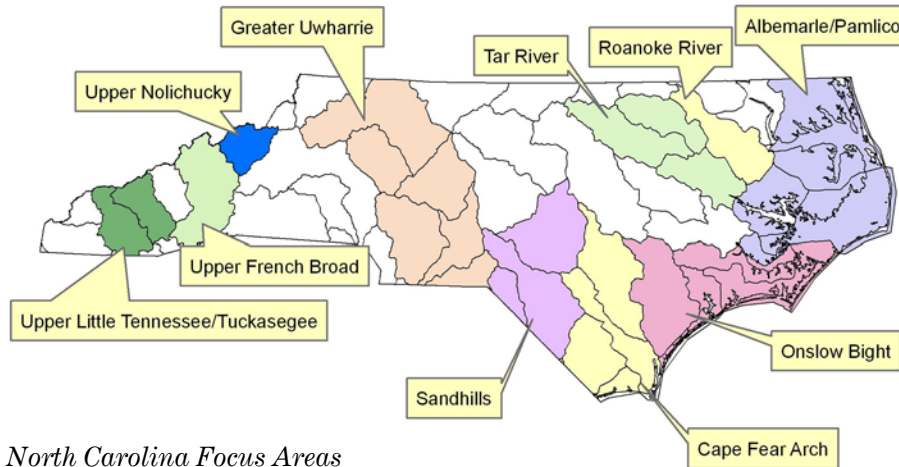


## Appendix A: North Carolina



North Carolina Focus Areas

### Introduction and Overview

North Carolina prides itself upon its diversity both ecologically and culturally. Its rich reputation of 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 has provided home for such species as sea turtles, brown pelicans, Venus flytraps, blue crabs, ducks, red-cockaded woodpeckers, bald eagles, fresh water mussels, and Indiana bats. The natural environments of North Carolina and the fish and wildlife resources that live in these environments have been an important factor in attracting many people and businesses to the State. Today, urban sprawl, growing industry, and associated development threaten the very resources that have made North Carolina so appealing and successful.

The Coastal Plain, Piedmont, and Mountain regions of North Carolina house 8,175 plant and animal species. Of those, 1,402 are presently considered rare, threatened, or endangered according to Federal and State agencies and private conservation organizations. Ten National Wildlife Refuges, covering 391,000 acres in North Carolina, are protected and managed for many of the State's important species.

Other government agencies such as 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 many other valuable conservation lands. An active system of Land Trusts, the North Carolina Chapter of The Nature Conservancy, and many other non-profit 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 lands, our trust resources would simply not survive. Private landowners in North Carolina want to conserve and restore habitats, but 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 Partners 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 brown water streams of North Carolina, receive rich layers of soil during frequent over bank flooding events and thus are some of our most productive forested wetlands.

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. This assemblage of forested wetland types are important for high priority species such as cerulean warbler, Swainson's warbler, prothonotary warbler, black-throated green warbler, American woodcock, yellow-throated warbler, red wolf, and black bear.

Large scale land clearing in North Carolina has created many problems for wildlife and water quality, especially in the coastal region. These problems include complete destruction 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 on wetland losses done 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 North Carolina (Hefner et. al. 1994).

#### *Longleaf Pine*

The longleaf pine ecosystem that once covered 92 million acres of the southeastern United States from Texas to Maryland included over 9 million acres of central and eastern North Carolina. Remnants of longleaf pine in North Carolina still play a vital role for many wildlife species. This naturally diverse ecosystem supports several federally listed species including red-cockaded woodpeckers, Mischeaux's sumac, American chaffseed, and rough-leaved 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 and Piedmont prairies 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 been largely squelched 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 surrounding riparian areas are rich and diverse in North Carolina. They perform many ecological functions such as regulating stream flow, storing water, removing harmful materials, and providing habitat for aquatic and terrestrial plants and animals. North Carolina's streams and riparian areas are essential habitat for many imperiled species such as the federally-listed Appalachian elktoe mussel, littlewing pearl mussel, spotfin chub, and Virginia spiraea. Many other Federal species of concern depend on water quality and the condition of streams for their existence.

Riparian (streamside) areas have been abused and misused for decades. Timbering and various agricultural practices have traditionally taken place in riparian habitat. Negative effects include sedimentation from bank sloughing, livestock tromping, and de-vegetation; over-eutrication from livestock access, fertilizers used in near-stream row cropping, and lack of filtering buffers; pollution from multiple sources; and various developmental activities. All of these activities contribute silt, nutrients, and pollutants to streams, thus affecting their living inhabitants.



USFWS

*Restored native prairie*

*Other Priority Habitats*

Piedmont prairies, Carolina bays, mountain bogs, coastal dunes, and hardwood forests are also important and declining native habitats in North Carolina, necessary for many rare and declining species as well as migratory birds. Like the other habitat types, alteration of habitat for development, forestry, and agriculture are the primary threats to them. Piedmont prairies, also known as grasslands, early successional habitat, savannahs, or xeric hardpan forests contain a whole suite of native bird and rare plant species such as Schweinitz's sunflower and smooth coneflower (both federally-listed endangered species). Also of concern is the Southern Appalachian Mountain Bog, which is a critically-endangered wetland ecosystem in the southeastern United States. Less than 750 acres of mountain bogs and fens are known to exist in North Carolina today, an 83 percent loss from the 5000 acres originally estimated to have existed.

*Geographic Focus Areas*

For this strategic plan, 10 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 span from the mountains to the coast. These focus areas were carefully selected by the private lands biologists who work in the area based on guidance from the North Carolina Wildlife Action Plan, presence of listed or declining species, both the Raleigh and Asheville Field Office's five year strategic plans, input from partners, occurrence of successful Partners

Program projects in the area in the past, and expectations of successful projects in the future.

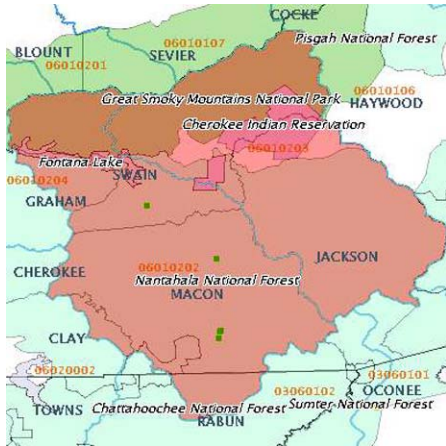
*Action Strategies*

A goal of the Partners Program in North Carolina is to restore quality habitat in each of the priority habitat types by working in partnership with landowners, conservation organizations, and other interested groups, raising awareness of the threats and challenges to each of these habitat types, and staying open to new techniques to fine tune our habitat improvement efficiency. More specifically, in alluvial forested wetlands as well as mountain bogs, Carolina bays, and other wetlands, we will work to find opportunities to carry out habitat improvement and protection projects on private lands.

We will restore hydrology and vegetation to degraded wetlands and manage the restored wetlands. In some cases, we will plug ditches, install water control structures, erect small berms, and establish native vegetation. In riparian habitats, we will work to restore and protect riparian buffers through revegetation, management, and cattle exclusion. Natural channel design techniques will be used to restore stream channels. To restore the longleaf pine ecosystem, we will establish longleaf and its associated native understory species, control midstory oaks using prescribed fire and herbicides.

In Piedmont prairie habitats, nonnative grasses will be killed and native grasses planted. Fire will be introduced to maintain viable native prairies. In many habitat types, exotic species will be treated with herbicides, mechanically, or with fire as recommended.





*Upper Little Tennessee/Tuckasegee Focus Area*

**Upper Little Tennessee/Tuckasegee Rivers Focus Area**

The 27-mile reach of free-flowing Little Tennessee River downstream of Lake Emory Dam in Macon and Swain Counties, North Carolina has been identified by the North Carolina Natural Heritage Program as Nationally Significant Aquatic Habitat. This reach is the only major river in the southern Blue Ridge Mountains that is believed to retain its full assemblage of native aquatic fauna. The Little Tennessee River is designated Critical Habitat for two federally-listed aquatic species.

The Little Tennessee River floodplain contains two significant plant community types: the rare montane alluvial forest and the floodplain pool. Portions of the Little Tennessee River floodplain also contain remnant stands of river cane, regarded as one of America’s most critically endangered natural communities, covering less than two percent of its former extent.

*Priority Habitat*  
Riparian Corridor

*Five-Year Target (FY 2007-2011)*  
2 miles restored, 1 mile protected

*Focus Species\**  
Spotfin Chub (T); littlewing pearlymussel (E); Virginia spiraea (T); Appalachian elktoe (E)

*Priority Habitat*  
Stream channel

*Five-Year Target (FY 2007-2011)*  
One mile



*Upper French Broad Focus Area*

*Focus Species\**

Spotfin Chub (T); littlewing pearlymussel (E); Appalachian elktoe (E)

*Priority Habitat*  
Wetland: Bog

*Five-Year Target (FY 2007-2011)*  
One acre

*Focus Species\**  
Bog (= Muhlenberg) turtle (SOC); similarity of appearance to a threatened taxon

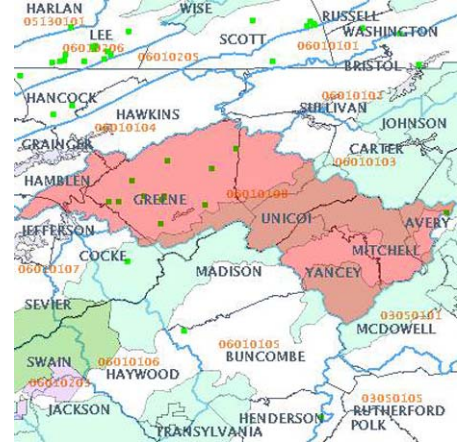
**Upper French Broad River (UFBR) Focus Area**

The UFBR focus area is located in western North Carolina primarily in Madison, Buncombe, Henderson, and Transylvania Counties. This subbasin contains some of the last remaining populations of several federally listed species that occur in North Carolina. Most notable of these include the endangered Appalachian elktoe, the bog turtle, the endangered mountain sweet pitcher plant and the endangered bunched arrowhead. In addition to habitat improvement practices along stream and river corridors, projects here will seek to preserve Appalachian mountain bogs.



USFWS

*The use of prescribed fire is an important tool in restoring bogs*



*Upper Nolichucky River Focus Area*

*Priority Habitat*

Wetland: Bog

*Five-Year Target (FY 2007-2011)*  
Two acres

*Focus Species\**  
Bog (= Muhlenberg) turtle (SOC); similarity of appearance to a threatened taxon; mountain sweet pitcher plant (E); bunched arrowhead (E)

*Priority Habitat*  
Riparian

*Five-Year Target (FY 2007-2011)*  
One mile

*Focus Species\**  
Appalachian elktoe (E)

*Priority Habitat*  
In-stream

*Five-Year Target (FY 2007-2011)*  
0.5 miles

*Focus Species\**  
Appalachian elktoe (E)

**Upper Nolichucky River Focus Area**

The upper Nolichucky basin focus area, just north of the Upper French Broad watershed, is one of the last strong holds in western North Carolina for the federally-endangered Appalachian elktoe. It also includes southern Appalachian mountain bog habitats. This basin includes the north and south forks and mainstems of the Toe River and the Cane River, as well as the mainstem of the Nolichucky River. Portions of the Toe and Cane Rivers, as well as the entire Nolichucky River are designated as critical habitat for the Appalachian elktoe. Projects here will focus on the restoration of

instream, riparian, wetland and floodplain habitats and will also include tributary streams and their floodplains within and above these areas that may input sediment and nutrients potentially impacting these species, as well as the conservation of floodplain wetlands.

**Priority Habitat**

Wetland: Bog

**Five-Year Target (FY 2007-2011)**

Two acres

**Focus Species\***

Bog (=Muhlenberg) turtle (SOC), similarity of appearance to a threatened taxon

**Priority Habitat**

Riparian

**Five-Year Target (FY 2007-2011)**

One mile

**Focus Species\***

Appalachian elktoe (E); Virginia spiraea (T)

**Priority Habitat**

In-Stream

**Five-Year Target (FY 2007-2011)**

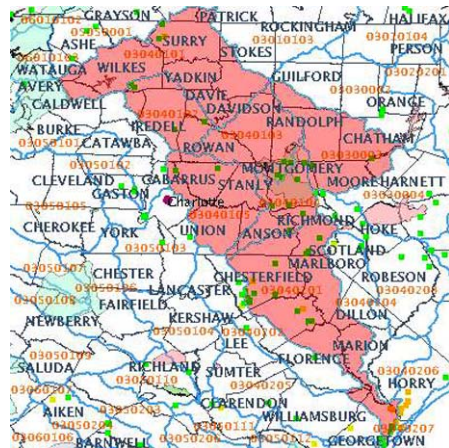
0.5 miles

**Focus Species\***

Appalachian elktoe (E)

**Greater Uwharrie (GU) Focus Area**

The GU focus area is aligned with the GU Conservation Partnership that was formed in 2005 and represented by 13 partners. Located in the southern, central Piedmont of North Carolina, it contains the ancient mountain range known as the Uwharries, a series of lakes along the Yadkin-Pee Dee watershed, nationally significant aquatic habitats, rare wetlands, Uwharrie National Forest, Pee Dee National Wildlife Refuge, farmlands, and Piedmont prairie remnants. 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 landscape compatible with the land use, conservation and management objectives of the participating organizations and agencies.”



Greater Uwharrie Focus Area

**Priority Habitat**

Wetlands

**Five-Year Target (FY 2007-2011)**

20 acres

**Focus Species\***

Bog (=Muhlenberg) turtle (SOC), similarity of appearance to a threatened taxon; panhandle lily (C)

**Priority Habitat**

Uplands: Native Grasslands, Longleaf Pine

**Five-Year Target (FY 2007-2011)**

100 acres

**Focus Species\***

Schweinitz’s sunflower (E); red-cockaded woodpecker (E); Georgia aster (C)

**Priority Habitat**

Riparian

**Five-Year Target (FY 2007-2011)**

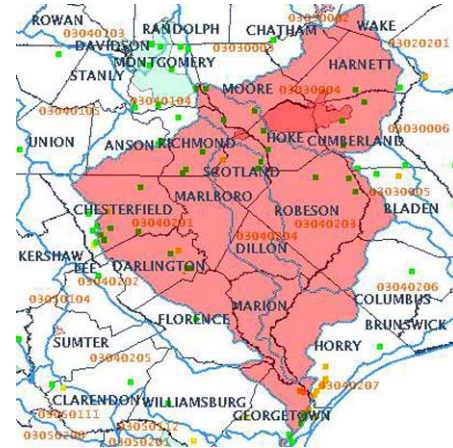
0.25 miles

**Focus Species\***

Shortnose sturgeon (E); Carolina elktoe (SOC), resolved taxon; brook floater (SOC); bald eagle (T); robust redhorse (SOC); Yadkin River goldenrod (C); Savannah lilliput (SOC)

**Sandhills Focus Area**

The North Carolina Sandhills focus area is approximately a million acres in extent, covering all or parts of eight counties in the southern central part of the State. It is best known for being the home of the longleaf pine, an ecosystem known for its incredible species diversity. It also contains the second largest concentration of the endangered red-cockaded woodpecker in existence.



North Carolina Sandhills Focus Area

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 Partners 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. In 2000, a group called The North Carolina Sandhills Conservation Partnership was formed with the specific intent to facilitate collaboration between various federal, state, and non-profit conservation groups for the purpose of conserving the vanishing longleaf pine ecosystem and recovering the endangered red-cockaded woodpecker in the North Carolina Sandhills.

**Priority Habitat**

Uplands

**Five-Year Target (FY 2007-2011)**

400 acres: Longleaf Pine

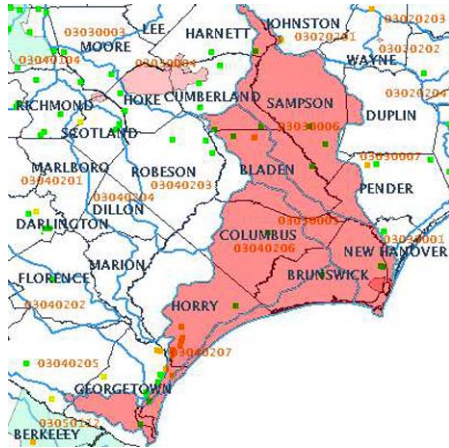
**Focus Species\***

Red-cockaded woodpecker (E); Bachman’s sparrow (SOC)

**Cape Fear Arch (CFA) Focus Area**

The CFA 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





Cape Fear Arch Focus Area

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 unique and 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 a collaboration in 2006 with a mission of 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.

*Priority Habitat*  
Wetlands

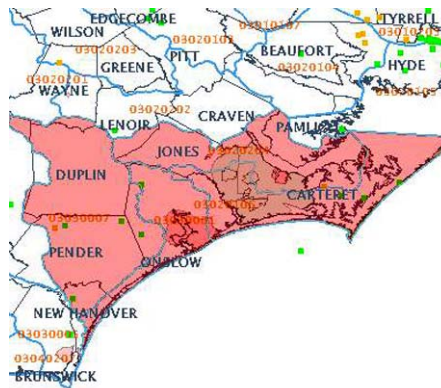
*Five-Year Target (FY 2007-2011)*  
10 acres

*Focus Species\**  
Wood stork (E); rough-leaved loosestrife (E)

*Priority Habitat*  
Upland: Longleaf Pine; Beach

*Five-Year Target (FY 2007-2011)*  
200 acres

*Focus Species\**  
Red-cockaded woodpecker (E); Bachman's sparrow (SOC); seabach amaranth (T); painted bunting (SOC); loggerhead sea turtle (T); least turn (SOC)



Onslow Bight Focus Area

**Onslow Bight (OB) Focus Area**

The OB focus area of eastern North Carolina is bounded on the north by Cape Lookout and to the south by Cape Fear. This focus area contains a unique landform of saltwater marshes, riverine wetlands, pocosins, longleaf pine savannahs and other coastal ecosystems. The Onslow Bight focus area includes several large protected areas including Camp Lejune, Hoffman State Forest, Croatan National Forest, Cedar Island NWR, and Holly Shelter Gamelands currently managed to support the natural communities of those areas.

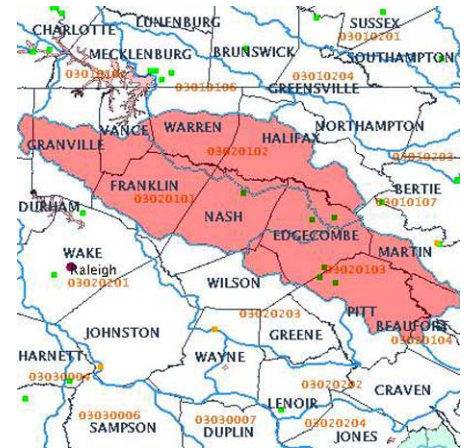
The area supports nationally significant occurrences of animal and plant communities. The threat of a rapid population growth was the impetus for eleven conservation organizations to develop a Memorandum of Understanding for the purpose of enhancing cooperation and communication regarding regional conservation issues within the Onslow Bight landscape by establishing the North Carolina Onslow Bight Conservation Forum (NCOBCF).

*Priority Habitat*  
Wetlands

*Five-Year Target (FY 2007-2011)*  
150 acres

*Focus Species\**  
Bald eagle (T); wood duck (SOC); northern pintail (SOC); prothonotary warbler (SOC)

*Priority Habitat*  
Upland: Longleaf Pine



Tar River Focus Area

*Five-Year Target (FY 2007-2011)*  
100 acres

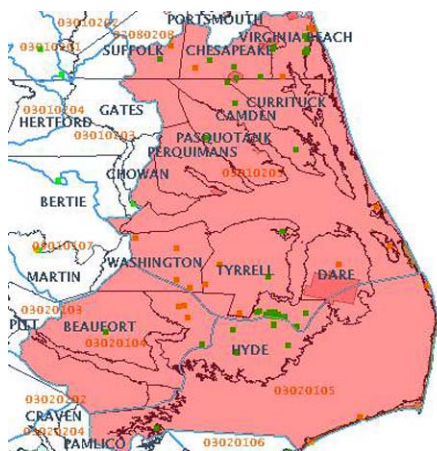
*Focus Species\**  
Red-cockaded woodpecker (E); Bachman's sparrow (SOC); wood thrush (SOC)

**Tar River (TR) Focus Area**

The TR 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 palustrine wetlands throughout the watershed. The Upper TR Basin is nationally recognized as one of the most important watersheds along the east coast. It harbors fourteen Federal and State rare and endangered species, including the federally endangered Tar River spiny mussel and dwarf wedgemussel. 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 TR 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 landbirds.

*Priority Habitat*  
Wetlands

*Five-Year Target (FY 2007-2011)*  
20



Albemarle/Pamlico Focus Area

**Focus Species\***

Bald eagle (T); wood Duck (SOC); prothonotary Warbler (SOC)

**Priority Habitat**

Riparian

**Five-Year Target (FY 2007-2011)**

0.5 miles

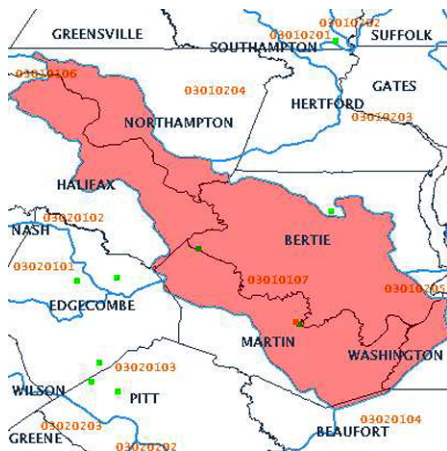
**Focus Species\***

Tar River spiny mussel (E); dwarf wedge mussel (E)

**Albemarle/Pamlico (AP) Focus Area**

Surrounded on three sides by the coastal sounds of eastern North Carolina, the AP 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 landbird species and a host of reptile and amphibian species.



Roanoke River Corridor Focus Area

**Priority Habitat**

Wetlands

**Five-Year Target (FY 2007-2011)**

60 acres

**Focus Species\***

Bald eagle (T); sensitive joint-vetch (T); wood duck (SOC); American alligator (SOC), similarity of appearance to a threatened taxon; red wolf (E, experimental population non-essential); Northern Pintail (SOC)

**Roanoke River Corridor (RRC)**

**Focus Area**

Extending from Roanoke Rapids southeast to just beyond Plymouth, North Carolina, the RRC 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 wildlife and a high diversity of species including one of the highest densities of nesting landbirds 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 Target (FY 2007-2011)**

20 acres

**Focus Species\***

Bald eagle (T); wood duck (SOC); Swainson's warbler (SOC); Kentucky warbler (SOC); cerulean warbler (SOC)

\*E=federally listed endangered species; T=federally listed threatened species; C=federal candidate species; SOC=species of concern

## Stakeholders Involved

- Private Landowners (approximately 80)
- Audubon Society
- Carolina Mountain Land Conservancy
- Catawba Lands Conservancy
- Cherokee Preservation Foundation
- Conservation Trust for North Carolina
- Ducks Unlimited
- Duke Energy
- Environmental Defense
- Environmental Impact RC&D
- Farm Service Agency
- Fish American Foundation
- International Paper
- Land Trust for Central North Carolina
- Land Trust for the Little Tennessee
- Mecklenburg Co. Park & Recreation Dept.
- Mountain Valleys RC&D
- National Committee for the New River
- National Fish and Wildlife Foundation
- Natural Resources Conservation Service
- NC Botanical Garden
- NC Clean Water Management Trust Fund
- NC Coastal Land Trust
- NC Coastal Federation
- NC Cooperative Extension Service
- NC Department of Cultural Resources
- NC Division of Forest Resources
- NC Division of Water Resources
- NC Environmental Enhancement Program
- NC Natural Heritage Program
- NC Parks and Recreation Department
- NC Plant Conservation Program
- NC Soil and Water Conservation Districts (Catawba, Cumberland, Lenoir, Surry, Wake, Yancy Counties)
- NC State Museum of Natural Sciences
- NC State University
- NC Stream Restoration Institute
- NC Wesleyan College
- NC Wildlife Resources Commission
- NC Zoological Park
- Piedmont Land Conservancy
- Pilot View R C&D, Inc.
- Project Bog Turtle
- Quail Unlimited
- Sand County Foundation
- Tar River Land Conservancy
- The Nature Conservancy, NC Chapter
- Triangle Land Conservancy
- Trout Unlimited
- University of North Carolina System
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- U.S. Environmental Protection Agency
- U.S. Geological Survey
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