

Northwest Florida Green Links GIS Database Guide

The following is the quick reference guide to the first version of the Northwest Florida Green Links GIS conservation priorities database. The guide is separated into categories that mirror the database file structure. Each GIS data layer listed includes the name of the GIS file and a brief description of the data layer. For raster layers, the description of the values is also included. The following acronyms are used in this guide:

CLC = Cooperative Land Cover data

CLIP = Critical Lands and Waters 2.0 Database

FEGN = Data from the update of the Florida Ecological Greenways Network

FGDL = Florida Geographic Data Library

FNAI = Florida Natural Areas Inventory

FWC = Florida Fish and Wildlife Conservation Commission

GL = GIS layer created for this project

USFWS = US Fish and Wildlife Service

All statewide GIS data used in this GIS database have been clipped to the Green Links 10 county study area boundary.

I. Conservation Lands Data

A. Existing Conservation Lands

- 1) flma_201303_Clip.shp: FNAI Managed Areas
- 2) DEP_mitibank_oct12_Clip.shp: Florida Department of Environmental Protection (DEP) wetland mitigation banks
- 3) Umbrella_mitigation_NWFWMD.shp: NWFWMD DOT mitigation plan sites
- 4) Mitigation_Banks_COE.shp: Corps of Engineers mitigation banks

B. Proposed Conservation Lands

- 1) ffbot_201302_Clip.shp: FNAI Florida Forever Projects
- 2) Conservation_Units_GPEMA_all.shp: Regional General Permit Conservation Units

II. Core Data Layers

All of these raster layers have a LEGEND field that can be used both as a description of each value and in the ArcMap table of contents and map legends.

A. Landscape

- 1) CLIP Florida Ecological Greenways Network (**fegn_clipr**)

More information about the FEGN can be found at: <http://www.fnai.org/clip.cfm>. There are eight priority levels in the FEGN:

Value 1(Critical Linkages 1): These Critical Linkages, which are a subset of the original Priority 1 linkages, are critical for completing a connection between existing conservation lands. Critical Linkages 1 are defined as areas with very high ecological significance while also being most threatened by development.

Value 2 (Critical Linkages 2): These Critical Linkages, which are a subset of the original Priority 2 linkages, are critical for completing a connection between existing conservation lands. Critical Linkages 1 and 2 together would complete a statewide ecological network containing the most important large intact landscapes and best connection opportunities.

Value 3 (Priority 1): These are the remaining areas of Priority 1 linkages not included within Critical Linkages 1.

Value 4 (Priority 2): These are the remaining areas of Priority 2 linkages not included within Critical Linkages 2.

Value 5 (Priority 3): Priority 3 linkages provide significant alternate routes to higher priority linkages.

Value 6 (Priority 4): Most Priority 4 linkages provide important riparian corridors within Florida and to other states. One Priority 4 linkage is needed to protect the northern half of the St. Johns Florida black bear population.

Value 7 (Priority 5): Priority 5 linkages represent other regionally significant opportunities to protect large intact landscapes.

Value 8 (Priority 6): Priority 6 includes all other areas of large intact landscapes that support protection of a statewide ecological network.

2) FEGN Major River Buffers (**gl_mjrivnet**)

This layer was created for the ongoing update of the Florida Ecological Greenways Network. It identifies functional buffers of natural and semi-natural land cover of up to 800 meters (approximately ½ mile) around each major river (identified by FREAC) and Special Outstanding Florida Waters connected to these rivers.

Value 0 = Not a major river buffer

Value 1 = Within a major river, connected Special Outstanding Florida Water, or buffer

3) FEGN Xeric Habitat Connectivity (**xeric_nconr**)

This layer was created for the ongoing update of the Florida Ecological Greenways Network. It identifies functionally connected xeric landscapes (all natural and semi-natural land cover on xeric soils) within 1.5 miles of larger patches (100 acres or larger) of sandhill, scrub, or scrubby flatwoods. These patches were then separated into two size classes:

Value 0 = Not in an identified xeric landscape
Value 1 = 5,000 acres or larger
Value 2 = 1,000 acres to 4,999 acres

4) GL Conservation Buffers (**gl_conbuffer**)

This layer was created specifically for the Green Links study. It identifies potentially functional buffers around all existing conservation lands used in this study (See Section I above). Land uses were separated into four categories:

- High compatibility (natural and semi-natural land cover)
- Moderate compatibility (improved pasture and other low intensity agriculture or rural land use)
- Low compatibility (other more intensive agricultural and moderate intensity land uses such as golf courses)

These land use compatibility categories were then combined with buffer distances from existing conservation lands to result in the following values:

Value 0 = not a buffer
Value 1 = P1 = ¼ mile high land use compatibility
Value 2 = P2 = ¼ mile moderate compatibility
Value 3 = P3 = 1 mile high compatibility
Value 4 = P4 = 1 mile moderate compatibility
Value 5 = P5 = ¼ mile low compatibility
Value 6 = P6 = 1 mile low compatibility

B. Natural Communities

1) CLIP Rare Natural Communities (**natcom_clipf**)

More information about the CLIP Natural Communities layer can be found at: <http://www.fnai.org/clip.cfm>. The values in this layer are each a separate under-represented natural community found in the Green Links study area:

Value 0 = OUT
Value 1 = Upland Glade (G1)
Value 4 = Scrub (G2)
Value 7 = Seepage Slope (G2)
Value 8 = Sandhill (G3)
Value 9 = Sandhill Upland Lake (G3)
Value 10 = Coastal Uplands (G3)
Value 11 = Upland Hardwood (G5)
Value 12 = Pine Flatwoods (G4)
Value 13 = Coastal Wetlands (G5)

2) GL Cooperative Land Cover (CLC) based G1-G2 Natural Communities (**gl_natcom**)

This layer was created specifically for the Green Links study. It identifies additional natural communities within the study region to supplement the CLIP Under-represented Natural Communities.

- Value 1 = Other land uses
- Value 3 = Semi-natural land cover types
- Value 5 = All other natural communities
- Value 7 = G1 or G2 natural communities

C. Species

1) CLIP FNAI Rare Species Habitat (**fnaihab_clipr**)

More information about the CLIP FNAI Rare Species Habitat layer can be found at: <http://www.fnai.org/clip.cfm>. This layer identifies overlapping habitat priorities for many different vertebrate and invertebrate species across the state. Priorities are based on a combination of the G ranks of the species and the amount of overlap across the species habitat models. The values are:

- Value 0 = not a habitat priority
- Value 1 = P1
- Value 2 = P2
- Value 3 = P3
- Value 4 = P4
- Value 5 = P5
- Value 6 = P6

2) CLIP FWC Strategic Habitat Conservation Areas (**fwcshca_clipr**)

More information about the CLIP FWC Strategic Habitat Conservation Areas layer can be found at: <http://www.fnai.org/clip.cfm>. This layer identifies habitat conservation needs for meeting viability goals for a set of focal vertebrate species. Priorities are based on the G ranks of the species. The values are:

- Value 0 = not a habitat priority
- Value 1 = P1
- Value 2 = P2
- Value 3 = P3
- Value 4 = P4
- Value 5 = P5

3) GL Florida Black Bear Habitat and Corridor Analysis (**bear_prio**)

This layer was created specifically for the Green Links study with several statewide bear habitat priority layers and a bear corridor analysis done specifically for this study. These layers include:

- FWC Florida Black Bear Strategic Habitat Conservation Areas (SHCAs)
- Florida Black Bear Population Priority Conservation Areas (created by T. Hctor)
- Florida black bear habitat quality ranking (created by T. Hctor)
- Corridor Analysis between Apalchicola and Eglin bear subpopulations (using a 10% slice of ArcGIS corridor function using ranked bear habitat and CLIP 2.0 Landscape Context and large waterbodies added as high cost)

Values in this layer include:

Value 0 = not a bear habitat priority

Value 1 = P1 = high bear habitat or corridor priority

Value 2 = P2 = moderate bear habitat priority

D. Surface Water

1) CLIP FNAI Wetland Priorities (**wetland_clipr**)

More information about the CLIP FNAI Wetland Priorities layer can be found at:

<http://www.fnai.org/clip.cfm>. This layer prioritizes all wetlands in Florida based on both the intensity of land uses surrounding each wetland and potential natural community ranks. The values are:

Value 0 = not a habitat priority

Value 1 = P1

Value 2 = P2

Value 3 = P3

Value 4 = P4

Value 5 = P5

Value 6 = P6

2) CLIP FNAI Surface Water Priorities (**surfwat_clipr**)

More information about the CLIP FNAI Surface Water Priorities layer can be found at: <http://www.fnai.org/clip.cfm>. This layer identifies surface water protection buffers and priority watershed areas for protecting designated priority inland and coastal water bodies statewide. The values are:

- Value 0 = not a habitat priority
- Value 1 = P1
- Value 2 = P2
- Value 3 = P3
- Value 4 = P4
- Value 5 = P5
- Value 6 = P6
- Value 7 = P7

3) GL Riparian Network (**gl_ripnetwork**)

This layer was created specifically for the Green Links study. It identifies functionally connected buffers around all river, streams, creeks and wetlands and water bodies connected to them. Buffers are up to 300 meters wide and include all connected natural and semi-natural land cover adjacent to connected surface water network. The identified riparian network is then prioritized using the CLIP FNAI Surface Water Priorities where:

- Value 1 = P1 = CLIP Surface Water Priorities P1
- Value 2 = P2 = CLIP Surface Water Priorities P2-P3
- Value 3 = P3 = CLIP Surface Water Priorities P4-P7

III. Aggregated Priority Layers

All of these raster layers have a LEGEND field that can be used both as a description of each value and in the ArcMap table of contents and map legends.

The Aggregated Priority Layers are all combinations of Core Data Layers described above. Rules were used working with the Green Links committee to determine how core data layer priorities would be combined in these aggregated priority data layers.

1) GL Regional Ecological Network (**gl_ren**)

This layer is a combination of Florida Ecological Greenways Network (FEGN), Florida Black Bear Habitat and Corridor Analysis, Major River Buffers, Xeric Habitat Connectivity, and the Riparian Network. The priorities are:

Value 1 = Priority 1: FEGN Critical Linkages, Florida black bear PPCAs and SHCAs, bear corridor; Major River buffers, and P1 Riparian Network

Value 2 = Priority 2: FEGN P1-P5, other bear habitat priorities, Xeric Connectivity patches 5,000 acres or larger, P2 Riparian Network

Value 3 = Priority 3: FEGN P6, Xeric Connectivity patches 1,000 - 4,999 acres, P3 Riparian Network

2) GL CLIP and Regional Data Synthesis (**gl_clipregsyn**)

This layer is a combination of GL Conservation Buffers, CLIP Under-represented Natural Communities, GL Cooperative Land Cover (CLC) based G1-G2 Natural Communities, CLIP FNAI Rare Species Habitat, CLIP FWC Strategic Habitat Conservation Areas, and CLIP FNAI Wetland Priorities. The priorities are:

Value 1 = Priority 1:

CLIP FNAIHAB P1-2

CLIP SHCA P1

CLIP Natural Communities: G1-G2 Very High or High; G3 Very High

CLIP Wetlands P1

Conservation Buffers P1, P2

Value 2 = Priority 2:

CLIP FNAIHAB P3

CLIP SHCA P2-3

CLIP NC: G1-G2 Medium; G3 High or Medium

CLIP Wetlands P2-4

Conservation Buffers P3

Value 3 = Priority 3:

CLIP FNAIHAB P4-P6

CLIP SHCA P4-5

CLIP NC: All other rare natural communities plus others ranked G1-G2

CLIP Wetlands P5-P6

Conservation Buffers P4-P5

3) GL Regional CLIP (**gl_rclip**)

This is the final aggregated priorities data layer for the Green Links study area. It combines the Regional Ecological Network and the CLIP and Regional Data Synthesis with a rules-based maximum approach. This means that each cell in the study area is given the highest priority rank from either of the two layers that occurs at that location. The values are:

Value 1 = Priority 1
Value 2 = Priority 2
Value 3 = Priority 3

4) GL Regional CLIP P1 Overlay Model Priority Levels (**gl_rclipp1om**)

This layer combines the Priority 1 areas from the GL Regional CLIP layer with the Final Overlay Model described below in Section IV. This was done by taking the original 9 priority levels in the Final Overlay Model, clipping them to the Regional CLIP P1 boundary, and then reclassifying them into 3 priority levels using the Natural Breaks reclassification method in ArcGIS. Natural Breaks reclassification resulted in these groupings:

Overlay Model values 1-5 = low (L3)
Overlay Model values 6-7 = moderate (L2)
Overlay Model values 8-9 = high (L1)

These Overlay Model priority levels were then combined with the Regional CLIP P1 in a second level of priority with CLIP P1 areas in a raster layer with the following values:

Value 1 = Priority 1 = P1L1
Value 2 = Priority 2 = P1L2
Value 3 = Priority 3 = P1L3

IV. Overlay Model Layers

All of these raster layers have a LEGEND field that can be used both as a description of each value and in the ArcMap table of contents and map legends. The overlay models were created to serve as supplemental priorities for the Regional CLIP aggregated priorities described above. These overlay models are based on a combination of averaging of priorities and a rules-based prioritization for layers within each Resource Category (Biodiversity, Landscape, and Surface Water) and then a combination of these three resource categories into the Final Overlay Model using a rules-based approach.

1) Biodiversity Overlay Model (**gl_om_biodiv**)

This layer was created by first averaging the three species core data layers (CLIP FNAI Rare Species Habitat, CLIP FWC SHCAs, and GL Bear Habitat Priorities) and then combining the species averaged layer with the Natural Communities layers (CLIP FNAI Under-represented Natural Communities and GL Natural Communities) using a rules-based maximum approach. The values in the layer range from 1-9, where a 1 is the lowest rank and 9 is the highest.

2) Landscape Overlay Model (**gl_om_landsc**)

This layer was created by first combining three of the Landscape Resource Category Core Data layers (Xeric Connectivity, Major River Buffers, and Conservation Buffers) using a rules-based

maximum approach, and then this layer was then averaged with the Florida Ecological Greenways Network priorities. The values in the layer range from 1-9, where a 1 is the lowest rank and 9 is the highest.

3) Surface Water Overlay Model (**gl_om_surfwat**)

This layer was created by averaging the CLIP FNAI Surface Water Priorities, CLIP FNAI Wetland Priorities, and GL Riparian Network. The values in the layer range from 1-9, where a 1 is the lowest rank and 9 is the highest.

4) Final Overlay Model (Combination of the Biodiversity, Landscape, and Surface Water Overlay Models) (**gl_om_final**)

This is the layer was created by combining the Biodiversity, Landscape, and Surface Water overlay models using a rules-based maximum approach. The values in the layer range from 1-9, where a 1 is the lowest rank and 9 is the highest.

V. Supplemental Core Data Layers

A. Ecosystem Services

1) CLIP Storm Protection (**stormpr_clipr**)

More information about the CLIP Storm Protection layer can be found at: <http://www.fnai.org/clip.cfm>. The layer is a combination of coastal natural communities from FNAI, coastal high hazard areas from FEMA, and an identification of areas of higher human population density using U.S. Census data. The values are:

- Value 1 = FNAI high priority coastal natural communities in FEMA High Velocity or COBRA Zones within 2.5 miles of higher human population density
- Value 2 = FNAI high priority coastal natural communities in FEMA High Velocity or COBRA Zones within 5 miles of higher human population density
- Value 3 = FNAI high priority coastal natural communities in FEMA High Velocity or COBRA Zones beyond 5 miles of higher human population density
- Value 4 = Other non-water natural or semi-natural cover in FEMA High Velocity or COBRA Zones within 2.5 miles of higher human population density
- Value 5 = Other non-water natural or semi-natural cover in FEMA High Velocity or COBRA Zones within 5 miles of higher human population density
- Value 6 = Other non-water natural or semi-natural cover in FEMA High Velocity or COBRA Zones beyond 5 miles of higher human population density

B. Groundwater

1) CLIP FNAI Groundwater Priorities (**grwater_clipr**)

More information about the CLIP Groundwater Priorities layer can be found at: <http://www.fnai.org/clip.cfm>. The Groundwater Priorities are based on a statewide aquifer recharge model as well as areas within Springs Protection Areas and in proximity to public water supply wells. The values are:

Value 1 = P1

Value 2 = P2

Value 3 = P3

Value 4 = P4

Value 5 = P5

Value 6 = P6

C. Landscape

1) GL Smokeshed Buffers (**smokesheds**)

The smokeshed buffer priorities were created by buffering all existing and proposed conservation lands (see conservation lands section above), and pyrophilic listed plant sites provided by the USFWS. All CLC natural, semi-natural, and agricultural land cover or land use was considered compatible with prescribed fire on adjacent or nearby conservation lands or pyrophilic sites. Combined these two mile buffers with two land use categories from CLC. All residential, commercial, and industrial development was considered to be generally incompatible with nearby prescribed burning. These various land covers and land use were combined with distance increments up to 2 miles to create the following priorities:

Value 0 = Not within 2 miles of conservation lands or plant site

Value 1 = P1 = compatible within ¼ mile (includes conservation lands and plant sites)

Value 2 = P2 = compatible within ½ mile

Value 3 = P3 = compatible within 1 mile

Value 4 = P4 = compatible within 2 miles

Value 5 = within 2 miles and NOT compatible

D. Species

1) GL FNAI Focal Species Habitat (**FNAI_NWFL_species_habitat_models_dec2012.shp**)

This layer includes all of the FNAI habitat models for panhandle species found in the FNAI Rare Species Habitat Model. The layer is vector and can be queried for multiple attributes including scientific name, common name, global rarity rank, state rarity rank, federal listing status, state listing status, and general species category (whether a plant, mammal, bird, etc.). The final field (NWGI_score) in the shapefile table is a ranking that could be used for summary

priority use of this dataset, based on both the focal species lists created for this project and listing status. The values for that field are:

- 9 = Federal listed, candidate, petitioned species
- 8 = Other state listed species
- 7 = Other Green Links focal species habitat
- 1 = All other species habitat used in the FNAI Rare Species Habitat model that are NOT Green Links focal species

2) GL FWC Rare and Imperiled Freshwater Fish Basins

More information about the FWC Rare and Imperiled Freshwater Fish basins can be found at: http://fwcg.myfwc.com/docs/Rare_Fish_Guidelines_Hoehn.pdf. This dataset identifies watersheds that contain rare fish species across Florida for the purpose of planning and management considerations that might affect watershed health and the rare fish species they contain. The original data layer was clipped to the study area boundary, which is named “**fwc_rare_imperiled_freshwater_fish_basins.shp**”. For the Green Links project we created to value-added datasets to assist use of these data in the study area:

- a. Riparian Network within Rare Fish Basins (**fishb_ripn**): this layer identifies where areas identified as part of the Riparian Network within the study area are within or outside Rare Fish Basins where:

- Value 0 = Not within the Riparian Network in Rare Fish Basins
 - Value 1 = Riparian Network in Rare Fish Basins

- b. FNAI FWC Rare Fish Surface Water Protection Submodel (**fishbas_clipr**): More information about this model can be found in the technical documentation for the Florida Forever Conservation Needs Assessment at <http://www.fnai.org/FIForever.cfm>. This model identifies stream and other waterbody features that are potentially most important for protecting rare freshwater fish species based on FWC’s Rare and Imperiled Freshwater Fish basins. The values are:

- Value 0 = Not a priority
 - Value 1 = P1 (highest priority)
 - Value 2 = P2
 - Value 3 = P3
 - Value 4 = P4
 - Value 5 = P5
 - Value 6 = P6
 - Value 7 = P7
 - Value 8 = P8
 - Value 9 = P9
 - Value 10 = P10 (lowest priority)

3) Panama City Crayfish (**pc_crayfish.shp**)

The Florida Fish and Wildlife Conservation Commission provided this shapefile of surveyed Panama City Crayfish sites. It includes survey dates, habitat type, and relevant notes for each location.

4) USFWS Critical Habitat

Critical habitat shapefiles were obtained from the USFWS for all relevant listed species found in the study area. These files were combined into several new shapefiles including:

- a. **ch_7mussels.shp**: Critical Habitat for seven species of mussels in the Apalachicola River and Chipola River systems
- b. **ch_beachmice_all.shp**: Critical Habitat for all relevant beach mice species
- c. **ch_mussels8.shp**: Critical Habitat for eight additional species of mussels
- d. **ch_pipingplover_flatwoodssalamander_sturgeonestuaries.shp**: Critical Habitat for piping plover, flatwood salamander, and coastal Gulf sturgeon habitat
- e. **ch_sturgeon_rivers.shp**: Gulf sturgeon riverine Critical Habitat

All files were converted to raster grid format and combined into a final Critical Habitat grid (**ch_all_sp**) with the following values:

- Value 0 = Not Critical Habitat
- Value 1 = Critical Habitat

E. Surface Water

1) GL 100 Year Floodplain Land Use (**gl_floodlu**)

This data layer is a combination of 100 year floodplain data (a combination of new DFIRM and older FEMA data depending on availability by county) obtained from FGDL and CLC land use data with the following values:

- Value 0 = Not 100 year floodplains or 100 year floodplains in more intensive land uses
- Value 1 = P1 = Natural 100 year floodplains
- Value 2 = P2 = Seminalural (mainly tree plantations) 100 year floodplains
- Value 3 = P3 = Pasture 100 year floodplains
- Value 4 = P4 = Other Agriculture 100 year floodplains

2) FNAI Springs Buffer Submodel (**springs_clipr**)

More information about this model can be found in the technical documentation for the Florida Forever Conservation Needs Assessment at <http://www.fnai.org/FlForever.cfm>. This model identifies buffers around springs that might be significant for protecting their water quality. The values are:

- Value 0 = Not a priority
- Value 1 = P1 (highest priority)
- Value 2 = P2
- Value 3 = P3
- Value 4 = P4
- Value 5 = P5
- Value 6 = P6
- Value 7 = P7 (lowest priority)

3) GL Wetlands Regional CLIP Priorities (**wetland_rclip**)

This data layer clips the Green Links Regional CLIP data layer to wetlands (identified using the FNAI/CLIP Functional Wetlands) with the following values:

- Value 1 = Wetlands within Regional CLIP P1
- Value 2 = Wetlands within Regional CLIP P2
- Value 3 = Wetlands within Regional CLIP P3

4) GL Wetlands Overlay Model Priorities (**wetland_om9**)

This data layer clips the Green Links Final Overlay model to wetlands (identified using the FNAI/CLIP Functional Wetlands) with the following values:

- Value 9 = P1 (highest priority wetlands)
- Value 8 = P2
- Value 7 = P3
- Value 6 = P4
- Value 5 = P5
- Value 4 = P6
- Value 3 = P7 (the lowest ranked wetlands)

F. Sustainable Forestry

1) FNAI Forest Aquifer Recharge Areas (**fnai_forrech**)

More information about this model can be found in the technical documentation for the Florida Forever Conservation Needs Assessment at <http://www.fnai.org/FlForever.cfm>. This model

combines all natural and semi-natural pinelands with the P1, P2, and P3 priorities from the FNAI/CLIP Groundwater Priorities model. The values are:

Value 0 = Not a priority

Value 1 = Pinelands in higher priority areas for aquifer recharge/groundwater protection

2) FNAI Sustainable Forestry Priorities (**suforsty_clip**)

More information about this model can be found in the technical documentation for the Florida Forever Conservation Needs Assessment at <http://www.fnai.org/FlForever.cfm>. This model identifies existing and potential areas for sustainable forestry based on current natural versus plantation pinelands, acreage, distance to market, and hydrology (with mesic preferred). The values are:

Value 0 = Not a priority

Value 1 = P1 (highest priority)

Value 2 = P2

Value 3 = P3

Value 5 = P5 (lowest priority)