

Draft Environmental Assessment for the Proposed Expansion of

Mountain Bogs National Wildlife Refuge

Alleghany, Ashe, Henderson, Macon, McDowell, Rutherford, and Watauga Counties, North Carolina

USFWS 2019

Southeast Region



Table of Contents

Introduction:	1
Proposed Action:.....	1
Background:	1
Purpose and Need for the Proposed Action:.....	2
Alternatives Considered.....	3
Alternative A [Proposed Action Alternative] – Expand five existing and add two new Conservation Partnership Areas.....	3
Alternative B [No Action Alternative] – No expansion	5
Alternative C – Expand refuge to include core Box Creek CPA and additional lands around existing CPAs.....	5
Alternative(s) Considered, But Dismissed From Further Consideration	5
Affected Environment	8
Environmental Consequences of the Action	9
Cumulative Impact Analysis:	17
Summary of Analysis:	22
Public Involvement.....	23
Public Outreach:	23
State Coordination:	24
Tribal Consultation:	24
Appendix A. References	26
Appendix B. List of Preparers.....	28
Appendix C: Other Applicable Statutes, Executive Orders & Regulations	29

Table of Figures

Figure 1 - Alternative A [Proposed Action Alternative].Creation of the Box Creek and Black Rock Conservation Partnership Areas, and expansion of the existing Bluff, Butt, Pinnacle, and Sparta Conservation Partnership Areas. Map denotes the area where the Service currently holds a conservation easement..... 4

Figure 2 - Alternative C. Creation of the Box Creek (smaller than in Alternative A) and Black Rock Conservation Partnership Areas, and expansion of the existing Bluff, Butt, Pinnacle, and Sparta Conservation Partnership Areas. Map denotes the area where the Service currently holds a conservation easement..... 6

Figure 3 - Map of the general area, including potential expansion areas..... 7

List of Tables

Table 1. Impacts Analysis..... 10

Table 2. Cumulative Impacts Analysis 18

Introduction:

This Environmental Assessment (EA) evaluates effects associated with the proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

Proposed Action:

The Service proposes expanding the Mountain Bogs National Wildlife Refuge (Mountain Bogs NWR and MNBWR) acquisition boundary and increasing the amount of land authorized for potential acquisition. The refuge is currently authorized to protect, through fee-title acquisition or easements, up to 23,478 acres within an acquisition boundary encompassing 42,390 acres, including rare mountain bogs and surrounding upland habitats. The proposed expansion would increase the amount of area authorized for protection through easement or fee-title acquisition to 64,478 acres within an acquisition boundary encompassing 92,772 acres. Proposed expansion would occur in Alleghany, Ashe, Henderson, Macon, McDowell, Rutherford, and Watauga counties, North Carolina; including lands on which the Service already holds conservation easements in McDowell and Rutherford counties, North Carolina.

Acquisition boundaries delineate areas where the Service may consider negotiations with willing owners for acquisition of an interest in land. Lands within a refuge acquisition boundary do not become part of the refuge unless and until the acquisition of a legal interest through a management agreement, easement, lease, donation, or purchase. Lands within an acquisition boundary are not subject to any refuge regulations or jurisdictions unless and until acquired. Land interests are acquired from willing sellers/owners only.

This proposed action evolves over time during the process as the agency refines its proposal and learns more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will be made at the conclusion of the public comment period for the draft EA.

Background:

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The refuge was established in 2015, pursuant to National Wildlife Refuge System Administration Act (16 U.S.C. 668dd(b)); Endangered Species Act of 1973 (16 U.S.C. 1534); Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3921-3923); Fish and Wildlife Act of 1956 (16

U.S.C. 742a); and Migratory Bird Treaty Act (16 U.S.C. 703-712).

The mission of the NWRS, as outlined by the National Wildlife Refuge System Administration Act (NWRSA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is:

“... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans”

The primary purpose of MNBWR is to protect some of the last remaining examples of southern Appalachian mountain bogs; provide habitat for nongame neotropical migratory birds; conserve habitat for 13 federally-listed species, including the bog-dependent mountain sweet pitcher plant, green pitcher plant, bunched arrowhead, swamp pink, and bog turtles, and 83 state-listed species; provide breeding, wintering, and migration habitat for American woodcock; and provide opportunities for environmental education, interpretation and wildlife-dependent recreation. Protection of mountain bog habitats is identified as a priority action in the Service’s Strategic Plan for the Asheville Ecological Services Field Office, in the recovery plans for each of those federally listed species that occur within mountain bog habitats, and in the state wildlife action plans for both Tennessee and North Carolina.

The refuge acquisition boundary currently consists of 30 distinct areas, or Conservation Partnership Areas (CPAs), scattered across eleven North Carolina and two Tennessee counties. Each CPA consists of one or more bogs and surrounding uplands. It’s within these CPAs that the Service acquires easements or property fee-simple.

Purpose and Need for the Proposed Action:

The NWRSA mandates the Secretary of the Interior in administering the System to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses.

The purposes of this proposed action are to:

- Enhance the recovery of two federally-listed plants (bunched arrowhead and white irisette) and two federally-listed animals (Virginia big-eared bat and bog turtle).
- Support the pre-listing recovery of four at-risk plant and animal species (little brown bat, tri-colored bat, South Mountains gray-cheeked salamander, and mountain purple pitcher plant).
- Develop opportunities for wildlife-related recreation on MNBWR.
- Help establish a corridor between ecologically significant and protected areas in the South Mountains (e.g. South Mountains Game Lands and South Mountains State Park) and Hickory Nut Gorge (e.g. Chimney Rock State Park, The Nature Conservancy preserves).

The need of the proposed action is to meet the Service’s priorities and mandates as outlined by the NWRSA (16 U.S.C. 668dd(a)(4)) to:

- “provide for the conservation of fish, wildlife, and plants, and their habitats with the System,”
- “plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of states and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participating from conservation partners and the public,”
- “ensure that opportunities are provided within the System for compatible wildlife-dependent recreational uses.” 16 U.S.C. 668dd(a)(4))

Not undertaking the expansion would likely increase the duration and difficulty of listed species recovery efforts; increase the likelihood of listing at-risk species; close-off a significant opportunity to develop publicly available wildlife-based recreation in the future; and put the future of a wildlife corridor between the South Mountains and Hickory Nut Gorge into question.

Alternatives Considered

Alternative A [Proposed Action Alternative] – Expand five existing and add two new Conservation Partnership Areas

Under the Proposed Action Alternative, the Service would increase the Mountain Bogs NWR acquisition boundary by 50,382 to a total 92,772 acres. Within this acquisition boundary, the Service would be authorized to acquire, through fee-title or conservation easement, 41,000 acres in addition to the currently authorized 23,268 acres for a total of 68,268 acres. The additional acquisition boundary acreage would be comprised of two new CPAs and additional acreage added to five existing CPAs (Figure 1).

New CPAs:

- Box Creek (Rutherford and McDowell counties), 48,225 acres, to include a significant state-designated Natural Heritage Area, several bogs, bog turtles (threatened due to similarity of appearance), white irisette (endangered) and several at-risk and species of concern. The inclusion of the Box Creek CPA will help establish a corridor between protected areas in the South Mountains (e.g. South Mountains Game Lands and South Mountains State Park) and Hickory Nut Gorge (e.g. Chimney Rock State Park, TNC preserves).
- Black Rock (Macon County), 275 acres, to include a population of mountain purple pitcher plant, an at-risk species.

CPA expansions:

- Bluff (Ashe County), 477.85 acres, to include bog acreage inadvertently left out of the original acquisition boundary

- Butt (Henderson County), 42.20 acres, to include a bog that is home to bunched arrowhead (endangered).
- Pinnacle (Watauga County), 469.20 acres, to include a recently discovered primary maternity colony for North Carolina’s only Virginia big-eared bat (endangered) population.
- Sparta (Alleghany County), 477.65 acres, to include an additional bog known to have a healthy population of bog turtles (threatened due to similarity of appearance).
- Three Peaks (Watauga County), 125.46 acres, to include an additional bog site known to have Gray’s lily.

Acquisition of the identified properties is dependent on willing sellers and available funding. The Service is currently in possession of a conservation easement of 7,000 acres within the potential Box Creek Conservation Partnership Area. That easement was donated in November 2016 and this proposal would incorporate the easement into MNBNWR expansion.

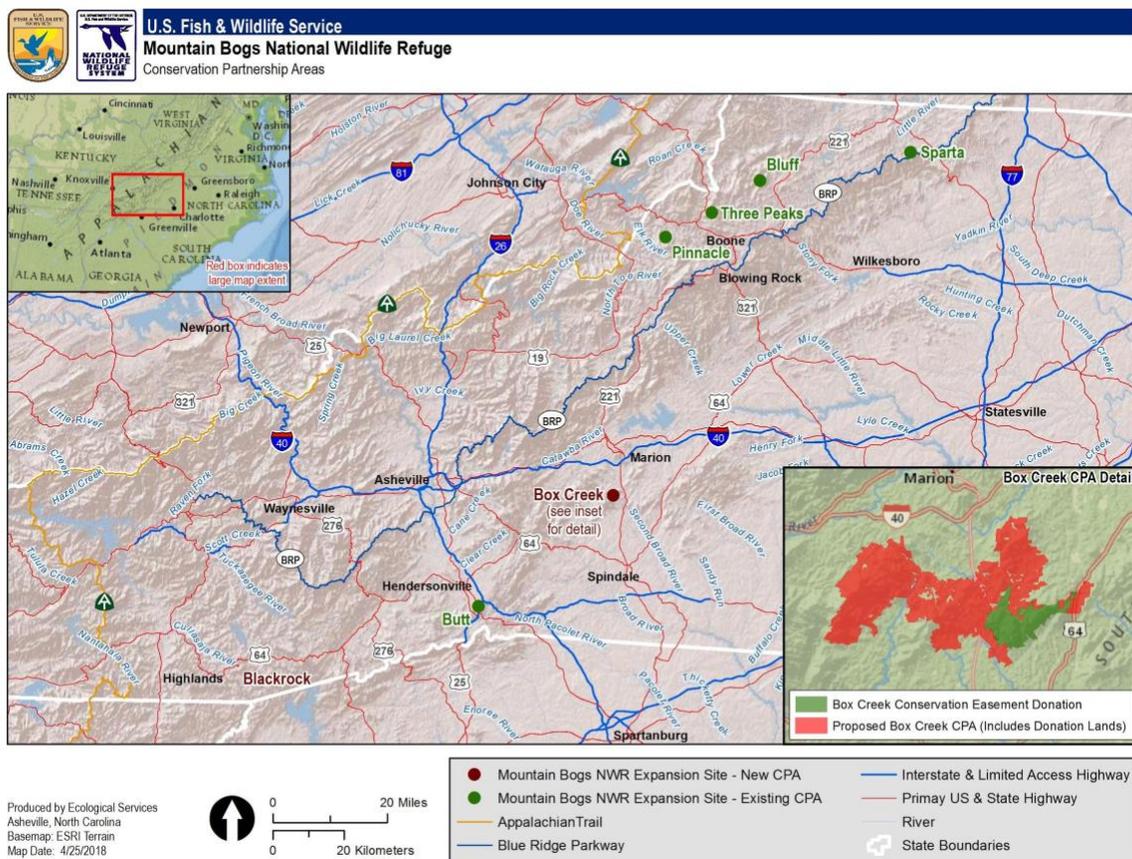


Figure 1 - Alternative A [Proposed Action Alternative]. Creation of the Box Creek and Black Rock Conservation Partnership Areas, and expansion of the existing Bluff, Butt, Pinnacle, and Sparta Conservation Partnership Areas. Map denotes the area where the Service currently holds a conservation easement.

Alternative B [No Action Alternative] – No expansion

In this alternative, the Service would not expand the existing acquisition boundary for Mountain Bogs NWR and no additional lands would be available for inclusion in the refuge expansion through either fee-title ownership, conservation easement, or cooperative agreement.

Alternative C – Expand refuge to include core Box Creek CPA and additional lands around existing CPAs

Alternative C would provide for an increase in the Mountain Bogs NWR acquisition boundary by 15,092.36 acres to a total of 57,482.36 acres (Figure 2). Within the acquisition boundary, the Service would be authorized to acquire through fee-title or conservation easement 15,092.36 acres in addition to the currently authorized 23,268 acres for a total of 38,360.36 acres. In this scenario, the following specific areas would be added:

New CPA

- Box Creek Core (Rutherford and McDowell counties), 13,500 acres, to include the 7,000 acre Box Creek conservation easement currently held by the Service and additional contiguous lands in ownership by the same landowner (Figure 2). Bogs, bog turtles, white irisette (E) and several at-risk and species of concern have been documented on this property, designated a North Carolina Natural Heritage Area. The inclusion of the Box Creek CPA will help establish a corridor between protected areas in the South Mountains (e.g. South Mountains Game Lands and South Mountains State Park) and Hickory Nut Gorge (e.g. Chimney Rock State Park, TNC preserves) though not to the extent of that described in Alternative A.

CPA expansions:

- Bluff (Ashe County), 477.85 acres, to include bog acreage inadvertently left out of the original acquisition boundary
- Butt (Henderson County), 42.20 acres, to include a bog that is home to bunched arrowhead (endangered).
- Pinnacle (Watauga County), 469.20 acres, to include a recently discovered primary maternity colony for North Carolina's only Virginia big-eared bat population (endangered).
- Sparta (Alleghany County), 477.65 acres, to include an additional bog known to have a healthy population of bog turtles (threatened due to similarity of appearance).
- Three Peaks (Watauga County), 125.46 acres, to include an additional bog site known to have Gray's lily

Alternative(s) Considered, But Dismissed From Further Consideration

An additional alternative was briefly considered – expanding existing Conservation Partnership Areas (Bluff, Butt, Pinnacle, Sparta, and Three Peaks), but not creating the new Conservation Partnership Areas of Box Creek and Black Rock. The Service currently holds donated conservation easements on 7,000 acres in what would be the Box Creek CPA. Given that this

alternative would not allow the Service to bring that acreage into the refuge system, it was not considered viable, therefore is not fully developed or analyzed.

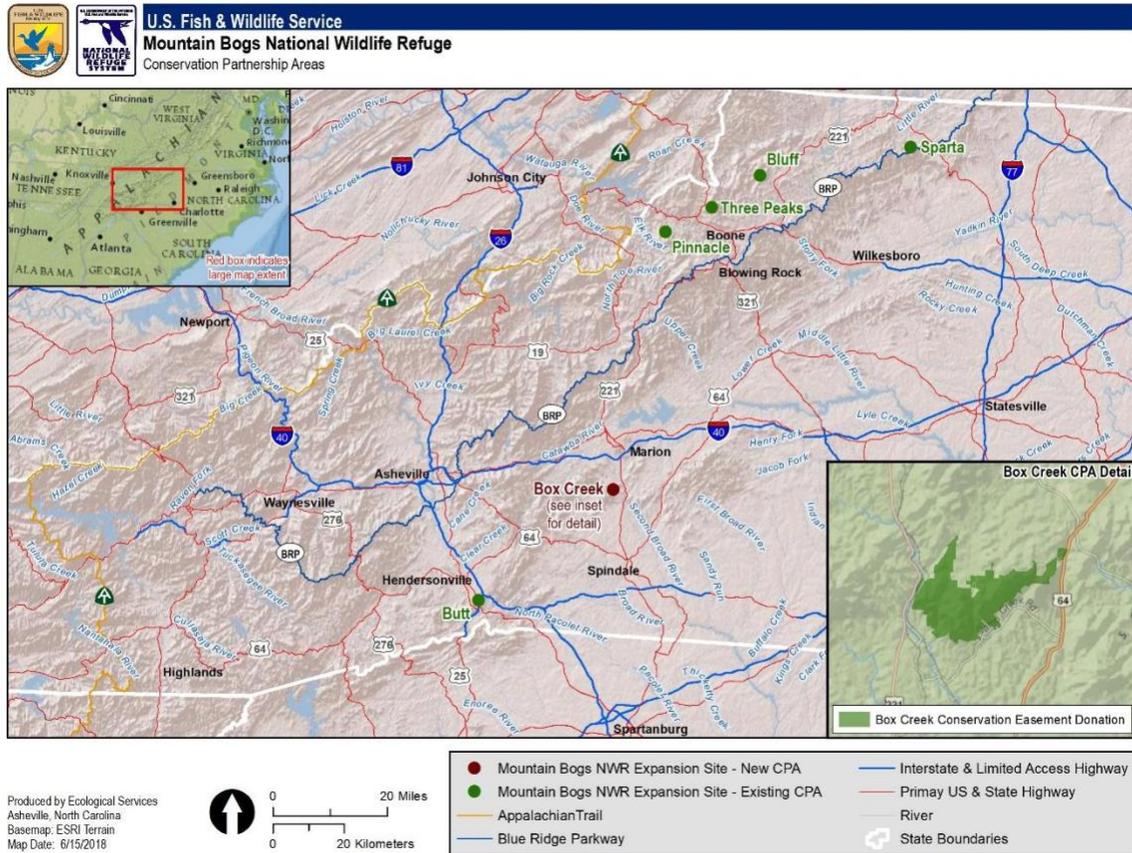


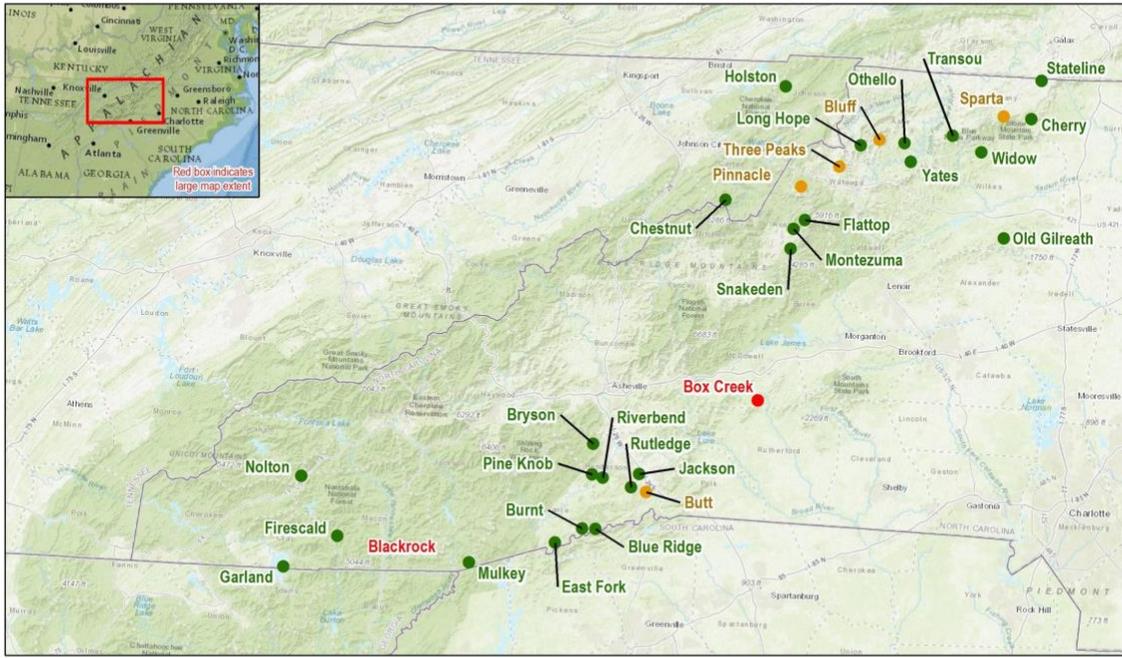
Figure 2 - Alternative C. Creation of the Box Creek (smaller than in Alternative A) and Black Rock Conservation Partnership Areas, and expansion of the existing Bluff, Butt, Pinnacle, and Sparta Conservation Partnership Areas. Map denotes the area where the Service currently holds a conservation easement.



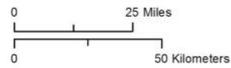
U.S. Fish & Wildlife Service

Mountain Bogs National Wildlife Refuge

Alleghany, Ashe, Avery, Clay, Graham, Henderson, Jackson, Macon, McDowell, Rutherford, Transylvania, Watauga, and Wilkes Counties NC, Carter and Johnson Counties TN



Produced by Ecological Services
Asheville, North Carolina
Basemap: ESRI World Topo
Map Date: 4/25/2018



- Mountain Bogs NWR Expansion Site - Proposed New CPA
- Mountain Bogs NWR Expansion Site - Within Existing CPA
- Approved Mountain Bogs NWR Conservation Partnership Areas

Figure 3 - Map of the general area, including potential expansion areas.

Affected Environment

Mountain Bogs National Wildlife Refuge is focused on southern Appalachian mountain bogs, though the landscape in which it is found is primarily southern and central Appalachian oak forest. The refuge's current acquisition boundary consists of thirty distinct sites, in 13 counties, with 28 sites in North Carolina and two in Tennessee – all within the Blue Ridge Ecoregion. The proposed action would create new acquisition boundary areas in three counties – Macon, McDowell, and Rutherford. Additionally, it would expand existing acquisition boundaries in Ashe, Henderson, Watauga, and Alleghany counties (Figure 3). Table 1 provides additional, brief descriptions of each resource affected by the proposed action.

The physical, biological, and cultural resources and socioeconomic conditions of the area under consideration for this expansion were described in detail in the Environmental Assessment for the establishment of the Mountain Bogs NWR (USFWS 2015). The environmental and socioeconomic conditions have not changed substantially since that description was constructed. The description of the affected environment from the Mountain Bogs NWR draft Land Protection Plan and Environmental Assessment is incorporated herein by reference.

Environmental Consequences of the Action

This section analyzes the environmental consequences of the action on each affected resource, including direct and indirect effects. This EA only includes the written analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an “affected resource” or are otherwise considered important as related to the proposed action. Any resources that will not be more than negligibly impacted by the action and have been identified as not otherwise important as related to the proposed action have been dismissed from further analyses.

Table 1 provides:

1. A brief description of the affected resources in the proposed action area;
2. Impacts of the proposed action and any alternatives on those resources, including direct and indirect effects.

Impact Types:

- *Direct effects* are those that are caused by the action and occur at the same time and place.
- *Indirect effects* are those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.
- *Cumulative impacts* result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.

Table 1. Impacts Analysis

NATURAL RESOURCES	
AFFECTED RESOURCE	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>Wildlife and Aquatic Species</p> <p>The potential expansion areas are host to a variety of animals commonly found in the eastern United States (e.g., raccoon, mink, muskrat, river otter, and beaver and a variety of small mammals); additionally, several species of bats breed and hibernate in the area. The area provides habitat for many generalist and opportunistic species of amphibians and reptiles. There are also a variety of non-game species that are tracked by the state natural heritage program, including the Carolina foothills crayfish, South Mountain gray-cheeked salamander, four-toed salamander, and timber rattlesnake.</p> <p>Additionally, the potential expansion area is home to 677 miles of stream, including 116 miles of state-designated trout waters.</p>	<p>Alternative A (preferred): This alternative would provide the greatest environmental benefit as it could a) conserve up to 41,000 acres, b) conserve up to 677 miles of stream, c) and conserve approximately 20 miles of wildlife corridor between the South Mountains region and the Hickory Nut Gorge/Chimney Rock region.</p> <p>Alternative B (no action): As native and natural habitats continue to decline in quality and spatial extent, and as habitat patches become more fragmented, the animal species that use these habitats would decline in numbers or fitness.</p> <p>Alternative C: This alternative would provide a moderate level of environmental benefit compared to the other two alternatives, as it could a) conserve up to 15,000 acres, b) conserve up to 99 miles of stream, c) and conserve approximately 10 miles of wildlife corridor between the South Mountains region and the Hickory Nut Gorge/Chimney Rock region.</p>
<p>Threatened and Endangered Species and Other Special Status Species</p> <p>Mountain Bogs NWR was created to conserve a rare wetland type, and several threatened and endangered species that depend on that habitat. The proposed</p>	<p>Alternative A (preferred): Through this alternative, all known occurrences of listed and at-risk species in the potential expansion area could be conserved, maximizing the action's recovery opportunities.</p> <p>Alternative B (no action): This alternative would afford the species no additional conservation benefit and would leave their habitat, and its surrounding area, exposed to the potential of loss or degradation.</p>

<p>expansion could help conserve habitat for five listed species:</p> <ul style="list-style-type: none"> ● Bog turtle, <i>Glyptemys muhlenbergii</i> ● Bunched arrowhead, <i>Sagittaria fasciculata</i> ● Virginia big-eared bat, <i>Corynorhinus townsendii virginianus</i> ● Northern long-eared bat, <i>Myotis septentrionalis</i> ● White irisette, <i>Sisyrinchium dichotomum</i> <p>Additionally, the expansion could help conserve habitat for up to four at-risk species:</p> <ul style="list-style-type: none"> ● Little brown bat, <i>Myotis lucifugus</i> ● Tri-colored bat, <i>Perimyotis subflavus</i> ● South Mountains gray-cheeked salamander, <i>Plethodon meridianus</i> ● Mountain purple pitcher plant, <i>Sarracenia purpurea</i> var. <i>montana</i> 	<p>Alternative C: This alternative would be moderate of the three in terms of opportunity to recover these species. It would not encompass all occurrences of northern long-eared bat, tri-colored bat, and bog turtle within the potential expansion area.</p>
<p>Vegetation (including vegetation of special management concern)</p> <p>Though there is a variety of vegetation on the potential expansion sites, greater than 60% of the area is southern and central Appalachian oak forest, including the xeric sub-type. Other plant communities prominent in the potential expansion area include southern and central Appalachian cove forest; and southern Appalachian low mountain pine forest.</p>	<p>Alternative A (preferred):</p> <p>Alternative A provides the greatest opportunity to positively impact vegetation and plant communities, as it raises the possibility of conserving the greatest amount of acreage and would allow for protection of all white irisette occurrences in the potential expansion area. Additionally, if selected, the Service would go through the Endangered Species Act Sec. 7 consultation process to identify and address any impacts to the white irisette.</p> <p>Alternative B (no action):</p> <p>Alternative B would provide no additional conservation opportunity for native vegetation, including the white irisette; indeed, this alternative would leave land open to development.</p>

<p>The potential expansion area is known to be home to one federally-listed plant, white irisette, <i>Sisyrinchium dichotomum</i></p>	<p>Alternative C:</p> <p>Alternative C provides opportunity to positively impact vegetation and plant communities, through the potential conservation of 15,000 acres, though it would not conserve white irisette occurrences.</p>
<p>Water Resources</p> <p>The potential expansion area is home to more than 206 miles of streams, spread across the French Broad, Kanawha, Santee, and Savannah river basins.</p>	<p>Alternative A (preferred): The expansion of the refuge could protect 206 miles of streams, across 41,000 acres, from future urbanization, poorly-managed agricultural operations, growing industries, etc. - land uses are typically associated with declines in water quality. Conservation lands, such as the refuge expansion, tend to improve water quality downstream as vegetated areas reduce runoff and sedimentation, while also absorbing some nitrogen and phosphorus. The expansion area would be protected from the construction of extensive drainage ditches, roads, and large areas of impervious surfaces associated with development that would alter the hydrology.</p> <p>Alternative B (no action): Under this alternative, water quality is expected to generally be adversely affected. In a developed landscape, materials such as animal wastes, oil, greases, heavy metals, fertilizers, pesticides, and other materials are washed off by rainfall into rivers and wetlands. These materials can create high pollutant loadings of sediment, nutrients, heavy metals, petroleum hydrocarbons, and coliform bacteria and viruses (Gill et al. 2005). Therefore, water quality is likely to continue to be adversely affected by expanding urban land use, poorly-managed commercial logging and agricultural operations, and mining. Expanding agricultural, industrial, mining, and other economic sectors are also expected to compete for limited water resources; this alternation of the landscape will affect groundwater recharge and stream flow levels.</p> <p>Alternative C: This would include the opportunity to conserve 99 miles of streams across 15,000 acres from future urbanization, expanded agricultural operations, growing industries, etc. - land uses are typically associated with declines in water quality. Conservation lands, such as the refuge expansion, tend to improve water quality downstream as vegetated areas reduce runoff and sedimentation, while also absorbing some</p>

	<p>nitrogen and phosphorus. The expansion area would be protected from the construction of extensive drainage ditches, roads, and large areas of impervious surfaces associated with development that would alter the hydrology.</p>
<p>Wetlands The refuge’s primary purpose is to conserve southern Appalachian mountain bogs, a general term referring to a handful of rare wetland types, and the imperiled plants and animals that rely on these habitats.</p> <p>The potential expansion area is home to montane alluvial forest, a common wetland type, but also rarer wetlands such as low-elevations seeps, southern Appalachian bogs, and swamp-forest bog complex.</p> <p>Protecting the adjacent buffer areas would be critical to the long-term conservation of mountain bogs. These vegetated areas help protect water resources that are important to the bogs. Forests, for instance, can absorb and slowly release water; providing a flow of water that sustains bogs down-slope, even during some droughts. Conversely, vegetated lands upstream of bogs help prevent sedimentation and limit flash floods.</p>	<p>Alternative A (preferred): This alternative could provide additional protection to bog habitats and adjacent uplands and stream habitats on up to 41,000 acres would be conserved under this alternative. At this time, the Service cannot predict the relative amounts of different habitats that would eventually make up the refuge expansion, though expansion would include bog habitats and adjacent buffers.</p> <p>Alternative B (no action): These would be no additional benefit to wetland conservation under this proposal. Wetlands would continue to receive existing protections under the Clean Water Act, though not the potential for permanent conservation within the National Wildlife Refuge System.</p> <p>Alternative C: Implementation of Alternative C could provide additional protection to bog habitats and adjacent uplands and stream habitats on up to 15,000 acres. At this time, the Service cannot predict the relative amounts of different habitats that would eventually make up the refuge expansion, though refuge expansion would include bog habitats and adjacent watershed buffers.</p>

VISITOR USE AND EXPERIENCE	
AFFECTED RESOURCE	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>Because Mountain Bogs NWR currently consists of a conservation easement and doesn't include any property fee-simple, there are currently no opportunities for wildlife-based recreation.</p> <p>However, as land is acquired fee-simple, the Service plans to develop recreation opportunities focused on non-sensitive wetlands and upland areas.</p>	<p>Alternative A (preferred): This alternative has the greatest potential to benefit wildlife-based recreation, as it has the potential to conserve the greatest amount of land, especially upland habitat that isn't sensitive to low-impact, wildlife based recreation. Opportunities for expanded wildlife-recreation will depend on the Service eventually acquiring land fee-simple, though this alternative provides the greatest opportunity for the greatest amount of land conservation.</p> <p>Alternative B (no action): This alternative would provide no additional public, wildlife-based recreation opportunities through the National Wildlife Refuges System.</p> <p>Alternative C: This alternative has potential to benefit wildlife-based recreation, as it has the potential to conserve land, especially upland habitat that isn't sensitive to low-impact, wildlife based recreation. Opportunities for expanded wildlife-recreation will depend on the Service eventually acquiring land fee-simple.</p>

SOCIOECONOMICS	
AFFECTED ENVIRONMENT	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>Local and regional economies</p> <p>The proposed expansion would occur in up to seven counties, and near several small towns.</p> <p>Much of the land within the potential acquisition boundary</p>	<p>Alternative A (preferred): The effects, both beneficial and adverse, of Service lands on local tax revenues depends on several factors (federal government appropriations, land value trends, etc.).</p> <p>Under the preferred alternative, it's difficult to determine what the overall effects will be on local tax revenues. Generally, the area is experiencing population growth, but there are more localized areas where this is not the case.</p>

<p>is in a natural state, not working land. Additionally, with no dedicated acquisition funding, we anticipate land acquisition to largely come in the form of donated conservation easements, which would allow the continued use of the land for forestry and agriculture .</p> <p>Acquisition of property interest – either easements, or fee simple – would impact local property tax revenue.</p> <p>For property the Service owns fee-simple, the Refuge Revenue Sharing Act of June 15, 1935 (16 U.S.C. §715s) offsets the loss of local tax revenues from federal land ownership through payments to local taxing authorities. A refuge provides annual payments to taxing authorities, based on the acreage and value of refuge lands located within their jurisdiction. Money for these payments comes from the sale of oil and gas leases, timber sales, grazing fees, the sale of other Refuge System resources, and from congressional appropriations, which are intended to make up the difference between the net receipts from the Refuge Revenue Sharing Fund and the total amount due to local taxing authorities. The actual Refuge Revenue Sharing payment does vary from year to year, because Congress may or may not appropriate sufficient funds to make full payment. The exact amount of the annual payment depends on the</p>	<p>These trends could change over time. At this point in time, the Service is unable to predict (if the proposal were to be authorized) where and when refuge lands would be purchased within the CPAs.</p> <p>In areas that are rapidly urbanizing and land values are rising, Refuge Revenue sharing payments may be less than local tax rates. However, it is expected that these losses may be offset by cost-savings to communities. Refuges can reduce costs to local communities because they require minimal infrastructure. Maintaining a system of open spaces, such a refuge, is one important way to control the operating costs of local government. Land conservation is often less expensive for a local government than a suburban-style residential development. In general, refuges and other open spaces put little demand on the infrastructure of a municipality and should be considered in assessing the financial impact on the municipality. Preserving open space has the long-term benefit of avoiding future costs. Increasingly, communities and counties are finding that single-family residential tax rate tables do not cover the costs of municipal services, community infrastructure, and local schools. Studies show that for every \$1.00 collected in taxes, residential development costs between \$1.04 to \$1.67 in services. Furthermore, these costs continue into the future, generally increasing over time. Even including the initial cost of acquisition, open space is less costly to taxpayers over both the short and long term than development of the same parcel, while the major public costs to preserve natural areas are finite (East Amwell Agricultural Advisory Board 1994; Mendham Township Committee 1994; Pinelands Commission 1994; Burlington County Farmland Preservation Program 1996; Madsen et al. 2004).</p> <p>Alternative B (no action): This alternative would have no impact on existing property taxes.</p> <p>Alternative C: Under this alternative, it is difficult to determine what the overall effects will be on local tax revenues. Generally, the area is experiencing population growth, but there are more localized areas where this is not the case. These trends could change over time. At this point in time, the Service is unable to predict (if the proposal were to be</p>
--	--

<p>congressional appropriation, which in recent years have tended to be less than the amount to fully fund the authorized level of payments.</p>	<p>authorized) where and when refuge lands would be purchased within the CPAs. Impact to local income tax depends on a host of variables described under the Alternative A description in this section.</p>
<p style="text-align: center;">ENVIRONMENTAL JUSTICE</p>	
<p>Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.</p>	<p>The Service has not identified any potential high and adverse environmental or human health impacts from this proposed action or any of the alternatives. Minority or low income communities will not be disproportionately affected by any impacts from this proposed action or any of the alternatives.</p>
<p style="text-align: center;">INDIAN TRUST RESOURCES</p>	
<p>The potential expansion areas do not include tribal lands, and there are no known archeological resources, though all expansion areas are located where Cherokee culture once existed. If the Service plans or permits any actions that might affect eligible cultural resources, it would carry out appropriate site identifications, evaluations, and protection measures as specified in the regulations and</p>	<p>There are no known Indian Trust Resources on this refuge and this action is not expected to impact any Indian Trust Resources.</p>

in Service directives and manuals.	
------------------------------------	--

Cumulative Impact Analysis:

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7).

Table 2. Cumulative Impacts Analysis

<p>Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment</p>	<p>Descriptions of Anticipated Cumulative Impacts</p>
<p>Wildlife-dependent recreation The variety of upland and wetland habitats found in the area supports a diversity of game species, including black bear, white-tailed deer, hog, turkey, waterfowl, dove, quail, and a variety of small game. The mountain region of the state is well-known for its trout fishing opportunities, and the potential expansion area has more than 186 km (115.58) of trout waters.</p> <p>None of the proposed expansion areas are currently open to the public. Any future public use of any expansion area depends on landowner permission in the case of conservation easements; or fee-simple ownership by the Service.</p>	<p>Alternative A (preferred): While the expansion of the refuge’s acquisition boundary will do nothing directly to increase wildlife-dependent recreation, it opens the door for future land acquisitions that could provide such opportunities. This alternative would provide the greatest opportunity for wildlife-based recreation, especially as it has the greatest amount of upland habitat. This would be most significant at the potential Box Creek CPA, where a refuge would join with a state park and state gamelands to help make the area a larger draw for recreationist.</p> <p>The Service expects the expansion of a new refuge to have some positive economic effects. Refuges can contribute to the region’s economy in several ways. First, a segment of the visiting public would spend its money at area hotels, restaurants, gas stations, etc. Secondly, visitors would locally buy some equipment and supplies associated with public uses such as hunting, fishing, and wildlife-watching and photography.</p> <p>Negative consequences could include additional congestion of area roads, for instance, resulting from an increase in refuge visitors. Heavy traffic and associated long delays could curb future visitation to the area, although given the exceptionally rural nature and dispersed nature of the potential expansion areas, this is unlikely.</p> <p>Alternative B (no action): Increased wildlife-dependent recreation would not be realized under the no action alternative.</p> <p>Alternative C: While the expansion of the refuge’s acquisition boundary will do nothing directly to increase wildlife-dependent recreation, it opens the door for future land acquisitions that could provide such opportunities. This would be most significant at the potential Box Creek CPA, where a refuge would join with a state park and state gamelands to help make the area a larger draw for recreationist.</p>

	<p>The Service expects the expansion of a new refuge to have some positive economic effects. Refuges can contribute to the region's economy in several ways. First, a segment of the visiting public would spend its money at area hotels, restaurants, gas stations, etc. Secondly, visitors would locally buy some equipment and supplies associated with public uses such as hunting, fishing, and wildlife watching and photography.</p> <p>Negative consequences could include additional congestion of area roads, for instance, resulting from an increase in refuge visitors. Heavy traffic and associated long delays could curb future visitation to the area, although, given the exceptionally rural nature and dispersed nature of the potential expansion areas, this is unlikely.</p>
<p>Development and Population Increase</p> <p>The population of North Carolina rose during the past 10 years and is expected to continue to do so for the next 20 years. By 2030, it is estimated that North Carolina's population will reach over 12 million, a rise of almost 52 percent compared to 2000 (U.S. Census Bureau 2005).</p> <p>The populations of North Carolina are likely to continue to rise during the next 50 years, with current decadal growth rates approximately 16 and 11 percent, respectively (U.S. Census Bureau 2012). With this continued population growth, land use is likely to change, and areas currently covered by intact deciduous forests could be converted to commercial pine forests, urban use, and agriculture. According to a 2009 study of land use trends in western North Carolina (Kirk 2009), agricultural lands have declined and are being</p>	<p>Alternative A (preferred):</p> <p>Under Alternative A, the total area of protected lands potentially available for habitat and wildlife conservation and compatible wildlife-dependent recreation would increase by approximately 45,000 acres. Unprotected lands would likely continue to be converted to development and other land uses (Reid et al. 2008; Kirk 2009; Thurmann et al. 2011).</p> <p>Even if all the refuge expansion lands are acquired over the next several decades, lands in the vicinity would be left unprotected and remain open to urban development, row-crop agriculture, industry, mining, and other land uses generally deemed incompatible with natural resource protection efforts.</p> <p>Alternative B (no action):</p> <p>The replacement of open spaces (e.g., farmland, wildlife habitat, outdoor recreation areas) by developed areas would continue to have potential consequences to people and wildlife. The impacts would be to clean and dependable supplies of water, local food/fiber production, outdoor recreation, etc.</p> <p>Alternative C:</p> <p>Under Alternative C, the total area of protected lands used for habitat and wildlife conservation and compatible wildlife-dependent recreation would increase by approximately 15,000 acres. Unprotected lands would likely continue to be converted to development and other land uses (Reid et</p>

<p>replaced primarily by developed areas. It predicts that by 2030, agricultural areas and forests will decline by 12 and 4.8 percent, respectively.</p>	<p>al. 2008; Kirk 2009; Thurmann et al. 2011), as discussed in the Land Use Patterns section of Alternative A.</p> <p>Even if all the refuge expansion lands are acquired over the next several decades, lands in the vicinity would be left unprotected and remain open to urban development, row-crop agriculture, industry, mining, and other land uses generally deemed incompatible with natural resource protection efforts.</p>
<p>Climate Change</p> <p>Vegetation, alive or dead, is an important carbon stock, and ecosystems in the United States contain approximately 66,600 million tons of carbon (Heath and Smith 2004). According to the U.S. Climate Change Science Program, the size of the carbon sink in U.S. forests appears to be declining, based on inventory data from 1952 to 2007 (Birdsey et al. 2007). The carbon density (the amount of carbon stored per unit of land area) is highly variable, as it is directly correlated to the amount of biomass in an ecosystem or plant community. The total carbon in an ecosystem also includes the organic component of soil, which can be substantial, depending on the vegetation cover type and other factors (Bruce et al. 1999). The total carbon stored in temperate forests (which are expected to be similar to the “deciduous forests” that comprise most of the land cover in the AOI) is about 70 tons per acre (Congressional Research Service 2009).</p>	<p>Alternative A (preferred):</p> <p>The Proposed Alternative could ensure that the approximately 41,000 acres of refuge expansion lands, once acquired, would continue to act as carbon sinks, resulting in a positive impact with regard to climate change. Habitats differ in their ability to store carbon, depending on the amount of vegetation they support and other factors. Some habitats such as certain wetlands, although they store carbon, also produce methane (Bridgham et al. 2006), a powerful greenhouse gas (National Oceanic and Atmospheric Administration 2011). However, it is believed that the refuge expansion lands would provide a net reduction in greenhouse gases, even with potential anthropogenic sources (see discussion of Adverse Effects below) of these gases taken into account.</p> <p>As land comes into the refuge system, there would be an increase in carbon emissions from refuge operations and increased visitation, but these contributions would not be significant, especially as the refuge systems works to implement many of the strategies for achieving Service-wide carbon neutrality by 2020 (USFWS 2009a: “Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change”), refuge energy use is expected to decline. Strategies included in this plan include use of hybrid vehicles, building energy-efficient facilities, video-conferencing (to reduce travel-related energy use), and green purchasing. These strategies, combined with those of other Service offices and the federal government in general, would likely result in a beneficial reduction in the rate of greenhouse gas emissions nationally.</p> <p>Alternative B (no action):</p> <p>Under the No Action alternative, fewer areas in the affected area are expected to remain or become carbon sinks, and positive impacts with regard to climate change are not anticipated.</p>

	<p>Alternative C:</p> <p>The Proposed Alternative could ensure that the approximately 15,000 acres of refuge expansion lands, once acquired, would continue to act as carbon sinks, resulting in a positive impact with regard to climate change. Habitats differ in their ability to store carbon, depending on the amount of vegetation they support and other factors. Some habitats such as certain wetlands, although they store carbon, also produce methane (Bridgham et al. 2006), a powerful greenhouse gas (National Oceanic and Atmospheric Administration 2011). However, it is believed that the refuge expansion lands would provide a net reduction in greenhouse gases, even with potential anthropogenic sources (see discussion of Adverse Effects below) of these gases taken into account.</p> <p>As land comes into the refuge system, there would be an increase in carbon emissions from refuge operations and increased visitation, but these contributions would not be significant, especially as the refuge systems works to implement many of the strategies for achieving Service-wide carbon neutrality by 2020 (USFWS 2009a: "Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change"), refuge energy use is expected to decline. Strategies included in this plan include use of hybrid vehicles, building energy-efficient facilities, video-conferencing (to reduce travel-related energy use), and green purchasing. These strategies, combined with those of other Service offices and the federal government in general, would likely result in a beneficial reduction in the rate of greenhouse gas emissions nationally.</p>
--	--

Summary of Analysis:

The purpose of this EA is to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a Finding of No Significant Impact (FONSI). The term “significantly” as used in NEPA requires consideration of both the context of the action and the intensity of effects. This section summarizes the findings and conclusions of the analyses above so that we may determine the likely significance of the effects.

Alternative A – Proposed Action Alternative

Of the three alternatives, this one goes the furthest towards meeting the purpose and needs of the Service as described above, as it would provide the greatest conservation opportunity for federal trust resources, and the greatest opportunity for future wildlife-based recreation.

Impacts depend on amount and location of land ultimately acquired, though this alternative could a) conserve up to 41,000 acres, b) conserve up to 677 miles of stream, c) and conserve up to approximately 20 miles of wildlife corridor between the South Mountains region and the Hickory Nut Gorge/Chimney Rock region. Through this alternative, all known occurrences of listed and at-risk species in the potential expansion area could be conserved. The Proposed Alternative could ensure that the approximately 41,000 acres of refuge expansion lands, once acquired, would continue to act as carbon sinks, resulting in a positive impact with regard to climate change.

Opportunities for expanded wildlife-recreation will depend on the Service eventually acquiring land fee-simple, though this alternative provides the greatest opportunity for the greatest amount of land conservation.

The effects, both beneficial and adverse, of Service lands on local tax revenues depends on several factors (federal government appropriations, land value trends, etc.), it’s difficult to determine what the overall effects will be on local tax revenues, as the Service is unable to predict where and when refuge lands would be purchased within the CPAs.

Alternative B – No Action Alternative

Of the three alternatives, this one does the least to meet the purpose and needs of the Service as described above.

The role of Mountain Bogs NWR would not increase to include protection of the listed species habitat identified in the other two alternatives, leaving its ultimate conservation in limbo. This alternative would afford the species no additional conservation benefit and would leave their habitat, and its surrounding area, exposed to the potential of loss or degradation. There would be no additional opportunity for wildlife-related recreation on the refuge. The Service would play no role in establishing a wildlife corridor between the South Mountains and Hickory Nut Gorge areas, leaving the conservation of this corridor in limbo. Under the No Action alternative, fewer areas in the affected area are expected to remain or become carbon sinks, and positive impacts with regard to climate change are not anticipated. Under this alternative, water quality is expected to generally be adversely affected due to an increasingly developing landscape.

This alternative would have no impact on existing property taxes.

Alternative C

This alternative meets the purpose and needs of the Service as described above, though not to the degree Alternative A would, as this alternative would allow for the conservation of less acreage than Alternative A.

This alternative would provide a moderate level of environmental benefit compared to the other two alternatives, as it could a) Conserve up to 15,000 acres, b) conserve up to 99 miles of stream, c) and conserve approximately 10 miles of wildlife corridor between the South Mountains region and the Hickory Nut Gorge/Chimney Rock region. This alternative would be moderate of the three in terms of opportunity to recover these species. It could conserve occurrences of northern long-eared and tri-colored bat and the South Mountain gray-cheeked salamander. However, it could not conserve all bog turtle occurrences, nor would it conserve any white irisette occurrences. It has potential to benefit wildlife-based recreation, especially upland habitat that is not sensitive to low-impact, wildlife based recreation. Opportunities for expanded wildlife-recreation will depend on the Service eventually acquiring land fee-simple. The Proposed Alternative could ensure that the approximately 15,000 acres of refuge expansion lands, once acquired, would continue to act as carbon sinks, resulting in a positive impact with regard to climate change.

The effects, both beneficial and adverse, of Service lands on local tax revenues depends on several factors (federal government appropriations, land value trends, etc.), it's difficult to determine what the overall effects will be on local tax revenues, as the Service is unable to predict where and when refuge lands would be purchased within the CPAs.

Public Involvement

Outreach for input into the draft Environmental Assessment was done concurrently with the draft Mountain Bogs NWR Land Protection Plan (LPP). Comments received during the planning process are summarized in the draft LPP. A brief synopsis of outreach is provided below.

Public Outreach:

The Service contacted numerous key stakeholders directly, sending letters describing the potential expansion and inviting feedback and attendance at one of six open houses. Recipients included Congressional staff, landowners in the potential acquisition boundary, four American Indian tribes, five federal agencies, county administrators from all potentially affected counties, seven state agencies, eleven conservation NGOs, and two power companies.

Six open houses, each lasting two hours, provided the public with an opportunity to interact individually with Service experts in real estate, bog biology, private land stewardship, and refuge expansion. All events were held in the early evening at the local library, during December 2016. These open houses were announced in advance through a press release, as well as in letters and e-mails sent to landowners; county administrators; bog conservation partners; and other state and federal natural resource agencies. The dates and locations of the open houses were:

- December 12, 2016 - Franklin, Macon County, North Carolina
- December 12, 2016 - Hendersonville, Henderson County, North Carolina
- December 13, 2016 - Lake Lure, Rutherford County, North Carolina
- December 14, 2016 - Boone, Watauga County, North Carolina
- December 14, 2016 - West Jefferson, Ashe County, North Carolina
- December 15, 2016 - Marion, McDowell County, North Carolina

The Service distributed a press release on November 22, 2016 to ten area media outlets, representing both regional outlets and local outlets serving the communities of the potential expansion. Additionally, a Service announcement was broadcast on WNCW.

Information about the proposal and an invitation to submit comments was posted to Facebook, as well as the Asheville Ecological Services Field Office website and the region Service website.

State Coordination:

Staff from the N.C. Wildlife Resources Commission and Plant Conservation Program were notified via direct mail of Service interest in exploring this expansion. They were also invited to attend any or all open houses. Additionally, Service biologists had staff-level conversations with staff from both agencies regarding the potential expansion.

Tribal Consultation:

Four American Indian tribes were contacted via direct mail regarding the proposal, and invited to submit comments. These were the Eastern Band of Cherokee Indians, the Cherokee Nation of Oklahoma, the United Keetoowah Band of Cherokee, and the Catawba Indian Nation.

LIST OF SOURCES, AGENCIES AND PERSONS CONSULTED:

Congressional staff for

- Sen. Richard Burr
- Sen. Thom Tillis
- Rep. Virginia Foxx (NC-5)
- Rep. Patrick McHenry (NC-10)
- Rep. Mark Meadows (NC-11)

Landowners in the potential acquisition boundary

- 530 landowners

Tribes

- Eastern Band of Cherokee Indians
- Cherokee Nation of Oklahoma
- United Keetoowah Band of Cherokee
- Catawba Indian Nation

Federal agencies

- Federal Highways Administration
- U.S. Army Corps of Engineers, Asheville Regulatory Office
- U.S. Forest Service, National Forests of North Carolina
- National Park Service, Blue Ridge Parkway
- National Park Service, Great Smoky Mountains National Park
- Natural Resources Conservation Service – District conservationists covering Macon, Henderson, Rutherford, McDowell, Watauga, Ashe, and Alleghany counties.

County administrators

- Ashe
- Alleghany
- Henderson
- Macon
- McDowell
- Rutherford
- Watauga

State agencies

- North Carolina Wildlife Resources Commission
- North Carolina Plant Conservation Program
- North Carolina Natural Heritage Program
- North Carolina Museum of Natural Sciences
- North Carolina Department of Agriculture and Consumer Sciences
- North Carolina Department of Transportation
- North Carolina Division of Environmental Quality

Non-Governmental Organizations

- Audubon
- Conserving Carolina
- The Conservation Fund
- Defenders of Wildlife
- Foothills Land Conservancy
- The Nature Conservancy
- North Carolina Farm Bureau
- North Carolina Forestry Association
- Ruffed Grouse Society
- Trout Unlimited
- Wild Turkey Federation

For-Profit Corporations

- Duke Energy
- Rutherford Electric Membership Corporation

Appendix A. References

- Birdsey, R.A., J.C. Jenkins, M. Johnston, E. Huber-Sannwald, B. Amero, B. de Jong, J.D.E. Barra, N. French, F. Garcia- Oliva, M. Harmon, L.S. Heath, V.J. Jaramillo, K. Johnsen, B.E. Law, E. Marín-Spiotta, O. Maser, R. Neilson, Y. Pan and K.S. Pregitzer. 2007. North American Forests. In *The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research (A.W. King, L. Dilling, G.P. Zimmerman, D.M. Fairman, R.A. Houghton, G. Marland, A.Z. Rose and T.J. Wilbanks , eds.)*. National Oceanic and Atmospheric Administration, National Climatic Data Center, Asheville, NC, USA. Pages 117-126. <http://www.climate-science.gov/Library/sap/sap2-2/final-report/default.htm>
Accessed: February 2012.
- Bridgman SD, Megonigal JP, Keller JK, Bliss NB, Trettin C. 2006. The carbon balance of North American wetlands. *Wetlands* 26: 889–916.
- Bruce, J.P., M. Frome, E. Haites, H. Janzen, R. Lal and K. Paustian. 1999. Carbon sequestration in soils. *Journal of Soil and Water Conservation* 54:382-389.
- Burlington County Farmland Preservation Program. 1996. Draft Strategic Plan; section on benefits of farmland preservation includes cost of community services calculations.
- Congressional Research Service. 2009. Carbon Sequestration in Forests. CRS Report for Congress RL31432. R. Gorte. <http://www.fas.org/sgp/crs/misc/RL31432.pdf>
Accessed: August 2012.
- East Amwell Agricultural Advisory Board. 1994. Cost of Community Services Study by Valerie Rudolph.
- Gill, A.C., McPherson, A.K., and Moreland, R.S. 2005. Water quality and simulated effects of urban land-use change in J.B. Converse Lake watershed, Mobile County, Alabama, 1990–2003. U.S. Geological Survey Scientific Investigations Report 2005–5171. 110 pp. <http://pubs.usgs.gov/sir/2005/5171/pdf/sir20055171.pdf> Accessed: February 2012.
- Heath, L.S. and J.E. Smith. 2004. Criterion 5, indicator 26: total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class and successional change. In *Data Report: A Supplement to the National Report on Sustainable Forests, 2003 (D.R. Darr, [coord.]*). FS-766A, U.S. Department of Agriculture, Washington, DC. 14 pp. <http://www.fs.fed.us/research/sustain/contents.htm> Accessed: February 2012.
- Kirk, R.W. 2009. Land Use and Terrestrial Carbon Storage in Western North Carolina from 1850-2030: A Historical Reconstruction and Simulation Study. Dissertation, University of Minnesota. <http://coweeta.uga.edu/publications/10380.pdf> Accessed: August 2012.
- Madsen, Travis, Dave Algozo and Elizabeth Ouzts. 2004. *The Value of Open Space: How Preserving North Carolina’s Natural Heritage Benefits Our Economy and Quality of Life*.

NCPIRG Education Fund. <http://www.policyarchive.org/handle/10207/bitstreams/5175.pdf>
Accessed: June 2012.

Mendham Township Committee. 1994. Report of the Financial Impact on Taxpayers for Acquisition of the Schiff Tract by Mendham Township. Costs of acquisition, future taxes.

National Oceanographic and Atmospheric Administration. 2011. Greenhouse Gases: Frequently Asked Questions. National Climatic Data Center. Asheville, North Carolina. <http://lwf.ncdc.noaa.gov/oa/climate/gases.html> Accessed: May 2013.

Pinelands Commission. 1994. Comparison of Financial Statistics of Several Pinelands and non-Pinelands Municipalities. Comparisons of vacant land sales, per capita real estate taxes and recent farmland sales.

Reid, J.L., J.P. Evans, J.K. Hiers and J.B.C. Harris. 2008. Ten years of forest change in two adjacent communities on the southern Cumberland Plateau. *Journal of the Torrey Botanical Society* 135:224-235.

Thurman, Libby M.A., Bill Terry, Teresa Gibson and Harry A. Green. 2011. Land Use and Planning in Tennessee: A Tennessee Advisory Commission on Intergovernmental Relations (TACIR) Staff Report. http://www.tn.gov/tacir/PDF_FILES/Other_Issues/LandUseAndPlanning.pdf
Accessed: August 2012.

U.S. Census Bureau. 2005. State Interim Population Projections by Age and Sex: 2004-2030. <http://www.census.gov/population/www/projections/projectionsagesex.html>
Accessed: March 2012.

U.S. Census Bureau. 2012. State and County QuickFacts. <http://quickfacts.census.gov/qfd/states/37000.html> Accessed: March 2012.

U.S. Fish and Wildlife Service. 2009a. Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change. Washington, D.C. <http://www.fws.gov/home/climatechange/pdf/CCStrategicPlan.pdf> Accessed: December 2011.

Appendix B. List of Preparers

- Sue Cameron, Conservation Biologist, Asheville Ecological Services Field Office, Southeast Region, USFWS
- Susan Cielinski, Assistant Area III Supervisor, Southeast Region, National Wildlife Refuge System
- Justin Dewey, Realty Specialist, Southeast Region, USFWS
- Mark Endries, Geographic Information Systems Analyst, Asheville Ecological Services Field Office, Southeast Region, USFWS
- Anita Goetz, Conservation Biologist, Asheville Ecological Services Field Office, Southeast Region, USFWS
- Andrew Hammond, Project Leader, Piedmont National Wildlife Refuge Complex
- Laura Housh, Senior Planner, Southeast Region, USFWS
- Carolyn Johnson, Deputy Project Leader, Piedmont National Wildlife Refuge Complex
- Alice Lawrence, Realty Specialist, Southeast Region, USFWS
- Janet Mizzi, Project Leader, Asheville Ecological Services Field Office, Southeast Region, USFWS
- Gary Peeples, Public Affairs Officer, Asheville Ecological Services Field Office, Southeast Region, USFWS
- Pamala Wingrove, Natural Resource Planner, Area III, Southeast Region, USFWS

Appendix C: Other Applicable Statutes, Executive Orders & Regulations

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS	
<p>Cultural Resources</p> <p>American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 – 1996a; 43 CFR Part 7</p> <p>Antiquities Act of 1906, 16 U.S.C. 431-433; 43 CFR Part 3</p> <p>Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa – 470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7</p> <p>National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810</p> <p>Paleontological Resources Protection Act, 16 U.S.C. 470aaa – 470aaa-11</p> <p>Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10</p> <p>Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)</p> <p>Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)</p>	<p>The Service went through the Endangered Species Act Section 7 consultation process to address potential impacts to threatened or endangered species (Draft Land Protection Plan for the Expansion of Mountain Bogs NWR Appendix C).</p>

<p>Fish & Wildlife</p> <p>Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. 668-668c, 50 CFR 22</p> <p>Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450</p> <p>Fish and Wildlife Act of 1956, 16 U.S.C. 742 a-m</p> <p>Lacey Act, as amended, 16 U.S.C. 3371 et seq.; 15 CFR Parts 10, 11, 12, 14, 300, and 904</p> <p>Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21</p> <p>Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)</p>	
<p>Natural Resources</p> <p>Clean Air Act, as amended, 42 U.S.C. 7401-7671q; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23</p> <p>Wilderness Act, 16 U.S.C. 1131 et seq.</p> <p>Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.</p>	

<p>Executive Order 13112 – Invasive Species, 64 Fed. Reg. 6183 (1999)</p>	
<p>Water Resources</p> <p>Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et seq.; 15 CFR Parts 923, 930, 933</p> <p>Federal Water Pollution Control Act of 1972 (commonly referred to as Clean Water Act), 33 U.S.C. 1251 et seq.; 33 CFR Parts 320-330; 40 CFR Parts 110, 112, 116, 117, 230-232, 323, and 328</p> <p>Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.; 33 CFR Parts 114, 115, 116, 321, 322, and 333</p> <p>Safe Drinking Water Act of 1974, 42 U.S.C. 300f et seq.; 40 CFR Parts 141-148</p> <p>Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977)</p> <p>Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977)</p>	