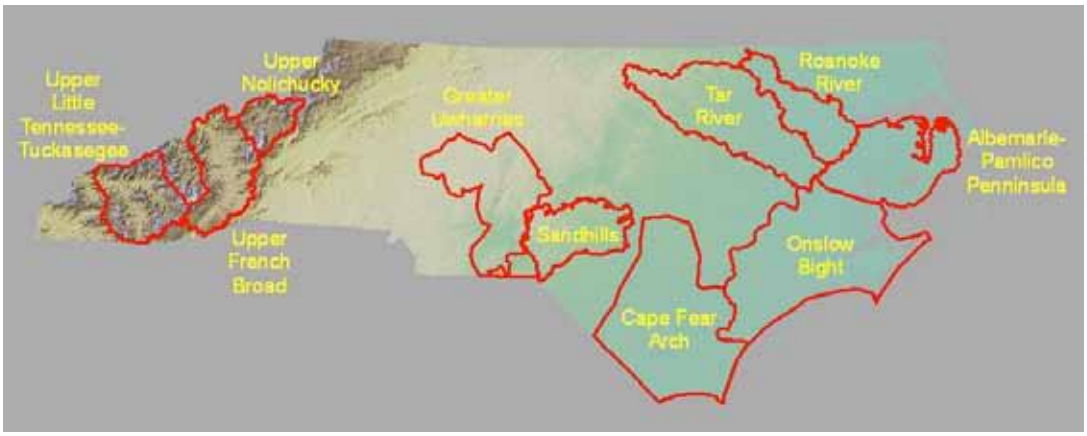
Appendix A: North Carolina



North Carolina Partners Program Focus Areas

Introduction and Overview

North Carolina prides itself on its rich ecological and cultural diversity. Its pristine beaches, wide seafood filled sounds and estuaries, sprawling floodplains, sweltering sandhills with swaying longleaf pines, rolling hills, winding rivers, crashing waterfalls, and awesome mountain peaks provide homes for such species as sea turtles, brown pelicans, Venus flytraps, blue crabs, ducks, red cockaded woodpeckers, bald eagles, freshwater mussels, and Indiana bats. Ironically, it is these types of Federal trust resources and their habitats that have attracted so many people and businesses to North Carolina. Today, the very resources that have made North Carolina so appealing and successful are threatened by urban sprawl, growing industry, and associated development.

The Coastal Plain, Piedmont, and Mountain regions of North Carolina house over 16,000 plant and animal species. Presently, 7,514 of these are considered rare, threatened, or endangered according to Federal and State agencies and private conservation organizations. Ten National Wildlife Refuges, covering 391,000 acres in the State, are protected and managed for many important species. Other government agencies, such as the Department of Defense, National Park Service, U.S. Forest Service, North Carolina Wildlife Resources Commission, and North Carolina Department of Parks and Recreation, manage and protect valuable conservation land. An active system of Land Trusts, the North Carolina Chapter of The Nature Conservancy, and many other nonprofit organizations also manage and protect many of North Carolina's valuable ecosystems.

The fact remains that 90 percent of the land in North Carolina is privately owned. Without conservation efforts on private land, our trust resources would simply not survive. Private landowners want to conserve and restore habitats, but they often lack the technical and financial support necessary to manage their land so that it can support wildlife and meet their needs financially. The U.S. Fish and Wildlife Service's (Service) Partners for Fish and Wildlife (PFW) Program helps satisfy this need.

Overview of Priority Habitats and Their Threats

Forested Wetlands - bottomland hardwoods, non-alluvial swamp forest, pocosins

Bottomland hardwoods, occurring along the streams, receive rich layers of soil during frequent over-bank flooding events and thus are some of our most productive forested wetlands. Important tree species are the many wetland oaks, sugarberry, elms, green ash, red maple, box elder, and sweetgum, with water tupelo and cypress in the lower, wetter zones.

Non alluvial swamp forests occur in broad "flats" with poorly defined drainage systems. They do not receive "over-bank" flooding, but are primarily flooded by rainfall. These forested wetlands, along with pocosins, once covered thousands of square miles of eastern North Carolina. Their dominant tree species are black gum, loblolly bay, red maple, sweet gum, cypress, and Atlantic white cedar. This assemblage of forested wetland types is important for high priority species such as cerulean warbler, Swainson's warbler, black-throated green warbler, American woodcock, wood thrush, rusty blackbird, red wolf, and black bear.

Large-scale land clearing has created many problems for wildlife and water quality, especially in the Coastal Plain region. These problems include the loss of forested wetlands (i.e., conversion to agriculture), drainage and conversion to loblolly pine plantations, drainage and destructive logging techniques, release of nutrients and mercury due to oxidation of organic soils, and habitat fragmentation. In a study of wetland losses prepared by the Service's National Wetland Inventory, North Carolina stood out among all southeastern states with the highest acreage of net wetland loss, an estimated 1.2 million acres. Nearly all the losses were from forested and scrub/shrub wetlands and were concentrated in the "Coastal Flats" region of the State (Hefner et. al. 1994).

More recently these habitats have become threatened by salt water intrusion and sea level rise.

Longleaf Pine

The longleaf pine ecosystem, which once covered 92 million acres of the southeastern United States from Texas to Maryland, included over nine million acres in central and eastern North Carolina. Remnants of the longleaf pine ecosystem in North Carolina still play a vital role for many wildlife species. Through the America's Longleaf Initiative this habitat has gained increased focus from our partnering agencies and organizations. The North Carolina Longleaf Coalition and the North Carolina Prescribed Fire Council are both working locally to restore and manage this naturally diverse ecosystem that supports several federally listed species including the red-cockaded woodpecker, Micheaux's sumac, and rough-leafed loosestrife. It is also an important habitat for migratory birds such as Bachman's sparrow, pine warbler, and brown-headed nuthatch.

Threats to the longleaf pine ecosystem are the exclusion of fire, urban sprawl, development, and conversion to loblolly pine plantations. Fire, an essential element in the management and maintenance of the longleaf pine ecosystem and native prairies, has often been eliminated due to a lack of understanding and education about its importance and difficulty of burning at the urban interface.

Streams and Riparian Areas

Streams and their surrounding riparian areas and floodplains contain rich and diverse habitat. They perform many ecological and hydrological functions such as regulating stormwater flow, moving sediment and woody debris, filtering pollutants from runoff, and providing habitat for aquatic and terrestrial plants and animals. Streams and riparian areas provide essential habitat for many imperiled species such as the federally listed Appalachian elktoe mussel, Tar River spinymussel, spotfin chub, and Virginia spiraea. Many other Federal species of concern depend on good water quality and habitat for their existence. Floodplain pools provide important habitat for amphibians. Streams also provide recreational opportunities for the public and serve as public water supplies.

The Uwharrie River, part of the Greater Uwharrie Focus Area, provides habitat for eight federal species of concern (six mussels and two fish) and two anadromous fish, credit K. Douglass.

Stream corridors have been abused for decades. Timbering, transportation and utility line development, and various agricultural practices have traditionally taken place within floodplains. Resulting negative effects on stream ecosystems include increased sedimentation, soil compaction, degraded instream habitat, and loss of vegetation. Without filtering floodplain buffers, fertilizers used in near-stream row cropping and stormwater runoff have impacted waters. Streams have also been impacted by the construction of dams, roads, and utility lines that have caused changes in flow patterns, fragmenting and eliminating access to habitat used by aquatic species, including anadromous fish such as American shad and eel, as well as resident fish such as brook trout.

Other Priority Habitats

Piedmont remnant grasslands, Carolina bays, bogs and fens, coastal dunes, and upland hardwood forests are also important and declining habitats, necessary for many rare species as well as migratory birds. Like other habitat types, alteration for development, forestry, and agriculture is their primary threat. Some of these may also be vulnerable to impacts from global climate change. Piedmont remnant grasslands, commonly called "Piedmont prairies," contain a whole suite of native bird and rare plant species including the federally endangered Schweinitz's sunflower and smooth coneflower. Also of concern are the mountain bogs and fens of the Southern Appalachians and the hillside seepage bogs of the Piedmont; these bogs and fens are a critically-endangered wetland ecosystems and home to many federally listed plants, such as bunched arrowhead and mountain sweet pitcher plant, as well as the bog turtle. Less than 500 acres of mountain bogs and fens are known to exist in North Carolina today, a 90 percent loss from the 5,000 acres originally estimated to have existed.

Mountain sweet pitcher plant, an endangered insectivorous plant, is endemic to a few mountain bogs and streambanks in western North Carolina, USFWS.

PFW Coordinator John Ann Shearer works with students from AB Combs Leadership Magnet Elementary School in Wake County, North Carolina to plant native plants in a newly constructed rain garden. The rain garden was built to improve water quality in the impaired Simmons Branch watershed by filtering runoff. It will also provide an outdoor learning lab for students and teachers, USFWS.

Connecting People with Nature Initiative

The PFW Program in North Carolina will continue to promote school-yard habitat and other outdoor education efforts with our partners, emphasizing "hands-on" education about wildlife and conservation to young people and providing them with outdoor educational opportunities.

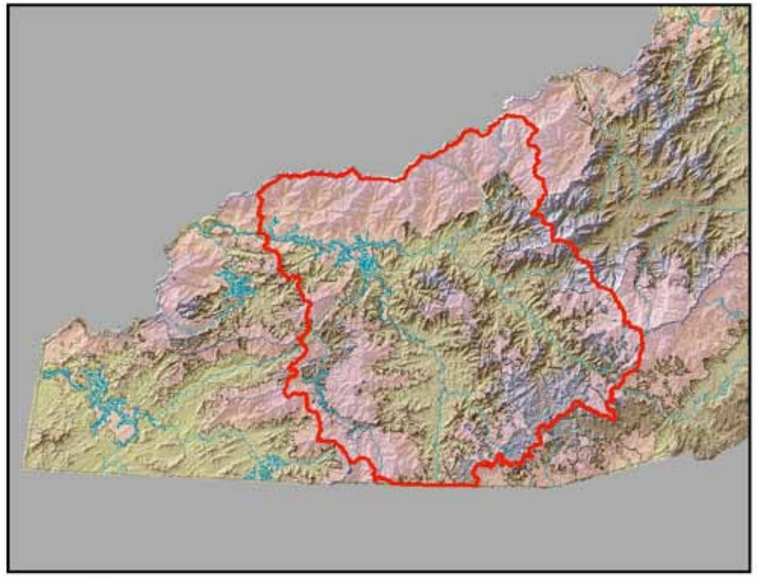
Monitoring

Monitoring the success of PFW projects is an important, but challenging task. Traditionally we have reported habitat improvements as acres and miles, and we will continue to tally this information. However, with the adoption of the Strategic Habitat Conservation framework we now work with our partners to help determine successful impacts to priority habitats and in some cases populations of focal species. In a few cases our biologists are able to collect data, but in many cases we must rely on the expertise of our partners to help with species status surveys. The PFW Program monitoring protocol for the Southeast Region is presented in Appendix E.

In the Sandhills Focus Area where red-cockaded woodpeckers are a focus species, many partners, including the Sandhills Ecological Institute, NC State University, and the North Carolina Wildlife Resources Commission work cooperatively with us to collect population data, including breeding data. From that information we are often able to assess the success of our PFW longleaf pine restoration projects on the species in that area.

In other focus areas, breeding birds are the focal species. Impacts to their populations are determined from breeding bird surveys conducted before and after habitat restoration work. Projects are often relatively small, making it difficult to know with certainty if changes in bird use are the results of our work.

In the watershed focus areas including the Upper Nolichucky, Upper Little Tennessee, and Upper Tar Rivers, PFW biologists and endangered species biologists cooperate with the North Carolina Wildlife Resources Commission and others to conduct mussel and native fish surveys both prior to and after restoration. Occasionally our projects are implemented in conjunction with university researchers, such as UNC-Asheville's study to monitor ecosystem response to dam removal in the North Toe River in western North Carolina.



Upper Little Tennessee/Tuckasegee Focus Area

North Carolina PFW Program Focus Areas

Ten geographic focus areas have been established for North Carolina. While some focus strictly on one priority habitat, others encompass several priority habitats. The focus areas, spanning from the mountains to the coast, were carefully selected by local private lands biologists who received guidance and recommendations from multiple conservation partners and plans including the North Carolina Wildlife Action Plan; Service Recovery Plans for federally listed species; the Service Raleigh and Asheville Field Office's Strategic Plans; Partners in Flight Bird Conservation Plans; conservation plans from National, regional, and local conservation partnerships and resource agencies; and input from agencies, organizations, and landowners. The occurrence of successful PFW projects and anticipated future successful projects also were taken into account.

Upper Little Tennessee/ Tuckasegee Focus Area

The Little Tennessee River Basin in North Carolina has over 150 designated Significant Natural Heritage Areas, according to the North Carolina Natural Heritage Program. The 25-mile reach of free-flowing Little Tennessee River downstream of Lake Emory Dam in Macon and Swain counties, and the Tuckasegee River, have been identified by the North Carolina Natural Heritage Program as Aquatic Significant Natural Heritage Areas of National importance. The Little Tennessee River supports the greatest diversity and abundance of aquatic species in western North Carolina, and has designated critical habitat for two federally listed species (Appalachian elktoe and spotfin chub). Because of its north-south orientation and large concentration of wetlands, the Little Tennessee River serves as a key migratory flyway for birds. The Qualla Boundary of the Eastern Band of the Cherokee Nation occupies a portion of the watershed.

Priority Habitats
Riparian, instream, and floodplains

Five-Year Accomplishment Targets (FY 2012 – FY 2016)
- Riparian: 10.0 miles
- Instream: 0.25 miles
- Structures (Removed or Installed): 2

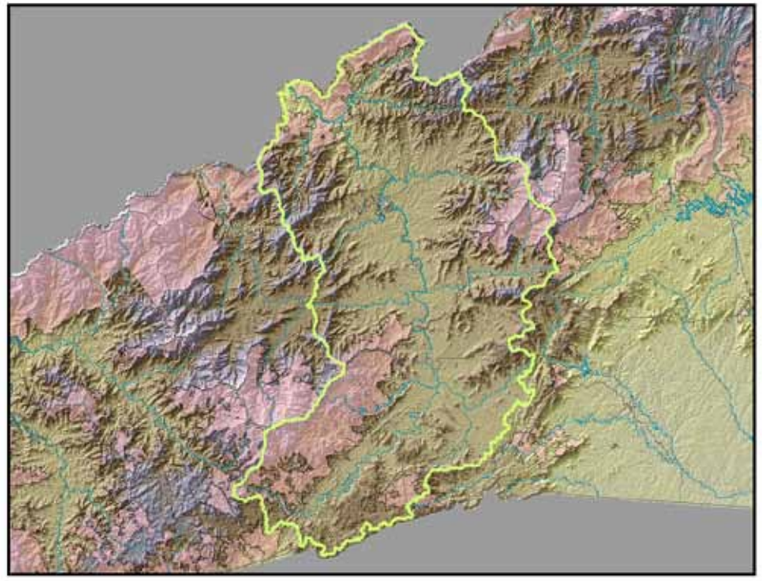
*Focus Species**
- Spotfin Chub (T)
- Littlewing pearly mussel (E)
- Virginia spiraea (T)
- Appalachian elktoe (E)
- Sicklefin redhorse (C)

Threats
- Erosion, sedimentation, and contaminants issues resulting from run-off from agricultural operations, urban expansion, other development activities, etc.
- Loss of riparian buffer zones
- Fish passage barriers
- Invasive species

Action Strategies
- Work with private landowners and other partners to improve aquatic habitat by reducing or eliminating threats through the implementation of best management practices and habitat restoration methods (e.g., protect and restore riparian zones, install fencing to exclude livestock from streams, provide alternate water sources for livestock, apply natural channel design techniques and other instream habitat techniques, remove fish barriers, apply water-control structures when appropriate, invasive species control).

Upper French Broad Focus Area

The Upper French Broad River Watershed is located in western North Carolina primarily in Madison, Buncombe, Henderson, and Transylvania Counties. This sub-basin contains some of the last remaining populations of several federally listed species that occur in North Carolina, including Appalachian elktoe, bog turtle, mountain sweet pitcher plant, and bunched arrowhead. The Little



Upper French Broad Focus Area

River has designated critical habitat for the endangered Appalachian elktoe. Brook trout are found in select streams at higher elevations, including the southern strain of Eastern Brook Trout, and this area is within the Eastern Brook Trout Joint Venture. In addition to restoration, enhancement, and protection practices along stream and river corridors, projects here will seek to restore and protect southern Appalachian mountain bogs and fens, and associated wetlands.

Priority Habitat
Riparian Corridor, wetlands

Five-Year Accomplishment Target (FY 2012 – FY 2016)
Riparian: 1.0 Mile

Wetland: 50 acres

*Focus Species**
- Appalachian elktoe (E)
- Mountain blotched chub (SOC)
- Brook trout (SOC)
- Hellbender (SOC)
- Bog turtle (T-S/A)
- Mountain sweet pitcher plant (E)

Threats
- Erosion, sedimentation, and contaminants issues resulting from run-off from agricultural operations, urban expansion, other development activities, etc.
- Loss of riparian buffer zones
- Fish passage barriers
- Loss of wetland habitat due to a variety of human-related actions, including development and other land use changes
- Invasive species

Action Strategies
- Work with private landowners and other partners to restore and enhance wetlands and improve aquatic habitat by reducing or eliminating threats through the implementation of best management practices and habitat restoration methods (e.g., protect and restore riparian zones, install fencing to exclude livestock from streams, provide alternate water sources for livestock, apply natural channel design techniques and other instream habitat techniques, remove fish barriers, apply water-control structures when appropriate, restore hydrology and natural vegetation in degraded wetlands, and invasive species control).

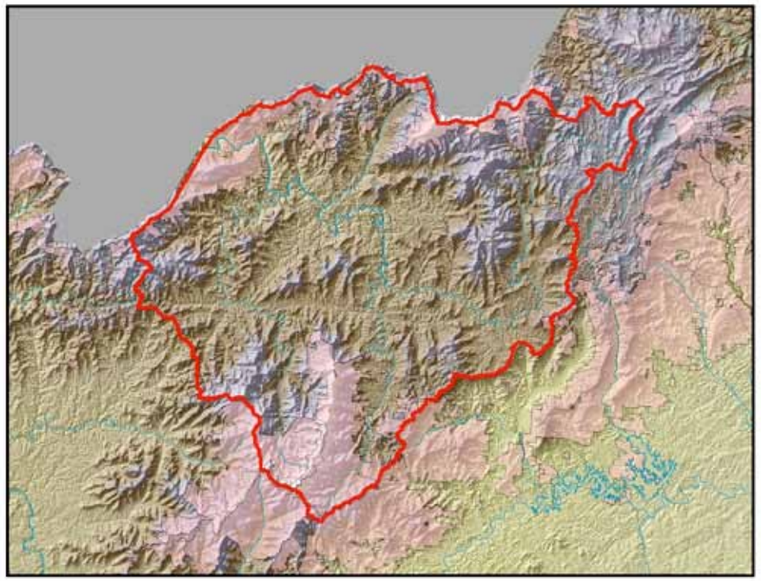
Upper Nolichucky Focus Area

The upper Nolichucky River Basin, just north of the Upper French Broad watershed, is one of the last strong holds in western North Carolina for the endangered Appalachian elktoe. This Basin includes the North and South Toe Rivers, the Cane River, as well as the mainstem of the Nolichucky River. Portions of the Toe and Cane rivers and the entire Nolichucky River are designated as critical habitat for the Appalachian elktoe. The Toe and Nolichucky Rivers are considered Aquatic Significant Natural Heritage Areas (ASNHA) of National Importance, while the Cane River is an ASNHA of State Importance. This watershed lies within the Eastern Brook Trout Joint Venture area, and the southern strain of Eastern Brook Trout is known to inhabit certain tributary streams. Projects here will focus on the restoration of instream, riparian, wetland, and floodplain habitats and will also include tributary streams and their floodplains. In addition, barriers to aquatic species will be inventoried and passage will be restored in priority areas at road crossings and dams.

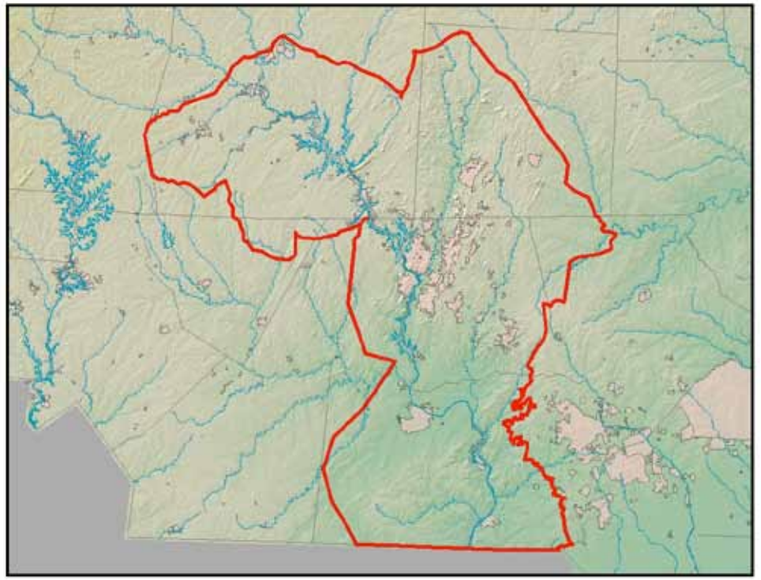
Priority Habitats
Riparian corridor, Instream

Five-Year Accomplishment Targets (FY 2012 – FY 2016)
- Riparian: 40.0 miles
- Structures (removed): 4
- Instream: 0.25 mile

*Focus Species**
- Appalachian elktoe (E)
- Brook trout (SOC)
- Sharphead darter (SOC)
- Blotchside logperch (SOC)
- Hellbender (SOC)



Upper Nolichucky Focus Area



Greater Uwharrie Focus Area

Threats

- Erosion, sedimentation, and contaminants issues resulting from run-off from agricultural operations, urban expansion, other development activities, etc.
- Loss of riparian buffer zones
- Fish passage barriers
- Invasive species

Action Strategies

- Work with private landowners and other partners to improve aquatic habitat by reducing or eliminating threats through the implementation of best management practices and habitat restoration methods (e.g., protect and restore riparian zones, install fencing to exclude livestock from streams, provide alternate water sources for livestock, apply natural channel design techniques and other instream habitat techniques, remove fish barriers, apply water-control structures when appropriate, invasive species control).

Greater Uwharrie Focus Area

The Greater Uwharrie Focus Area is aligned with the Greater Uwharrie Conservation Partnership that formed in 2006 and is represented by 13 partner organizations. The mission of the Partnership is "to work for the long-term conservation and enhancement of biological diversity and ecosystem sustainability throughout the Greater Uwharries consistent with the conservation and management objectives of the participating organizations and agencies." Located in the southern, central Piedmont, the Greater Uwharrie Focus Area contains the ancient mountain range known as the Uwharries, a series of lakes along the Yadkin-Pee Dee watershed, and several State and Federal protected areas such as Morrow Mountain State Park, Uwharrie National Forest, and Pee Dee National Wildlife Refuge. The highest ranked significant natural heritage plant communities in this region include hillside seepage bogs, upland pools, Uwharrie boggy streamheads, Piedmont cliffs, granitic

Demolition of the Toe River (Spruce Pine) Dam in the Upper Nolichucky Focus Area. Local contractors use two excavators to remove the dam's right section. One is equiped with a hydraulic hammer to break up the dam, while another moves rubble out of the way to be disposed of at a later date. This project restored passage for fish and other aquatic species to over 40 miles of the river mainstem, and provided a safer passage for recreational users, USFWS.

A kayaker "goes with the flow" through the newly opened section of river, USFWS.

flatrocks, and Piedmont longleaf pine forests. The focus area encompasses eight ASNHA of National Importance with an array of federally and State listed species.

Priority Habitats

Riparian, wetlands, uplands

Five-Year Accomplishment Targets (FY 2012 – FY2016)

- Riparian: 189.0 miles
- Structures (removed): 1
- Wetland: 60 acres
- Upland: 400 acres

*Focus Species**

Riparian/Instream

- Brook floater (SOC)
- Roanoke slabshell (SOC)
- Carolina creekshell (SOC)
- American shad (SOC)
- Carolina Redhorse (SOC)

Wetland

- Mole salamander (SOC)
- Four-toed salamander (SOC)
- Pitcher plant moth (SOC)
- Yellow pitcher plant (SOC)

Upland

- Schweinitz's sunflower (E)
- Georgia aster (C)

Threats

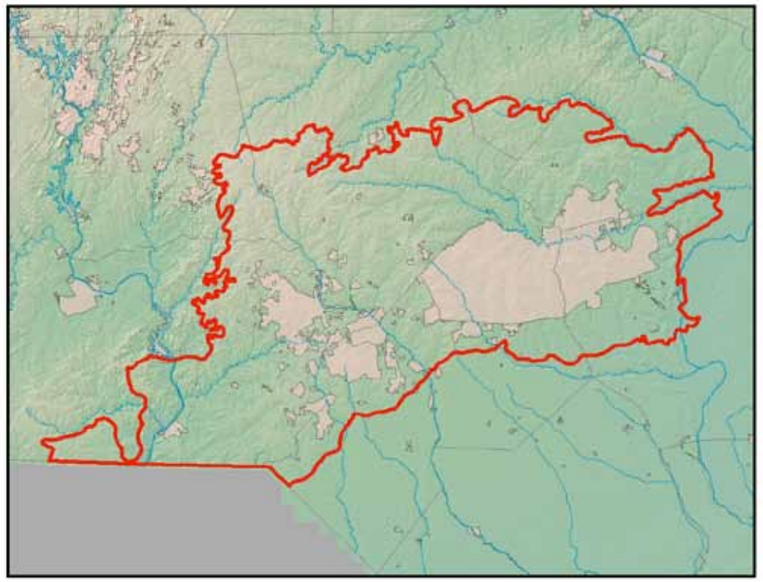
- Erosion, sedimentation, and contaminants issues resulting from run-off from agricultural operations, urban expansion, other development activities, etc.
- Loss of riparian buffer zones
- Fish passage barriers
- Loss of wetland and upland habitat due to a variety of human-related actions, including development and other land use changes
- Invasive species

Action Strategies

- Work with private landowners and other partners to restore and enhance priority wetlands and uplands and improve aquatic habitat by reducing or eliminating threats through the implementation of best management practices and habitat restoration methods (e.g., protect and restore riparian zones, install fencing to exclude livestock from streams, provide alternate water sources for livestock, apply natural channel design techniques and other instream habitat techniques, remove fish barriers, apply water-control structures when appropriate, restore hydrology and natural vegetation in degraded wetlands and uplands, and invasive species control).

North Carolina Sandhills Focus Area

The North Carolina Sandhills Focus Area is approximately a million acres, covering all or parts of eight counties in the south-central part of the State. It is best known for the longleaf pine ecosystem and associated species diversity. It also contains the second largest concentration of the endangered red-cockaded woodpecker in existence. In 1995, the Service and the U.S. Army collaborated to open a new project office in the heart of the Sandhills with staff dedicated to reach out to private landowners to encourage them to restore, manage, and protect longleaf pine habitat on their property. Today, through the North Carolina Sandhills Safe Harbor initiative and the PFW Program, the Service is working with more than 100 landowners on over 51,000 acres of land providing longleaf pine habitat that supports 56 groups of red-cockaded woodpeckers. A group called The North Carolina Sandhills Conservation Partnership was formed in 2000 with the specific intent to facilitate collaboration between various Federal, State, and nonprofit conservation groups for the purpose of conserving the vanishing longleaf pine ecosystem and recovering the endangered red-cockaded woodpecker in the North Carolina Sandhills.



North Carolina Sandhills Focus Area

This PFW project included removal of loblolly pine, herbicide treatment of oak species (note that oaks are standing dead), planting of longleaf pines, and use of prescribed fire, D. Halley.

Priority Habitat
Upland (Longleaf pine ecosystem, Native grasslands)

Five-Year Accomplishment Target (FY 2012 – FY 2016)

- Upland: 1,000 acres

*Focus Species**

- Red-cockaded woodpecker (E)
- Bachman's sparrow (SOC)

Threats

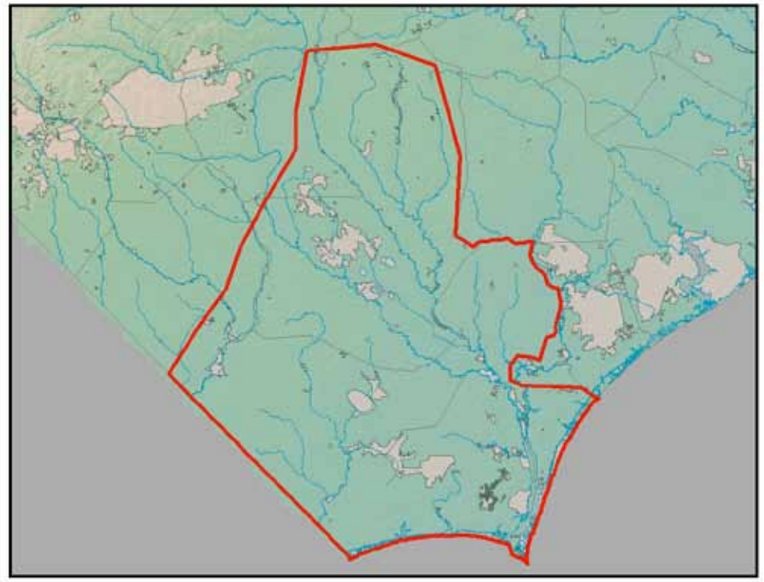
- Continuing loss of longleaf pine due to a variety of human-related factors, including agriculture, development, urban sprawl, failure to use prescribed fire, conversion to other pine types
- Invasive species

Action Strategies

- Work with private landowners and other partners to establish and improve longleaf pine and its associated native understory species, and control invasive and other undesirable species using prescribed fire, herbicides, and/or mechanical means.
- Remnant longleaf pine stands and native grassland habitats will also be restored or improved by removing loblolly pine or by thinning fire suppressed forests, by reintroducing prescribed fire, and by planting longleaf pine seedlings.
- Pastures where non-native grasses have been planted will be restored to native warm season grasses and native wildflowers to provide habitat for migratory birds and other species.

Cape Fear Arch Focus Area

The Cape Fear Arch Focus Area encompasses one of the most biologically diverse areas along the Atlantic Coast. In the southeast corner of North Carolina and the northeast corner of South Carolina, it includes the watersheds of the Lower Cape Fear and the Waccamaw rivers. The rivers themselves are important habitat for aquatic and estuarine species. Many habitat types around these rivers such as Carolina bays, maritime forests, and longleaf pine are critically important to rare and declining species, both plants and animals. This area, like so many others along our coast, is under great development pressure, creating an ever-increasing demand for supporting infrastructure, all of which replaces habitat for important wildlife species. Several interested conservation partners began collaborations in 2006 to develop a community conservation vision that provides protection and stewardship of the important natural resources and raises awareness of the importance of conservation of these resources in the focus area.



Cape Fear Arch Focus Area

Priority Habitats
Upland, Wetland

Five-Year Accomplishment Targets (FY 2012 – FY 2016)

- Upland: 500 acres
- Wetland: 10 acres

*Focus Species**
Upland

- Red-cockaded woodpecker (E)
- Bachman's sparrow (SOC)

Wetland

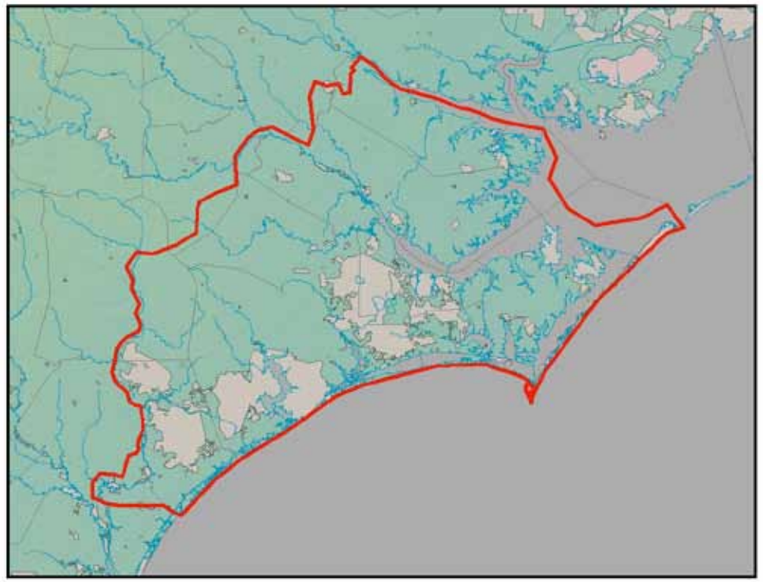
- Wood stork (E)
- Rough-leaved loosestrife (E)

Threats

- Loss of wetland and upland habitat due to a variety of human-related actions, including development and other land use changes
- Invasive species

Action Strategies

- Work with private landowners and other partners to restore and enhance priority uplands and wetlands through the implementation of best management practices and habitat restoration methods (e.g., restore hydrology and natural vegetation in degraded wetlands and uplands, and invasive species control).



Onslow Bight Focus Area

Onslow Bight Focus Area

The Onslow Bight Focus Area of eastern North Carolina, bounded on the North by Cape Lookout and to the South by Cape Fear, contains a unique landform of saltwater marshes, riverine wetlands, pocosins, longleaf pine savannahs, and other coastal ecosystems. The Onslow Bight includes several large protected areas including Camp Lejune, Hoffman State Forest, Croatan National Forest, Cedar Island National Wildlife Refuge, and Holly Shelter Gamelands, currently managed to support the natural communities of those areas. The area supports nationally significant occurrences of animal and plant communities. The threat of a rapid population growth was the impetus for eleven conservation organizations to develop a memorandum of understanding for the purpose of enhancing cooperation and communication regarding regional conservation issues within the Onslow Bight Focus Area by establishing the North Carolina Onslow Bight Conservation Forum.

Priority Habitat
Upland, Wetland

Five-Year Accomplishment Targets (FY 2012 – FY2016)
- Upland: 700 acres
- Wetland: 20 acres

*Focus Species**
Upland
- Red-cockaded woodpecker (E)
- Bachman's sparrow (SOC)
- Wood Thrush (SOC)
- Brown-headed Nuthatch (SOC)

Wetland
- Bald eagle (SOC)
- Wood Duck (SOC)
- Northern Pintail (SOC)

Threats
- Loss of wetland and upland habitat due to a variety of human-related actions, including development and other land use changes
- Invasive species

Action Strategies
- Work with private landowners and other partners to restore and enhance priority uplands and wetlands through the implementation of best management practices and habitat restoration methods (e.g., restore hydrology and natural vegetation in degraded wetlands and uplands, and invasive species).

Tar River Focus Area

The Tar River Focus Area encompasses three hydrologic units, Fishing Creek, Lower Tar, and Upper Tar and has two distinct habitat focuses. One is the river, its tributaries, and the associated riparian buffers; the other is the palustrine wetlands throughout the watershed. The Upper Tar River Basin is nationally recognized as one of the most important watersheds along the east coast. It harbors 14 federal and state rare and endangered species, including the federally endangered Tar River spiny mussel and dwarf wedge mussel. A diverse affiliation, known as the Upper Tar River Collaboration, works together and with landowners to protect, restore, and enhance riparian buffers and wetlands in the Upper Tar River Basin. As the Tar River widens into the Pamlico, the landscape includes many drained palustrine wetlands providing opportunities to restore hydrology and native vegetation within this basin to benefit many species of migratory birds including waterfowl and breeding land birds.

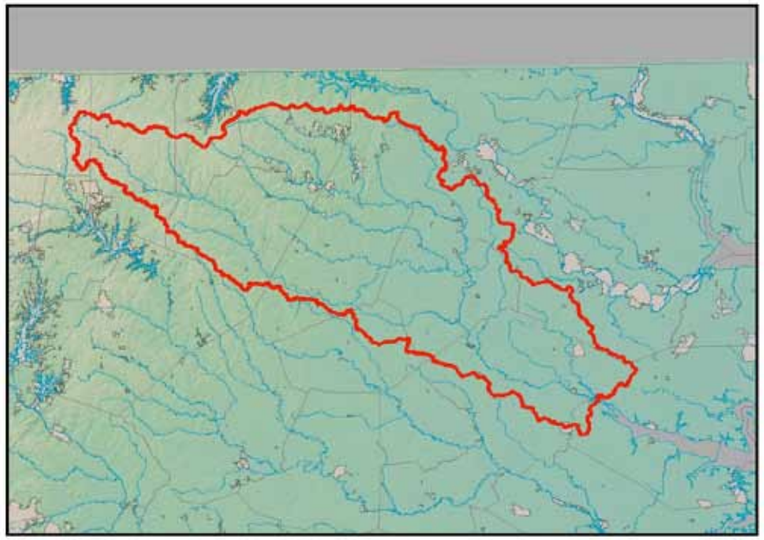
Priority Habitats
Riparian Corridor, Wetland

Five-year Accomplishment Targets (FY 2012 – FY 2016)
Riparian: 0.5 Mile

Wetland: 20 acres

*Focus Species**
Riparian
- Tar River spinymussel (E)
- Dwarf wedge mussel (E)

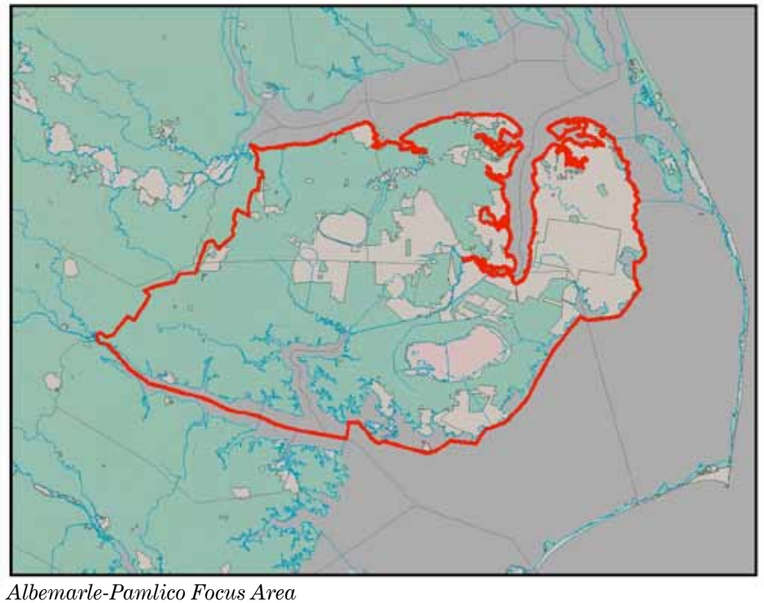
Wetland
- Bald eagle (SOC)
- Wood Duck (SOC)
- Prothonotary Warbler (SOC)



Tar River Focus Area

Threats
- Erosion, sedimentation, and contaminants issues resulting from run-off from agricultural operations, urban expansion, other development activities, etc.
- Loss of riparian buffer zones
- Fish passage barriers
- Loss of wetland habitat due to a variety of human-related actions, including development and other land use changes
- Invasive species

Action Strategies
- Work with private landowners and other partners to restore and enhance wetlands and improve aquatic habitat by reducing or eliminating threats through the implementation of best management practices and habitat restoration methods (e.g., protect and restore riparian zones, install fencing to exclude livestock from streams, provide alternate water sources for livestock, apply natural channel design techniques and other instream habitat techniques, remove fish barriers, apply water-control structures when appropriate, restore hydrology and natural vegetation in degraded wetlands, and invasive species control).



Albemarle-Pamlico Focus Area

Albemarle-Pamlico Focus Area

Surrounded on three sides by the coastal sounds of eastern North Carolina, the Albemarle-Pamlico Focus Area is made up of Washington, Tyrrell, mainland Dare, mainland Hyde, and the northern half of Beaufort counties. Once an expansive wetland complex of pocosins, marshes, canebrakes, and non-riverine hardwood swamps, the natural hydrology of the area has now been highly altered through ditching and draining of the natural wetlands. Sustainable populations of red wolves and red-cockaded woodpeckers, nesting bald eagles, as well as high densities of black bear are notable. With an abundance of cropland, rivers, natural lakes, marshes, and the

extensive sound waters, the peninsula also attracts thousands of migratory waterfowl each winter. These include numerous species of ducks as well as a significant percentage of the Atlantic populations of Canada geese, snow geese, and tundra swans. In addition, the non-riverine hardwood swamps and expansive pocosins support numerous migratory land bird species and a host of reptiles and amphibians.

Priority Habitat
Wetlands

Five-Year Accomplishment Targets (FY 2012 – FY 2016)
Wetland: 150 acres

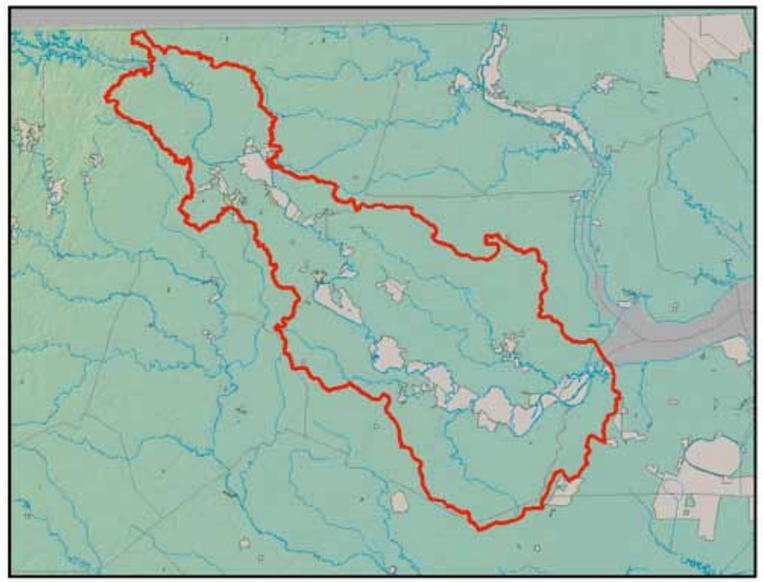
*Focus Species**
- Bald eagle (SOC)
- Wood Duck (SOC)
- Red Wolf (SOC--Experimental Population, Non-Essential)
- Northern Pintail (SOC)

Threats
- Development, urban expansion, loss of natural hydrology and vegetation due to draining and ditching

Action Strategies
- Work with private landowners and other partners to restore and enhance priority wetlands through the implementation of best management practices and habitat restoration methods (e.g., restore hydrology and natural vegetation in degraded wetlands, and invasive species).

Roanoke River Corridor Focus Area

Extending from Roanoke Rapids southeast to just beyond Plymouth, the Roanoke River Corridor Focus Area covers portions of five counties. The basin drains to the Roanoke River as the river flows unimpeded for 137 miles from the dam of Roanoke Rapids Lake to the Albemarle Sound. With a floodplain of up to five miles wide in places, this area is the most expansive bottomland hardwood forest east of the Mississippi and includes expansive cypress/tupelo swamps. Habitat here supports abundant populations of



Roanoke River Corridor Focus Area

wildlife and a high diversity of species including one of the highest densities of nesting land birds in the State, nesting bald eagles, and wading bird rookeries. Abundant wintering waterfowl include mallards, American black ducks, and wood ducks. The bottomlands also provide excellent nesting and brood-rearing habitat for wood ducks. The river itself supports several populations of anadromous fish. Blueback herring, alewife, hickory shad, American shad, and striped bass all rely on the river system for spawning habitat. The endangered shortnose sturgeon has been documented within the basin though its current status is not well known.

Priority Habitat
Wetlands

Five-Year Accomplishment Targets (FY 2012 – FY 2016)
Wetland: 20 acres

*Focus Species**
- Bald eagle (SOC)
- Wood Duck (SOC)
- Swainson's warbler (SOC)
- Kentucky warbler (SOC)
- Cerulean warbler (SOC)

Threats
- Development, urban expansion, loss of natural hydrology and vegetation due to draining and ditching

Action Strategies
- Work with private landowners and other partners to restore and enhance priority wetlands through the implementation of best management practices and habitat restoration methods (e.g., restore hydrology and natural vegetation in degraded wetlands, and invasive species).

* E – federally listed as endangered; T – federally listed as threatened; C – candidate species for federal listing; SOC – species of concern designated by the state or other

In North Carolina's hardwood forest, Kentucky warblers are a priority migratory bird species and a focal species of the Roanoke River Corridor, credit C. Moorman.

While some PFW projects simply involve the landowner and the PFW biologist, most include multiple stakeholders. This project, which accomplished habitat restoration benefiting migratory birds, included several family members, PFW biologists, the state game and fish agency, the state forest service, a consulting forester, and the local land trust, USFWS.

Stakeholders Involved

- Private Landowners (over 300)
- Atlanta Botanical Garden
- Audubon Society
- Cherokee Preservation Foundation
- Davidson College
- Ducks Unlimited
- Environmental Defense Fund
- Farm Service Agency
- Fish American Foundation
- Friends of the Greenway
- GEAR UP
- Hiwassee River Watershed Coalition
- Land Trusts and Land Conservancies in North Carolina (24)
- Local Governments
- Little Tennessee Watershed Association
- Mecklenburg County Parks and Recreation Department
- National Committee for the New River
- National Fish and Wildlife Foundation
- Natural Resources Conservation Service
- North Carolina Botanical Garden
- North Carolina Clean Water Management Trust Fund
- North Carolina Coastal Federation
- North Carolina Cooperative Extension Service
- North Carolina Department of Cultural Resources
- North Carolina Division of Forest Resources
- North Carolina Division of Land Resources
- North Carolina Division of Water Quality
- North Carolina Division of Water Resources
- North Carolina Ecosystem Enhancement Program
- North Carolina Natural Heritage Program
- North Carolina Parks and Recreation Department
- North Carolina Plant Conservation Program
- North Carolina Soil and Water Conservation Districts
- North Carolina State Museum of Natural Sciences
- North Carolina Stream Restoration Institute
- North Carolina Wildlife Resources Commission
- North Carolina Zoological Park
- Project Bog Turtle
- Public Schools
- Quail Unlimited
- Resource, Conservation and Development Councils throughout North Carolina (10)
- Roanoke River Partners
- The Conservation Fund
- The Nature Conservancy, NC Chapter
- Toe River Valley Watch
- Trout Unlimited
- University of North Carolina System
- U.S. Forest Service
- U.S. Environmental Protection Agency
- U.S. Geological Survey
- Watershed Association of the Tuckasegee River

References

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