# *The Historical Context for Monitoring*

This report sets the stage for monitoring by briefly describing the history, condition, and management of the forests.

## 1. Historical Context - The Forests' Contribution to the Conservation of Biological Diversity

The LRMP for **Nantahala and Pisgah National Forests (N/P)**, as amended in 1994, states three broad goals related to the conservation of biological diversity:

1) Maintain, and where possible, enhance the diversity of plant and animal communities. Maintain viable populations of existing native wildlife, fish, and plants.
2) Threatened and endangered plant and animal species are protected, managed or recovered consistent with the Endangered Species Act; and sensitive species are conserved.
3) Attributes and resources of special interest areas including wilderness, research natural areas, and areas registered by the North Carolina Natural Heritage Program are maintained.

Goals for the **Uwharrie and Croatan National Forests (U/C)** are nearly identical, plus special emphasis is placed on the unique pocosin environment of the Croatan.

### THE DIVERSITY OF VEGETATION

**Nantahala and Pisgah National Forests** are remarkable for the variety of woodland communities that exist along elevational and moisture gradients: red spruce and Fraser fir at the highest elevations; downslope, northern hardwood communities grading into upland mixed oak forests at mid-elevations; with mixed cove forests containing many tree species in the moist hollows; and pine communities on the lower, drier sites.

- Approximately 68 pteridophytes, 1501 grasses and forbs, and 52 vine species have been identified on the Forests.
- **Uwharrie National Forest** in the piedmont supports many of the same tree species found in the mountain forests, but is lacking those high-elevation communities. It contains more lowland pine communities such as loblolly, shortleaf and longleaf. A higher proportion of the Uwharrie is in pine, and more of the hardwoods are mixed with pines.
- Upland ponds are a unique feature of the Uwharrie Mountains where depressions have an impervious subsoil layer. Surrounding these impoundments are plant communities of species typically found on large river flood plains of the area. Species include ash, water oak, willow oak, button bush, greenbriar, wire grasses, and sedges.
- **Croatan National Forest** is ecologically part of the Atlantic Coastal Flatwoods Section and contains many unique plant communities such as pocosins (raised peatlands), forested wetlands, longleaf pine savannas, swamps, interstream flats, and estuaries. Pond pine, loblolly pine and longleaf pine are the most frequent tree species, with small amounts of hardwood forest.

## THE DIVERSITY OF ANIMALS

- References from the 1970's and 80's document the following species diversity on the Nantahala and Pisgah National Forests:

| | |
|---|---|
| Mammals | 65 species |
| Reptiles | 36 species |
| Amphibians | 44 species |
| Birds | 159 species |
| Fish | 108 species |

- **Uwharrie National Forest** also provides productive, diverse habitat for a wide variety of species. Most of the mammalian species in North Carolina are present in the Piedmont. Sixty species of reptiles and amphibians are present. This diversity is in part supported by the upland ponds where breeding sites remain relatively undisturbed.
- **Croatan National Forest** supports 46 mammals, 122 birds, and 94 reptiles and amphibians.

## THREATENED AND ENDANGERED SPECIES

As of FY 2000, there were 14 animals and 17 plants listed as T&E species that occur or might occur on the Forests. Table 1-1 lists these species, the year of listing, status (T=threatened, E=endangered) and occurrence on the Forests.

### TABLE 1-1. FY 2000 STATUS OF T&E SPECIES

| ANIMALS | YEAR LISTED | STATUS | ON FORESTS? |
|---|---|---|---|
| Appalachian Elktoe Mussel | 1994 | E | Occurs |
| Red Wolf | 1967 | E | Extirpated |
| Spotifn Chub | 1977 | T | Occurs |
| Peregrine Falcon | 1970 | E | Occurs |
| Eastern Cougar | 1973 | E | May occur |
| Carolina Northern Flying Squirrel | 1985 | E | Occurs |
| Spruce-fir Moss Spider | 1995 | E | Occurs |
| Noonday Snail | 1978 | T | Occurs |
| Indiana Bat | 1967 | E | Occurs |
| Little-Wing Pearly Mussel | 1988 | E | Occurs |
| Virginia Big-eared Bat | 1979 | E | May occur |
| Red cockaded Woodpecker | 1970 | E | Occurs |

| PLANTS | YEAR LISTED | STATUS | ON FORESTS? |
|---|---|---|---|
| Sensitive Jointvetch | 1992 | T | May occur |
| Spereading Avens | 1990 | E | Occurs |
| Swamp Pink | 1988 | T | Occurs |
| Dwarf-flowered Heartleaf | 1989 | T | May occur |
| Mountain Bluet | 1990 | E | Occurs |
| Mountain Golden Heather | 1980 | T | Occurs |

| PLANTS | YEAR LISTED | STATUS | ON FORESTS? |
|---|---|---|---|
| Small Whorled Pogonia | 1982 | E | Occurs |
| Heller's Blazingstar | 1987 | T | Occurs |
| Bunched Arrowhead | 1979 | E | May occur |
| Mountain Sweet Pitcher Plant | 1988 | E | May occur |
| Green Pitcher Plant | 1979 | E | May occur |
| White Irisette | 1991 | E | May occur |
| Blueridge Goldenrod | 1985 | T | Occurs |
| Rough-leaved Loosestrife | 1987 | E | Occurs |
| Schweinitz Sunflower | 1991 | E | Occurs |
| Virginia Spirea | 1990 | T | Occurs |
| Rock Gnome Lichen | 1995 | E | Occurs |

## 2. Historical Context - The Forests' Contribution to the Maintenance of the Productive Capacity of Forest Ecosystems

The LRMP goals related to maintaining the productive capacity of forest ecosystems:

1) A variety of silvicultural treatments are used to provide a continuous supply of wood products (with emphasis on high quality hardwoods for N/P Forests).
2) Utilization of mineral resources is provided in an environmentally sound manner.

### FORESTRY

- For the N/P forests, upland hardwoods cover approximately 45 percent of the Forests, while cove hardwoods cover approximately 30 percent. The remaining 25 percent is made up of white pine, yellow pine, northern hardwood, and spruce fir communities. For C/U forests, loblolly, shortleaf, and longleaf pine are the major forest types on the Croatan, while the Uwharrie is about an even mix of hardwoods such as oaks and southern pine types such as loblolly and shortleaf.
- Of the 1,024,902 acres of N/P National Forest land, 275,798 acres (27%) are suitable for timber production (see LRMP, p. E-7). For C/U, approximately 68,000 of the 210,000 acres (32%) are suitable for timber production.

Photo of Log Truck

### FOREST BOTANICAL PRODUCTS

- The two mountain Forests have administered a large program of issuing permits and collecting fees from collectors of botanical products. At the same time, studies are underway regarding sustainable levels of harvest and rates of growth and reproduction.
- Galax, moss, vines, ginseng, bloodroot, and black cohosh are among the most widely collected botanical products. Ginseng is thought to be much

less prevalent than 100 years ago, while the comparative abundance of many others is not known.

## MINERAL RESOURCES

Photo of Ginseng

- As of 1994 there were 5 active mine and lease areas on the N/P Forests. Olivine, limestone, dimension stone, and aggregate stone were the mining products.
- There was no oil, gas, geothermal, or other energy development within the Forests.
- A substantial amount of rock hounding was occurring for gem and mineral specimens including olivine, kyanite, gold, and a variety of semi-precious gemstones.
- Decades old abandoned mines were a safety concern.

# 3. Historical Context - The Forests' Contribution to the Maintenance of Forest Ecosystem Health and Vitality

## FOREST HEALTH PROTECTION

- The major native forest insects and diseases affecting the Forests are southern pine beetle (SPB) and oak decline. A dozen species of plants, Gypsy moth, hemlock woolly adelgid, and dogwood anthracnose are the major non-native agents of concern.
- Large landscapes on the Forests are at risk of damage from these agents for a number of reasons: cohorts of similar-aged, mature upland oak stands that grew up after the elimination of the American chestnut are now affected by or susceptible to oak decline. Fire suppression and lack of regeneration harvests or thinning has resulted in dense, slow growing pine stands susceptible to SPB attack. Among non-native invasive plants, species such as princess tree, Japanese honeysuckle and multiflora rose may push aside native species, and kudzu and oriental bittersweet can hinder tree regeneration as well.

## AIR QUALITY

- Air quality is also a factor in ecosystem health. A uniform haze frequently blankets the mountains, largely the result of sulfate particles emitted by fossil fuel fired power plants generating the electricity we Americans use. Low-level ozone

is another threat to air quality. It is primarily a by-product of automobile exhaust, and can affect the growth of some plants and trees and make breathing difficult for susceptible humans. One management action that may affect air quality is prescribed burning.

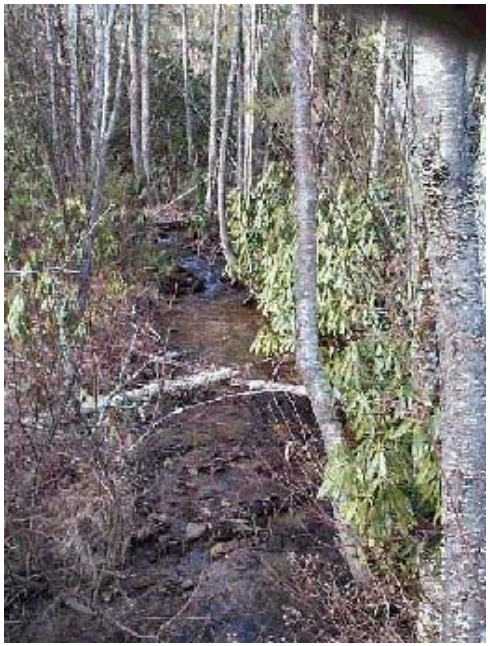
## 4. Historical Context - The Forests' Contribution to the Conservation and Maintenance of Soil and Water Resources

The LRMPs state two broad goals related to the conservation and maintenance of soil and water resources:

1) Riparian areas, floodplains, wetlands, and their existing ecosystems are perpetuated and enhanced.
2) Water quality and soil productivity are maintained.

### WATER RESOURCES

Generally, water quality across the Forests has met or exceeded the State water-quality standards for fresh water. State reports at the time of the LRMPs did not specify any water quality limitations associated with National Forest silviculture or other land management actions. However, in recent years a few stream segments have been identified as impaired due to erosion from nearby roads. These areas have been recognized as needing restoration activities.



### SOILS

The LRMPs contain numerous standards and mitigation measures prescribed to prevent soil erosion and stream sedimentation. Also, in North Carolina, land-disturbing activities on the National Forests must comply with the intent of the North Carolina Sedimentation Control Act of 1973, which requires that measures must be sufficient to "restrain accelerated erosion and prevent visible sediment from entering intermittent and perennial streams and perennial water bodies."

## 5. Historical Context - Maintenance of Contribution to Global Carbon Cycles

This criterion is not currently monitored at the National Forest scale. Evaluations are underway to determine if there are appropriate indicators for national forests to monitor that would contribute meaningfully to a national evaluation.

## 6. Historical Context - The Forests' Contribution to the Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to Meet the Needs of Societies

The LRMP contains two broad goals related to this criterion:

1) Protect the beauty of the Forests through special attention to visually sensitive areas and the careful application of resource management activities.
2) Provide different environmental and social settings for outdoor recreation opportunities that range from primitive to developed. Provide for a variety of recreational activities appropriate to these settings and the forest environment. Provide all recreation visitors to the National Forests the opportunity to participate in activities and programs and use facilities to the highest level of access practicable.

- During the 1980's, views of road construction and clearcut harvesting could be seen across the Forests. Members of the public found this objectionable, since it made the vistas appear less natural. The heavy reliance on clearcutting as the preferred regeneration method came under question, and this was addressed through NP LRMP Amendment 5 (1994) and changes to National policy. As a result, clearcutting was greatly reduced in favor of "two-aged" and "group selection" regeneration. The expected outcome would be that clearcut areas would blend in as the young stands got older, and new harvest areas would be less visible from the start.

**RECREATION**

- The National Forests in North Carolina receive heavy recreation use. On the Nantahala and Pisgah Forests, the heaviest use occurs along the NC 276 corridor through the Pisgah District. Other hot spots are the Curtis Creek and Wilson Creek areas, the Nantahala River, the US 64 corridor from Franklin to Highlands (Cullasaja Gorge), and parts of

the Forests accessible from the Blue Ridge Parkway. On the Uwharrie, the heaviest use occurs along the fringes of Badin Lake. On the Croatan, the heaviest use occurs along the Neuse and White Oak River corridors.

- The type of recreation available in a particular area of the Forests depends in large part upon whether or not there are roads present, and if the roads are open to vehicular traffic. The types of recreation range from solitary backpacking and hunting in the most remote parts of the Forests, to high tech visitor centers, and everything in between.
- The original Forest Plans signed in the 1980's projected less emphasis on developed sites and more emphasis on "dispersed recreation" such as making loop hiking trails.
- Amendment 5 of the N/P LRMP(1994) placed additional acres into "backcountry" management, reinforcing the aim of dispersing recreation use across more areas, and away from high use areas. By increasing "backcountry areas" it was thought that some of the use could also be diverted from designated wilderness areas where the numbers of visitors were too high.
- Management also recognizes that disabled access was an issue to be dealt with in the developed sites.

## HERITAGE RESOURCES

- The National Forests in North Carolina contain nearly 5,000 formally recorded heritage resources, prehistoric and historic archeological sites, historic structures, and traditional cultural properties.

- The coastal plain **Croatan National Forest** shows signs of human occupation from prehistoric times. The naval stores industry operated here throughout the 18$^{th}$ century and was important to the early growth of the state and source of the nickname "Tar Heels." Tar kilns found on the Forest warrant protection and interpretation. Rising sea levels had long before covered many of the earliest prehistoric sites, paleo-indian and early archaic. The largest prehistoric sites tend to be along the larger and deeper creeks and rivers where both aquatic and terrestrial resources were available. These sites are especially susceptible to shoreline and storm erosion, as well as recreational damage. Several civil war sites and early land conservation sites from the Civilian Conservation Corps located on the Forest are amenable to interpretation.

- The piedmont **Uwharrie National Forest** is extremely rich in prehistoric and historic sites. It contains the volcanic stone used for tools by American Indians for 10,000 years throughout the southeast. The area is also known to have been traditionally used by the Catawba Indians. Recreation use, including Off Highway Vehicles (OHV), mountain bikes and horses on the Uwharrie makes site protection difficult. The geology of the Uwharrie Mountains also led to America's first (1799) gold rush. The Forest has scattered gold mines that range from small family operations to larger industrial sites.

- The mountain **Pisgah National Forest** was the first National Forest in the eastern United States. The first tract of land purchased under the Weeks Act, the Curtis Creek Tract, is located on the Grandfather Ranger District near Marion, NC. The Grandfather RD is located between the rolling piedmont hills and the Appalachian Summit, making for rich and diverse ecozones, used extensively and intensively during prehistoric and historic times.

- The mountain **Nantahala National Forest** is similar to the Pisgah. However, its proximity to larger rivers and valleys made it a prehistoric and historic crossroad. The Eastern Band of Cherokee Indian Qualla Boundary is adjacent to the Nantahala National Forest. The Trail of Tears (1838) is located on the Wayah, Tusquitee and Cheoah Ranger Districts. National Forests in North Carolina (NFsNC) continue to work closely with the four federally recognized tribes with an interest in local national forest management. These are Eastern Band of Cherokee Indians, Cherokee Nation, United Keetoowah Band of Cherokee, and Catawba Indian Nation.

## 7. Historical Context - The Forests' Contribution to the Framework for Conservation and Sustainable Management

- **Planning/NEPA**. The LRMP for Nantahala and Pisgah National Forests was signed in 1987, and significantly amended (Amendment 5) in 1994. The LRMP for Croatan and Uwharrie National Forests was signed in 1985. The Croatan draft plan revision was issued in FY 2000. Finalization of that revision is expected during FY 2002. Plan implementation has been proceeding at a variable rate and is documented in the Monitoring and Evaluation Reports.

- **Conservation Education.** The Forest Discovery Center is the hub of on-site conservation education programs for the Forests. Programs designed to achieve specific curriculum objectives are presented to thousands of elementary students each year. Large numbers of additional interpretive programs and special events enable thousands of others to gain knowledge of forest ecosystems and the effects of human interactions with the environment. Outreach programs are conducted by ranger district and supervisor's office personnel and consist of conservation field days held in cooperation with other agencies, various school programs, teacher education, and a variety of specialized programs presented to requesting organizations.

**Land Adjustment.** At the end of FY 2000, the total acres of National Forest System land in North Carolina were 1,246,034 acres. Every year land trades and purchases have typically proceeded as opportunities become available, and when there is legislative and public support. Some objectives of the Land Adjustment program are to:

1. Consolidate property by acquiring inholdings when available and trading outlying parcels for adjacent parcels or administrative sites;
2. Acquire lands adjacent to the Appalachian Trail;
3. Acquire lands within the Chattooga watershed.

**Infrastructure.** The Forests provide approximately 190 developed recreation sites including visitor centers, campgrounds and picnic areas capable of serving over 22,000 persons at one time; over 1,700 miles of trails, 2,418 miles of Forest roads, and numerous "semi-developed" dispersed campsites. There is always a backlog of maintenance work and upgrades to meet accessibility standards. Generally, some progress is made each year on upgrades and maintenance depending upon available funds. However, the road maintenance backlog is quite large.