U.S. Department of Agriculture
Forest Service
Southern Region

Proposed Land and Resource Management Plan for the Uwharrie National Forest

National Forests in North Carolina

R8-MB 138A

June 2011

Uwharrie National Forest
Proposed Land and Resource Management Plan

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Responsible Agency: **USDA Forest Service**

Responsible Official: **Elizabeth Agpaoa,**
Regional Forester,
1720 Peachtree Road NW,
Atlanta, GA 30309
404-347-4177

For more information contact: **Marisue Hilliard**
Forest Supervisor
National Forests in North Carolina
160A Zillicoa Street
Asheville, NC 28801
(828) 257-4200

This Proposed Land and Resource Management Plan describes a proposed framework for guiding on-the-ground projects and activities. We encourage your comments on all aspects of the Proposed Plan. Public notification of commencement of the 90-day comment period will be published in the Federal Register.

E-mail comments to: comments-southern-north-carolina@fs.fed.us
Subject: Uwharrie Plan

Or if e-mail is not available, written comments should be submitted to:

Proposed Land and Resource Management Plan
NFsNC/Uwharrie National Forest
160 Zillicoa Street Suite A
Asheville, NC 28801

The Purpose of the Plan

This publication explains how the USDA Forest Service proposes to manage the Uwharrie National Forest (Uwharrie NF) over the next 15 years. Information is provided that describes what activities will be implemented, what public benefits are anticipated, and what will be the long-term conditions of the national forest as a result of implementing the plan.

Plan Organization

Chapter 1 - Introduction, provides a summary of the need to change the management direction that has been in place since 1986 when the first Land and Resource Management Plan for the Uwharrie National Forest was implemented. It contains a description of the national forest, its context in the larger landscape, and the unique roles it can play in providing goods and services to the local communities and the North Carolina Piedmont region. A summary of the Analysis of the Management Situation is included in fulfillment of planning regulation 36 CFR 219.11(a).

Chapter 2 – Forest-wide Direction provides a brief a description of the goals/desired conditions (36 CFR 219.11(b)) and objectives (36 CFR 219.11 (b)) for the various Uwharrie NF resources, and the standards and guidelines (36 CFR 219.11(c)) for management actions.

> **Goals/desired conditions** describe how the national forest is expected to look and function in the future when management direction in the Forest Plan has been successfully implemented. Goals/desired conditions are described using the ecological, economic, and social attributes that characterize or exemplify the outcomes of land management. Goals/desired conditions may be achievable only over the long term.
>
> **Objectives** describe activities the USDA Forest Service would perform in order to move the Uwharrie NF toward the goals/desired conditions. Most objectives are actual outcomes on the land that can be measured over time. The Objectives section of Chapter 2 also includes some of the management approaches to plan implementation. The "management approaches" fulfill in part the planning regulations at 36 CFR 219.11(c) that require "proposed and probable management practices" be included as plan content.
>
> **Standards and Guidelines** are the sideboards that constrain management activities to conserve or protect forest resources.

Chapter 3 – Management Area Prescriptions (36 CFR 219.11(c)) identifies the management areas and the suitability of various management areas for different types of uses. It also describes specific places on the national forest that have special management needs, including unique or rare botanical, zoological, historical, scenic and/ or recreational values.

Chapter 4 – Monitoring and Evaluation Requirements (CFR 219.11(d)) describes the monitoring program the USDA Forest Service intends to implement to ensure progress is made toward the goals/desired conditions, and to ensure resource protection.

Appendix A – Plan Direction Crosswalk, relates each goal/desired condition to its associated objectives and standards and/or guidelines in an easy-to-track table format.

Appendix B – Planned Timber Sale Program (CFR 219.11(c)), presents a description of the timber outputs likely to occur in the planning period. It includes a discussion of the appropriateness of regeneration harvest methods, as required by the National Forest Management Act and USDA Forest Service Directives.

Appendix C – Species Scientific Names and NatureServe Community References crosswalks common and scientific species names and crosswalks community names and NatureServe reference numbers.

MAPS – All maps are separate attachments

The **Forest Plan Map** displays the general location of the various Management Areas, and identifies the recommended and designated Special Interest Areas.

The **Badin Lake Recreation Area Plan Map** zooms in on this portion of the Uwharrie NF and displays the general location of Management Areas that overlay the Badin Lake Recreation Area.

The **Recreation and Scenery Settings Map** displays the desired combination of amount of access, amount of use, and scenery values for different parts of the Forest.

The **Potential Vegetation Map** displays the native ecological systems best adapted for various sites, as modeled using environmental factors.

Plan Decisions

Goals/Desired Conditions: While these are long term expectations that may not be realized during the life of the Plan, management actions that would move the national forest away from rather than towards the goals/desired conditions (in the long term) would not be permitted without first amending the Plan.

Objectives: These usually measureable outcomes on the land are expectations of project activities that will occur over the course of the planning period. They do not represent a complete set of projects that may occur, and activities not identified in the Plan may occur if they support the long term goals/desired conditions, or are required by law, regulation or policy. Management approaches discussed along with the objectives are not considered Plan decisions.

Standards and Guidelines: Standards must be followed or the Plan must be amended to allow the activity. Guidelines should be followed unless extenuating circumstances can be documented that would reasonably explain a deviation.

Management Area Prescriptions: Specific direction (goals/desired conditions, objectives, standards and guidelines) may apply to specific portions of the Uwharrie NF

depending on its location, its ecological attributes, and/or its importance to the human communities of interest. Some areas may be assigned to more than one management area (for example, a portion of Streamside Forest may also be part of a Special Interest Area). In those cases management activities should meet all applicable management area direction.

Lands not Suitable for Timber Production: Law, regulation and policy dictate that certain categories of land are not suitable for timber production. These lands are identified in Chapter 4.

Monitoring and Evaluation Requirements: These represent the most important forest management outcomes to be tracked over time, as determined through the collaborative planning process. For this Plan the requirements are linked to the goal/desired condition statements and objectives listed in Chapter 3. The methodology for monitoring and evaluating is not considered a Plan decision and could change over time if new protocols or technology come into use.

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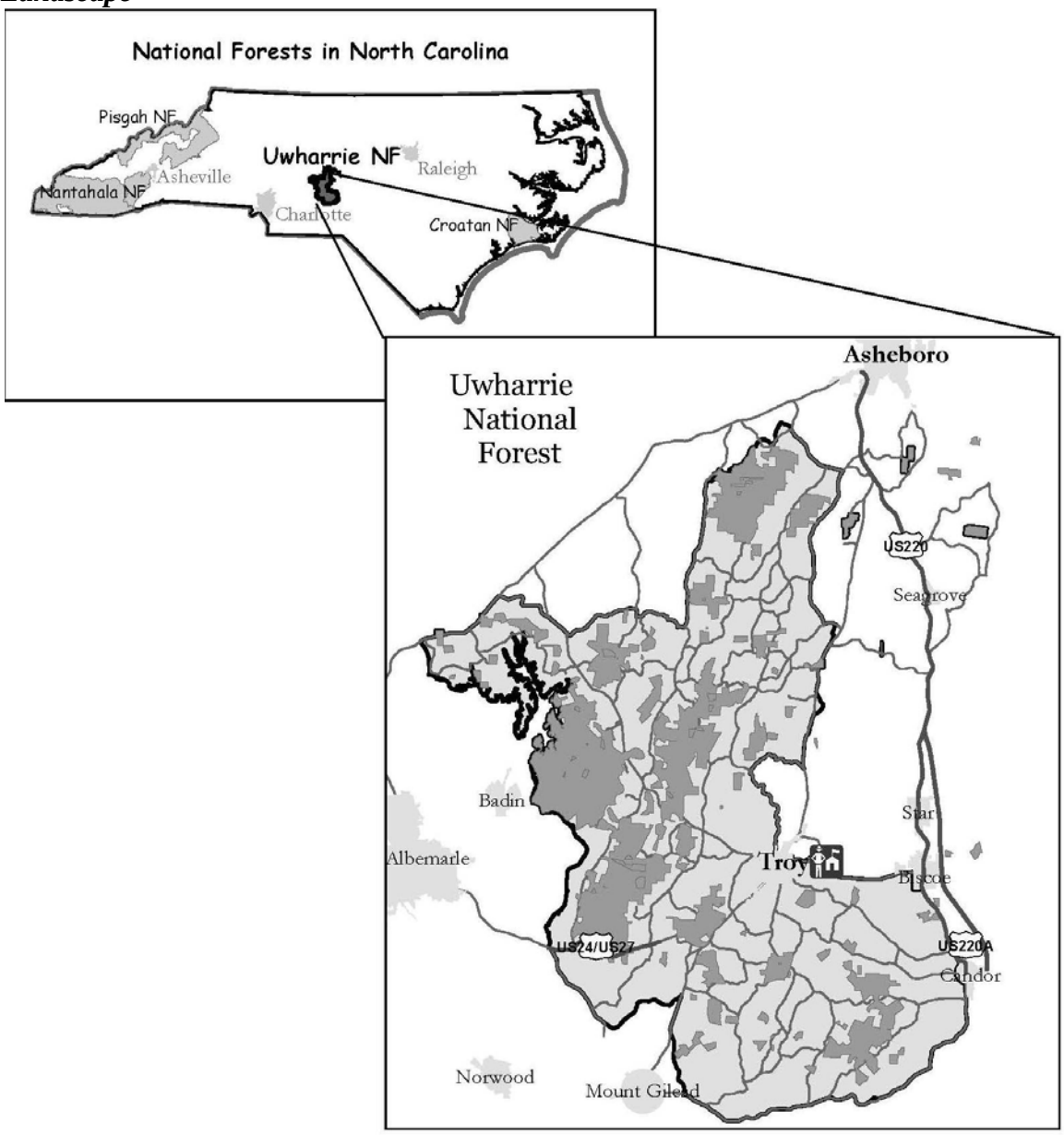
Attachments to the Proposed Plan:

1. Proposed Plan Map (black and white 11" by 17" format)
2. Badin Lake Recreation Area Proposed Plan Map (black and white 11" by 17" format)

Available On-Line or by CD:
(Full-Color 1 Inch to the Mile, 24" by 36" format)

1. Proposed Plan Map
2. Recreation and Scenery Settings Map
3. Potential Vegetation Map

Figure 1. Vicinity of the Uwharrie National Forest in Context with the Larger Landscape



Chapter 1 – Introduction

National Forest Land and Resource Management Plans (LRMPs or Forest Plans) provide broad guidance and information for project and activity decision making for each national forest. The original Uwharrie Forest Plan was adopted in 1986. The National Forest Management Act calls for plans to be revised from time to time, to incorporate new information, to account for changed national policy and direction, and to address new issues and opportunities. The USDA Forest Service developed this proposed plan collaboratively with partners, other government agencies, members of user groups, interest groups, and local citizens.

Uwharrie National Forest Overview

In 1931, during the Great Depression, the federal government began purchasing the land that is now the Uwharrie National Forest. In 1961, President John F. Kennedy proclaimed federal lands in Montgomery, Randolph, and Davidson Counties, North Carolina, as the Uwharrie National Forest, making it one of the newest and smallest forests in the National Forest System. Today the Uwharrie NF includes 50,814 acres, lands that in many cases were once private industrial forest land or private agricultural lands.

The Uwharrie NF is located in the North Carolina Piedmont and includes portions of the Uwharrie Mountains. The rolling topography, with well-rounded hills and long ridges, ranges in elevation from 400 to 1000 feet above sea level. The town of Troy and a number of small communities are within the proclamation boundary and several towns are just outside the boundary. The national forest is also within a two hour drive from North Carolina's largest population centers, including Charlotte, Raleigh, Durham, Greensboro, and Winston-Salem, Figure 1.

The land that comprises the Uwharrie NF is made up of approximately 60 separate parcels interspersed within privately owned, mostly forested landscapes; a situation that often makes forest management challenging. The vegetation is approximately half hardwoods and half pines, with associated understory vegetation. Forests on the Uwharrie NF include a higher percentage of loblolly pines than occurred historically due to an emphasis during the latter half of the 20th century on planting loblolly pine for timber production.

The Uwharrie NF is rich in historical and archeological resources (a.k.a. "cultural" resources) dating back to prehistoric times. These include everything from prehistoric quarry sites, to historic mines and settlements. Old gold mines dot the landscape and recreational gold panning still occurs.

Many outdoor recreation activities are popular on the Uwharrie NF such as hunting, horseback riding, hiking, camping, picnicking, bird watching, and OHV riding. Lakeside developments and trail systems are particularly popular.

Summarizing the Analysis of the Management Situation

There is increasing demand for recreational uses of the Uwharrie NF. While the counties that encompass the national forest are rural, the market area contains several large cities and a population over six million. The Uwharrie NF can expect more pressure from increasing recreational use in the future compared to other national forests in the region. This growth may be exacerbated by the four-laning of several state and interstate highways and the expansion of Fort Bragg Military Reservation. More effective management of recreation, especially dealing with the many trails that are in poor condition, could help accommodate the expected increase in use.

Several new or improved developed recreation sites were constructed over the past two decades. The focus for the foreseeable future could be on maintenance rather than new construction, so that more resources could be used toward bettering the management of dispersed recreation.

Prehistoric and historic artifacts and sites are more concentrated on the Uwharrie NF than many other southern national forests. Opportunities for scientific research, public interpretation, and resource preservation abound. Past cultures and lifeways can be studied, and climatic changes and environmental conditions that occurred in the past can be better understood if these resources are protected and researched.

Loblolly and shortleaf pine plantings that are available for harvest over the next 20 years present an opportunity to restore native plant communities such as longleaf pine and oak/hickory forests to the landscape. Commercial timber sales on the Uwharrie NF peaked in the 1980's and have fluctuated around 500,000 cubic feet per year since the early 1990's. Replacing the loblolly with native plant communities would create a forest more resilient to environmental changes and would provide better wildlife habitat.

There are opportunities to restore the Endangered Schweinitz's sunflower. There are existing populations of this plant that are at risk that need protective measure or relocation, and there are several areas of the national forest that have the right conditions for reintroducing the sunflower.

Numerous special places on the Uwharrie NF need recognition and special management to retain their unique features. Rare plant communities, scenic areas, areas of concentrated archeological sites – these are examples of over thirty sites identified during the collaborative process as potential Special Interest Areas.

Non-native invasive plant species are encroaching on the national forest. Treatments to control these need to be emphasized.

Most game species are abundant on the Uwharrie NF. There is an opportunity to shift management more towards habitats for less common species such as bobwhite quail and potential habitat for red-cockaded woodpecker.

There are opportunities to improve in stream aquatic habitats and stream channel stability. These actions would support the existing high aquatic species diversity and allow for reintroductions of rare native species.

There are opportunities to increase prescribed burning and especially growing-season burning. Restoring longleaf and maintaining the open forest conditions needed by many rare plants would require more frequent understory burning on more of the landscape.

Gaining a Sense of the Uwharrie's Niche

People who work, play, or live in or near the Uwharrie NF were invited to participate in a series of meetings to learn how the revised plan would be developed, and to share their ideas about what makes this national forest special. Many of these people helped develop the Proposed Plan, by participating in the collaborative planning process: a series of public meetings and field trips to exchange information and generate ideas for Forest Plan direction.

Many participants expressed appreciation for the sights, sounds, and smells of nature as a refuge from urban life. Some are interested primarily in conservation of the native ecosystems. Others see the Uwharrie NF as a place to recreate by hiking, mountain biking, horseback riding, OHV riding, camping, boating, hunting, fishing, or shooting. Some look for ways the Forest can provide economic benefits to local communities. But all participants expressed value for the Uwharrie NF's rural setting and its diversity of native plants and animals. Three themes came to dominate the collaborative planning process and most conversations about the Uwharrie NF:

1. **Restoring the forest to a more natural ecological condition:** For example, reducing the amount of loblolly pine plantations in favor of reestablishing longleaf pine forests or oak-hickory forests;

2. **Better managing cultural resources**: The Uwharrie NF has an abundance of artifacts and historic and prehistoric sites within its boundaries. These need protection, but they also provide opportunities for research, teaching, and interpretation;

3. **Providing outstanding and environmentally friendly outdoor recreation opportunities, with excellent trails and facilities:** It is a challenge to provide the kind of experience recreationists want while minimizing impacts to other forest resources and other forest users.

Chapter 2 – Forest-wide Direction

GOALS/DESIRED CONDITIONS

Goals/Desired Conditions describe how the national forest is expected to look and function in the future when management direction in the Plan has been successfully implemented. They may be achievable only over the long term.

Theme 1 - Restoring the forest to a more natural ecological condition

This theme encompasses the biological and physical natural resources of vegetation, wildlife, soil, water and fisheries.

Vegetation-Related Goals/Desired Conditions

VEG-1. Woodlands and open forests with small canopy gaps, interspersed with glades and Piedmont prairies, occupy portions of the forest where they occurred historically. These forests contain mixed ages with old trees and old forest conditions, as well as canopy openings that provide habitat for federally listed, sensitive and locally rare species.

VEG-2. Plant communities that were more common in the past occur on appropriate sites across the forest. Examples include longleaf pine woodlands, shortleaf pine woodlands, and oak-hickory forests.

VEG-3. Non-native invasive species are at low levels that do not interfere with native plant reproduction and distribution. New outbreaks are not spreading. Equestrians understand the need to use weed-free hay and straw.

VEG-4. Schweinitz's sunflowers (federally listed as endangered since 1991) that historically occurred across the Piedmont of North and South Carolina are restored on appropriate sites across the forest (longleaf pine woodlands, dry-oak hickory forests, mafic hardpan woodlands, and xeric forests). Other rare plant species are sustaining or increasing in number of occurrences or the extent of the occurrences.

VEG-5. Biological diversity is evident across the forest, and is further enhanced by a system of botanical special interest areas. All plant communities found on the Uwharrie NF are represented in this system, including rare plant communities and the species they support. These botanical special interest areas are intact and fully functioning; without evidence of unnatural erosion or non-native invasive species, and with intact hydrologic systems.

VEG-6. Regenerating hardwoods are evident following disturbances in tree canopies (canopy gaps) in multi-age deciduous forests and mixed pine-hardwood forests.

VEG-7. Forests are in a healthy condition. Most trees are in good health, well-formed, and with little evidence of widespread insect and/or disease damage. A healthy forest includes some dead and dying trees and hollow den trees used by wildlife. A healthy forest also contains various size patches of disturbance that provide habitat components desired by a variety of wildlife, and space and light for young trees ("regeneration").

VEG-8. The composition, structure, and processes of ecological systems are improving. The desired composition, structure and process for each system are described below:

Xeric Oak Forest: These forests on high ridges and knolls (commonly called monadnocks) are dominated by mature (> 80 years in age) chestnut oak with a patchy canopy (60-80% canopy closure); common associates include post oak, southern red oak, and pignut hickory. Canopy gaps are more frequent than in other ecological systems and the midstory is patchy and open. The shrub layer is scattered and the herb layer sparse, with less than 30% cover. Typical understory species include hillside blueberry and woodland tick-trefoil, but may be dominated by mountain laurel. Fire return interval is 7-20 years and consists of surface fires of mixed severity with flame heights mostly less than two feet with some fires occurring in the growing season.

Dry Oak-Hickory Forest: These forests on convex, exposed hillsides have a relatively open tree canopy (60%-80% closure) and are dominated by mature (> 80 years in age) dry site oaks or a mixture of oaks and up to 30% cover of shortleaf pine in upper crown positions. Small canopy gaps (½ - 2 acres in size) are dominated by oak and hickory seedlings or saplings, or by grasses and herbs. Southern red oak, white oak, or post oak are the dominant hardwood species. Other characteristic overstory trees include white ash, pignut hickory, redbud, winged elm, and Carolina shagbark hickory. Shrubs range from sparse to moderately dense and the herb layer, although generally sparse, can be well developed in canopy gaps. Typical understory species include deerberry, farkleberry, whorled milkweed, northern oak grass, broomsedge, and little bluestem. Fire return interval is 7-20 years and consists of surface fires of mixed severity with flame heights mostly less than two feet with some fires occurring in the growing season.

Dry-Mesic Oak-Hickory Forest: These mid to lower slope forests on concave landforms have a relatively open to mostly closed mature tree canopy (60-90% canopy closure). Small canopy gaps (½ - 2 acres in size) are dominated by oak and hickory seedlings or saplings or by grasses and herbs. Forests are dominated by mixtures of oaks and hickories, with white oak the most common species along with northern red oak, black oak, mockernut hickory, shagbark hickory and red hickory. Red maple, sweetgum, and tulip poplar may be present but not in abundance. Shortleaf pine may be common. The shrub layer ranges from sparse to moderately dense and typically

includes squaw-huckleberry, rattlesnake plantain, and little bluestem. The herb layer, although generally sparse, can be well developed in canopy gaps and includes ebony spleenwort, Carolina supplejack, black-edge sedge, and common foamflower. Fire return interval is 7-20 years and consists of surface fires of mixed severity with flame heights mostly less than two feet with some fires occurring in the growing season.

Southern Piedmont Mesic Forest: These forests are in sheltered topographic positions with closed (80-100% canopy closure), mature (> 80 years in age) canopies dominated by mesophytic trees. American beech is nearly always present. Other characteristic species include northern red oak, tulip poplar, and red maple; white ash and shagbark hickory occur on higher pH soils. The herb layer is dense and may include black cohosh, bloodroot, maidenhair fern, and Christmas fern. Fire return interval is 12-20 years and consists of surface fires of mixed severity with flame heights mostly less than one foot with some fires occurring in the growing season.

Southeastern Interior Longleaf Pine Woodland: These woodlands or open forests (25-60% canopy closure) are dominated by longleaf pine with occasional shortleaf pine and oaks, or codominated by longleaf and shortleaf pine with occasional oaks. They are multi-aged (25%-60% tree cover) with canopy gaps occasionally as large as ¼ acre in size: ½ to 2 acres in size on sites suitable for Schweinitz's sunflower. Characteristic hardwood associates may include: post oak, southern red oak, and blackjack oak. The mid-canopy is very sparse and the understory shrub layer may include hillside blueberry, New Jersey tea, and common chinquapin. The herb layer is nearly continuous, diverse, and includes characteristic species such as little bluestem, splitbeard bluestem, Virginia goat's-rue, yellow Indian grass, poverty oat-grass, and silky oat-grass. Fire return interval is three to five years and consists of surface fires of mixed severity with two to five foot flame heights and some fires occurring in the growing season.

Shortleaf Pine-Oak Woodland: These woodlands on very exposed slopes have open canopies (25-60% canopy closure) dominated by shortleaf pine, Virginia pine and chestnut oak or by shortleaf pine, blackjack oak and chestnut oak. Other characteristic trees include: blackgum, white oak, scarlet oak, black oak on soils derived from felsic rock and persimmon or white ash on soils derive from mafic rock. The shrub layer may be dense and include farkleberry, horsesugar, and mountain laurel. The herb layer is diverse and typically includes little bluestem, silky oat grass, butterfly pea, starved witch-grass, and Elliott's broomsedge. Fire return interval is three to five years and consists of surface fires of mixed severity with two to five foot flame heights and some fires occurring in the growing season. Stand replacement fire may occur on an 80-100 year interval.

Successional Forest (loblolly and shortleaf plantations): Successional forests in this context refer to forests that were historically managed "plantations" (usually loblolly or shortleaf pine) that were originally planted for timber and fiber production. The Uwharrie NF consists of a disproportionately higher amount of successional forest than would normally exist in intact, naturally regenerating ecological systems. Successional forests grow up after landscape disturbances but may not be well-adapted to the site over the long-term. The vision of the proposed forest plan is to move the

Uwharrie NF to a condition that has less loblolly and shortleaf successional forest and more native longleaf pine and oak-hickory forests.

Southern Piedmont Glades and Barrens: These cliffs, bluffs, and other rock outcrops are dominated by open woodlands (< 25% canopy closure) to nearly treeless plant communities with highly variable composition. The open woodland canopy may be dominated by Virginia red cedar and winged elm with eastern red maple and Virginia pine. Other woody species include fringetree, pignut hickory, sand hickory, white ash, farkleberry, hillside blueberry, persimmon, and winged sumac. The sparse to moderate herb layer is typically dominated by little bluestem. Other common grasses include silky oat grass, Indian grass, and starved witch grass. Flowering herbs include whorled milkweed, long-stalked aster, and cross-vine. Many additional woodland community types are possible in this system. Fire return interval is five to seven years and consists of surface fires of low severity with one to two foot flame heights.

Southern Piedmont Mafic Hardpan Woodland: These upland flats on soils with a perched water table are open woodlands (25-60% crown closure). The canopy is dominated by somewhat stunted post oak and blackjack oak and characteristic species such as Carolina shagbark hickory, persimmon, and black oak. A variety of other characteristic overstory trees may be present including Carolina shagbark hickory, white ash, pignut hickory, white oak, and black oak. Typical midstory and understory trees include Virginia red cedar, persimmon, redbud, and winged elm. The understory shrub layer is sparse and the herb layer continuous. Fire return interval is three to five years and consists of surface fires of low severity with one to two foot flame heights.

Southern Piedmont / Ridge and Valley Upland Depression Swamp: These seasonal to intermittently flooded upland flats have a closed forest canopy (60-100% canopy closure) dominated by willow oak or codominant with or replaced by overcup oak, swamp chestnut oak, or sweetgum. Shrubs are sparse but may include black highbush blueberry, highbush blueberry, buttonbush, and inkberry. The understory is also sparse but typically includes sphagnum moss, buttonbush, sedges or lamp rush. Fire return interval is highly variable and is dependent upon seasonal and yearly water fluctuations. Low severity surface fires with < 1 foot flame heights originate outside of this wetland.

Upland pools are also included in this ecological system. Upland pools lack significant tree cover except on their edge and are thought to be geologically successional to upland depression swamps.

Piedmont Seepage Wetland: Streamside seepage areas are imbedded within forests and have a scattered to closed tree canopy (60-100% canopy closure) that may include sweetgum, black gum, sweetbay, and persimmon. The understory may contain American holly, common winterberry, American strawberry bush, Virginia sweetspire, Southern wild raisin, tag alder, and ti-ti. The herb layer is diverse and may include royal fern, blaspheme-vine, and muscadine. Common spicebush and yellow root may occur along well-developed stream channels.

Hillside Seepage Bogs are imbedded in forests and woodlands and have patchy to open canopies (60-80% canopy closure) that may include swamp red maple, tulip poplar, sweetgum, or longleaf pine. Characteristic shrubs include evergreen bayberry, blue huckleberry, Southern blackhaw, and tag alder. The herb layer is diverse and may contain: yellow pitcher plant, purple pitcher plant, bushy broomsedge, ship nuthatch, and sphagnum moss. Fire return interval is highly variable and is dependent upon seasonal and yearly water fluctuations. Low severity surface fires with < 1 foot flame heights originate outside of these wetlands.

Streamside Forest: These forests provide shading, stability to stream banks, a source of coarse wood for in-stream habitat, and special habitat components such as cover and travel corridors for wildlife. They consist of a 100-foot corridor on each side of perennial streams as well as all alluvial forests. Fire return interval is 12-20 years and consists of surface fires of mixed severity with flame heights mostly less than two feet with some fires occurring in the growing season. Some sites are subject to flooding.

In the floodplains of small to medium-sized streams, where flooding and alluvial processes have some, but limited influence on vegetation, the canopy, subcanopy, shrub, and herbaceous layers are often well-developed. Widespread species such as sweetgum and tulip poplar may be common along with upland species as well as characteristic alluvial species such as sycamore and river birch. These small stream forests may also be dominated by American beech, white oak, red oak, and green ash, with a fairly dense streamside shrub layer that includes ti-ti and mountain laurel, and an herb layer dominated by galax, wood anemone, northern green-and-gold, yellow yam, and sedges.

In floodplain terraces and levees along larger streams and rivers, the forest canopy is nearly complete (80-100% canopy closure) to somewhat open and dominated by tulip poplar, sweetgum with water oak, sycamore, river birch, loblolly pine, and cherrybark oak. The understory is dominated by ironwood, silverbell, and common pawpaw. Giant cane often forms dense thickets. Vines are frequently prominent. Aquatic and emergent communities of active and abandoned beaver ponds are imbedded within this ecological system.

Restoration of Ecological Systems During the Planning Period: As part of the plan revision process, the Forest Service developed a predictive model of the potential extent of the various ecological systems described above. Characteristics of the landscape, such as geologic formation, landform, slope position, and aspect influence site temperature, moisture and fertility, which interact to determine what groups of species (see ecological system descriptions above) are best adapted to which sites. Table 2.1 displays the approximate amount of each ecological system that currently exists (existing acres) versus the amount that could exist according to the model (desired acres).

Table 2-1 Long Term Desired Restoration

Ecological System	Existing Acres (2010)	Desired Acres
Xeric Oak Forest	19,624*	2,990
Dry Oak-Hickory Felsic Forest		20,800
Dry-mesic Oak-Hickory Forest		11,060
Southern Piedmont Mesic Forest	1,076	1,220
Southeastern Interior Longleaf Pine Woodland	2,300	7,560
Shortleaf Pine-Oak Woodland	<20	<100
Loblolly and shortleaf pine Successional Forest	20,200	0
Southern Piedmont Glades and Barrens	<100	<100
Southern Piedmont Mafic Hardpan Woodland	<50	<50
Southern Piedmont / Ridge and Valley Upland Depression Swamp	<40	<40
Piedmont Seepage Wetland	<200	<200
Streamside Forest	6,900	6,900

*Existing acres as recorded in FSVEG database do not distinguish among these three categories. All acres are approximate.

Fire as a Process and Tool

FM-1. There is increasing evidence of prescribed fire used to restore the structure, composition, and ecosystem processes in ecological systems. Forest ecosystems are well-adapted to fire occurrence.

FM-2. The composition, structure and density of vegetation reduces potential fire behavior, including the rate of spread, flame length, spotting potential, and the likelihood of a surface fire transitioning to crown fire.

FM-3. There is defensible space around communities and the risk of catastrophic wildfire is low.

FM-4. Lightning caused fires are allowed to play their natural ecological role as long as they do not pose unmitigated threats to life and property.

The fire return interval mentioned in the descriptions of ecological systems is an approximation of how frequently fire might have burned through the system in the past before the mid - 20th century emphasis on fire suppression. Prescribed fire and wildfire typically would burn in a mosaic pattern and would be generally low intensity. Flame heights of 1-2 feet in oak-hickory forests would be sufficient to kill seedlings and saplings of thin-barked species such as red maple, sweetgum, and tulip poplar which would otherwise compete with the more fire resistant oaks and hickories. Similarly, flame heights of 2-5 feet in longleaf pine and shortleaf pine forests would favor these more fire resistant pines while reducing midcanopy shrubs and hardwoods and providing more favorable conditions for sun-loving grasses and herbs. Table 2.2 summarizes the desired fire return interval for ecological systems addressed in this Plan.

Table 2-2. Desired Fire Return Interval for Ecological Systems of the Uwharrie National Forest

Ecological System	Average Fire Return Interval
Southern Interior Longleaf Pine Woodland	3-5 years
Xeric Oak Forest	7-20 years
Dry Oak-Hickory Forest	7-20 years
Dry-mesic Oak-Hickory Forest	7-20 years
Southern Piedmont Mesic Forest	12-20 years
Streamside Forest	12-20 years
Shortleaf and Loblolly On potential Longleaf sites On potential Oak-Hickory sites	 3-5 years 5-7 years
Shortleaf Pine-Oak Woodland (**rare**)	3-5 years
Southern Piedmont Glades and Barrens (**rare**)	5-7 years
Southern Piedmont Mafic Hardpan Woodland (**rare**)	3-5 years
Upland Depression Swamp (**rare**)	Ignitions originate outside these areas
Seepage Wetlands (**rare**)	Ignitions originate outside these areas

Wildlife-Related Goals/Desired Conditions

WLF-1. Habitat is present for the diversity of native animal species typical of the Piedmont ecoregion - vertebrates, invertebrates, game and non-game, and including reptiles and amphibians.

WLF-2. Wildlife fields and openings in the forest are predominantly filled with native and desired non-invasive non-native grasses, herbs, and shrubs of species that native wildlife use for food. Occasional hard mast producing trees occur in the fields as well. Fields and openings are dispersed across the forest and do not occur within 150 yards of developed recreation areas.

WLF-3. Some non-native, non-invasive plants such as grains are growing in a small portion of wildlife openings in order to provide the wildlife viewing and hunting opportunity experience desired by forest visitors.

WLF-4. Den trees, snags, and downed wood are evident in most stands, supporting diverse populations of wildlife that use these habitat components. However, the amount of dead wood is limited near private land developments to reduce the potential of a high severity wildland fire in the wildland urban interface.

WLF-5. Suitable habitat for red-cockaded woodpecker (federally listed as endangered) occurs on mature longleaf pine or pine woodland sites.

WLF-6. An abundance of hard and soft mast is available across the national forest. Mature oaks and hickories are abundant and well distributed on appropriate

sites across the Uwharrie NF, producing abundant crops of acorns and hickory nuts in most years. Regenerating hardwoods (such as oaks and hickories) are evident in tree canopy gaps in multi-age forests to provide for a continuous supply of hard mast. Native fruit producing shrubs and trees are evident in many areas.

WLF-7. Ephemeral pools, ponds, swamps, seeps, bogs, and other wetlands are frequent throughout the national forest and visited by many wild animals. Conditions are secure for animals such as amphibians that use these habitats for reproducing.

WLF-8. Breeding, wintering and migration, staging and stopover habitat for migratory birds is provided in ways that contribute to their long term conservation.

Soil, Water and Fisheries-Related Desired Conditions

SWF-1. Aquatic ecosystems are diverse, with properly functioning streams providing high quality habitat for all native aquatic species, including non-game species.

SWF-2. Fish are plentiful in streams and lakes. Water is clean and clear of trash and pollutants, and there is in-stream habitat for fish to hide, spawn, and find food.

SWF-3. Road crossings allow for passage of fish and other aquatic animals up and down stream corridors except when there is a need to prevent non-native invasive species from moving upstream.

SWF-4. Non-native aquatic species do not threaten national forest lakes, rivers, or streams.

SWF-5. Native fresh water mussel communities are diverse and represented by multiple age-classes, with signs of reproduction evident. Appropriate habitats support sustainable populations of native freshwater mussels, including those that are federally-listed, regionally-sensitive, or locally rare. Non-native mussel species are not negatively impacting native species.

SWF-6. Streamsides are dominated by native riparian vegetation, including trees capable of adding large woody debris for hydrologic stability and instream habitat. Aquatic habitat is diverse and relatively free of unnatural sediments. Pool habitats are frequent and provide cover for many species of fish. Vegetated streamside areas are effective in providing shading to the streams and filtering sediments.

SWF-7. Stream channels are connected to their floodplains so that high streamflow events can be processed through the ecosystem without creating gullies or eroding stream banks. Man-made dikes and deposition are absent, allowing the stream to flood out of its banks and onto the floodplain in a natural way.

SWF-8. Stream channels degraded by historic mining are exhibiting improved biological and hydrological conditions.

SWF-9. Bogs and seeps are maintained or increasing their size through natural hydrologic processes and fire regimes.

SWF-10. Soil productivity is sustained through nitrogen and carbon fixation, mineral release from parent material, decaying organic matter, and translocation of nutrients. Erosion and compaction are infrequent occurrences.

Theme 2 - Better Managing Cultural Resources

This theme encompasses the archeological sites, artifacts, traditional cultural properties, and historic sites found on the Uwharrie NF.

Cultural Resource-Related Goals/Desired Conditions

ARC-1. Cultural resources are protected from loss. Significant sites are stabilized, treated, managed and preserved for their historical research value.

ARC-2. All known cultural resource sites are evaluated for significance.

ARC-3. Visitors to the Uwharrie NF have opportunities to learn about the past, and how to protect cultural resources, through interpretive programs and information.

ARC-4. Archeological sites are available for scientific research.

ARC-5. A Heritage Program Plan for the Uwharrie NF is complete.

Theme 3 - Providing outstanding and environmentally friendly outdoor recreation opportunities, with excellent trails and facilities.

This theme encompasses both developed and dispersed recreation opportunities including trails of all kinds, facilities such as campgrounds, and water-based recreation.

Outdoor Recreation - Related Goals/Desired Conditions

REC -1. Outstanding recreation opportunities draw visitors to the Uwharrie NF, provide opportunities for visitors to experience natural forest settings while

enjoying physical activities with family and friends, and provide economic benefits to the local communities. Conflicts among users are rare.

REC -2. Expanded recreation opportunities are provided outside the Badin Lake area.

REC -3. The following approximate amount of acres are maintained in each of the following Recreation Opportunity Spectrum (ROS) classes, as shown on the Recreation and Scenery Settings Map.

Table 2-3. Recreation Opportunity Spectrum Description and Distribution

ROS Class*	Description	Acres
SPNM	Semi-primitive Non-motorized/ Very high scenic integrity	5,160
RN2S	Roaded natural/ Less accessible by open roads/ High scenic integrity	11,144
RN2	Roaded natural/ Less accessible by open roads/ Moderate scenic integrity	20,660
RN1S	Roaded natural/ More accessible by open roads/ High scenic integrity	7,280
RN1	Roaded natural/ More accessible by open roads/ Moderate scenic integrity	6,570

* See the Glossary for a more complete definition of each ROS class.

REC -4. For the Badin Lake Recreation Area: the recreation sites are well maintained; the information and fee boards are up-to-date and provide appropriate information to the public; user conflicts on trails, roads, and within the recreation area are minimized; recreation impacts to the natural resources and cultural resources are reduced through improved conservation education programs, signage, and interaction of Forest Service employees with the users of the national forest.

Trail-Related Goals/Desired Conditions

TRL-1. Exceptional trails are available for hikers, horseback riders, off-roaders, mountain bikers, hunters, and anglers. The trails are designed, constructed, and maintained so that a variety of levels of challenge is available and other forest resources such as soil and water are protected.

TRL-2. The trail system has trails of varied lengths, including loop trails and trails with multiple access points, and may connect with trails on other ownerships. Trail users are well-informed about the trails and about ways to minimize their impacts on the environment during their visits. Many trails have vistas – points along the trails that allow for long-range views.

TRL-3. Trails are safe and safe vehicle parking is nearby. Trails and trailheads are well marked and easy to find; trails that cross roads are well marked for safety at all intersections. There are few hazard trees. For added safety, horse use and OHV use occur on separate trails.

TRL-4. Recreation use is dispersed across the Uwharrie NF and there is good trail access for visitors to both northern and southern portions of the national forest.

TRL-5. The 50-mile Uwharrie National Recreation Trail is complete and marked for hikers. That portion on national forest system lands has high scenic integrity.

TRL-6. Mountain biking occurs only on roads and designated trails and areas in several parts of the forest. Mountain biking does not occur on roads signed as closed to bikes.

TRL-7. Horseback riding occurs only on a designated system of trails, roads, and areas. Riders are informed about how to ride safely in traffic. Horse trails are well designed and maintained to provide varied user experiences (easy to more difficult) while minimizing resource damage. Trails do not usually coincide with roads and crossings occur at designated locations. While trails avoid wet areas, access is available to horse watering areas. While on the horse trails, visitors seldom see evidence of litter, concentrated manure, or erosion and sediment transport into streams.

TRL-8. OHV use occurs only on a designated system. An OHV trail system exists that is well designed and maintained to provide varied user experiences (easy to more difficult) while minimizing resource damage. Trails are available for full-size OHVs (greater than 50 inches in width) as well as other types of off-highway vehicles. Designated OHV routes are clearly defined on maps and on the ground, and off-highway vehicles are operating only on designated routes during the established open season. Little sediment can be seen entering streams from the OHV system, and trails are free of litter.

TRL-9. Well-trained partners and volunteer groups are working to maintain or improve the trail systems.

Facility-Related Goals/Desired Conditions

FAC-1. Developed recreation areas such as campgrounds, restrooms, showers, and a shooting range are clean, safe, and in good repair. Campgrounds are available, convenient, and appropriately designed for a variety of forest visitors.

FAC-2. Parking areas and trailheads exist for users at convenient locations and are well-designed for their intended use, including parking for vehicles towing trailers to the OHV area and horse trails. Forest users are parking in a safe manner along roads: not blocking roads, and not impacting adjacent landowners.

FAC-3. Trash receptacles are located at high-use areas. Forest visitors are informed to pack out their own trash and as a result generally leave the forest cleaner than they found it.

FAC-4. Facilities in flood prone areas will have designated boundaries and signage to alert the public to potential danger during high storm events.

Water-Based-Recreation-Related Goals/Desired Conditions

WBR-1. Access to the water is available for water-oriented activities such as canoeing, kayaking, power boating, fishing, waterfowl hunting, and horse watering. These access points are located in areas that do not degrade the aquatic resources and provide safe, reliable access for users of all abilities where practical.

WBR-2. A water-based trail provides recreationists with floating opportunities on the Uwharrie River and may connect with trails on other ownerships.

WBR-3. Fish habitats are healthy and sustainable, promoting a positive angling experience.

WBR-4. The outstandingly remarkable scenic, historic, and cultural values of the Uwharrie River and the outstandingly remarkable fish and wildlife values of Barnes Creek are evident on those portions that traverse the Uwharrie National Forest.

Additional Important Goals/Desired Conditions

This category of goals/desired conditions includes resources and other aspects of national forest management in addition to the three major themes, or those that cross thematic boundaries.

Wilderness-Related Goals/Desired Conditions

WLD-1. The wilderness provides a primitive recreation opportunity, exhibits little evidence of modern human disturbance, and is remote from the sights and sounds of 21st-century civilization such as traffic from roads. Natural processes such as succession, decomposition, and natural regeneration and disturbance factors such as fire, wind, and water shape the native vegetation. Large areas of uninterrupted habitat provide a safe haven for animals. Wilderness streams can be used as a reference for comparing water quality to other parts of the forest. There is minimal evidence of non-native invasive species or their impacts to native vegetation.

WLD-2. Visitors to the area include nature enthusiasts, hikers, hunters, and researchers. No facilities are present other than directional signs. Motorized or mechanical vehicles, equipment, or devices are absent. Information signs are not seen within the wilderness boundary.

WLD-3. Lightning caused fires are allowed to play their natural ecological role as long as they occur within prescribed parameters and do not pose unmitigated threats to life and/or private property, particularly in the wildland urban interface. Prescribed fire helps replace the natural fires interrupted by human activity outside the wilderness boundaries.

Scenery-Related Goals/Desired Conditions

SCE-1. Scenery is natural appearing and generally consists of older, multi-storied, closed-canopy forests, or park like or semi-open forests, except in young regeneration areas, woodlands, prairie-like openings, glades, and wildlife openings.

SCE-2. Viewpoints along roads and trails reveal mid- and long-distance views of attractive environments.

SCE-3. The Uwharrie National Forest is free of litter and refuse.

SCE-4. The following approximate amount of acres are maintained in each of the displayed Scenic Integrity categories (refer to the Recreation and Scenery Settings map):

Table 2-4. Acreage in each Scenic Integrity category

Scenic Integrity category*	Acres
Very High	5,160
High	18,424
Moderate	27,230

*See Glossary for definitions of Scenic Integrity levels

[The very high scenic integrity acres are the Birkhead Mountains Wilderness. The high scenic integrity acres include, among other areas, all the Special Interest Areas (see Chapter 3), and the Uwharrie National Recreation Trail corridor.]

Visitor Information-Related Goals/Desired Conditions

VIN-1. Visitors have access to accurate maps and detailed information so they can have a safe, positive experience in the forest. Information on trails includes distances, difficulty, and trailhead locations.

VIN-2. Up-to-date information such as in brochures or visitor guides is widely distributed and available at other area attractions such as the zoo, and at area visitor/welcome centers.

VIN-3. Visitors have access to natural and cultural history information, including interpretive exhibits. Information on aquatic, terrestrial, cultural, and wilderness resources is available.

VIN-4. Visitors are informed about ways to lessen their impact on the environment, including the importance of staying on trails; minimizing impacts to soil, water, vegetation and wildlife; not littering in the forest or leaving trash at campsites, parking areas, or the shooting range.

Road-Related Goals/Desired Conditions

RDS-1. Roads open to public vehicles are safe for forest visitors in non-4-wheel-drive vehicles and for emergency vehicles: there are no gullies, washouts, or slides; there are adequate turnouts or passing areas and adequate sight distances; the road surface is relatively smooth. Some heavily traveled Forest roads are paved. Some roads may be open seasonally to provide recreation opportunities.

RDS-2. Many existing roads are not open to public motorized vehicles, to reduce human disturbance to wildlife and reduce maintenance costs. Roads **not** open to public motor vehicles are available for use by hikers. Mountain bikers and horseback riders use these only if they are a part of the relevant designated system. The road surface is free of gullies and is generally covered with native materials or native grasses and forbs. The road edges are intact and not broken by excessive traffic of forest visitors. During rain events, water is able to seep into the soil gradually without causing erosion.

RDS-3. There is little evidence of new road construction. Unauthorized roads are nonexistent.

RDS-4. A negligible amount of sediment from roads is reaching streams.

Lands Goals/Desired Conditions

LND-1. Uwharrie National Forest land base is sufficient to protect wilderness values; provide habitat, refuges and corridors for native wildlife; provide special areas to improve ecological integrity; provide views and vistas; and provide a variety of outdoor recreation opportunities.

LND-2. The land base is adequate to accommodate completion of the Uwharrie National Recreation Trail.

LND-3. The land base is adjusted to provide adequate access for water-based recreation, including access to the Uwharrie River.

LND-4. The land base is mostly contiguous to allow for better resource management; however isolated tracts with special resource values are also a part of the land base.

Special Uses Goals/Desired Conditions

SPU-1. Permanent structures associated with special uses are centrally located or concentrated on existing sites or designated corridors, minimizing the number of acres encumbered by special use authorizations.

Minerals and Energy Goal/Desired Condition

MIN-1. Minerals and energy developments meet legal mandates to facilitate production of mineral and energy resources on the national forest in a manner that minimizes adverse impacts to surface and groundwater resources, and that do not detract from meeting other desired conditions applicable to the area.

Human Health and Safety

HHS-1. Management activities, facilities, roads and trails are designed and managed in such a way that human health and safety is a primary consideration.

OBJECTIVES

Objectives are measurable, time specific accomplishments. They are pursued through forest management activities that take place in an effort to move the national forest to its desired condition, or to maintain that condition. Objectives are aspirations and are not commitments or final decisions approving projects of activities. Objective accomplishment is highly dependent on funding and other influencing factors such as national policy and natural disturbance events.

Objectives are organized by theme and resource area, followed by a description of management approaches to paint a more complete picture of how we perceive moving toward the Desired Conditions. Certain management actions that cannot be quantified in the form of Objectives are also included in the "management approaches." Likely management actions include but are not limited to those discussed as "management approaches."

[NOTE: For these Objectives, the planning period is defined as 15 years]

Theme 1: Restoring the Forest to a more natural ecological condition:

Vegetation and Wildlife Objectives

[Vegetation and wildlife objectives are combined since wildlife habitat depends in large part on the structure and composition of the vegetation.]

1. Over the planning period, the 2,300 acres identified as existing longleaf pine in 2010 are maintained as longleaf pine woodlands.

2. Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Begin restoration of site-appropriate vegetation each year on an average of 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites.

3. Over the planning period, 5 to13 subpopulations of Schweinitz's sunflower (listed as endangered since 1991) are restored to appropriate sites. Plants from at risk locations will be moved into the reintroduction areas.

4. Over the planning period, 15-30 prairie-like openings of ½ to 2 acres in size are created across longleaf pine and oak-hickory restoration areas that are within the Schweinitz's Sunflower Habitat Management Area.

5. In an effort to achieve a more all-age condition that is desired from both a species sustainability standpoint and for a more even-flow of hard mast production, create or enhance existing gaps in oak-hickory stands to encourage natural regeneration of oak and hickory species. Create or enhance an average of 10 acres of gaps per year.

6. Each year an average of 400 acres are thinned to maintain room for growth and to discourage insect and disease infestation.

7. Each year, on average a minimum of 100 acres are treated to eliminate non-native invasive plants.

8. Over the planning period, assess existing grass/forb openings to identify conflicts with developed recreation areas, poor soil productivity, or other factors and develop a plan for relocating them to more appropriate locations.

9. Each year the historic hedgerows, grain fields, fruit trees, etc. are restored or maintained at a minimum of one identified key wildlife area (Thornburg, Quick, Klaussner, and Colonel Crump's).

Vegetation/Wildlife Management Approaches

The main strategy for restoring the Uwharrie NF to a more natural condition involves reducing the amount of off-site and planted pines and either reintroducing or enhancing reproduction of better adapted or more self-sustainable species such as longleaf pine or oaks and hickories at appropriate locations.

Pure loblolly stands cannot be restored quickly to oak-hickory since oak or hickory seedlings may be absent. In some instances it may be necessary to grow shortleaf pine and oak together in the regenerated stand. Apparently, light conditions in shortleaf pine stands are well-suited to development of oak seedlings. Then in later thinnings and improvement cuts, oaks would be favored as leave trees. More specific information regarding the silviculture and timber sale programs is located in Appendix B.

The designation of the most intact and most rare terrestrial ecological systems as "botanical special areas" will promote the native biological diversity that is a value of the Uwharrie NF widely recognized during the collaborative planning process. These areas will also provide habitat for a number of sensitive species. Management actions that might support these areas include: removing non-native invasive species through the use of cutting, pulling, or herbicides; rerouting trails that are impacting rare species populations.

To facilitate identification of rare ecological systems, USDA Forest Service personnel will cooperate with state and other agency partners to offer periodic field training for appropriate district personnel. Part of this training will including visiting known locations of rare species or communities to verify conditions, as well as instruction on how to document and track new finds. We plan to document locations of newly found occurrences of rare ecological systems (Glades and Barrens, Mafic Hardpan Woodland, Depression Swamps, and Seepage Wetlands) using GPS or similar technology, and enter coordinates in a GIS.

Another strategy to provide for native diversity is to focus on restoring the endangered Schweinitz's sunflower. To facilitate this, portions of the national forest with the best potential for maintaining or restoring populations of this species are recognized as the Schweinitz's Sunflower Habitat Management Area (HMA). Restoration involves removing competing vegetation often through burning, and transplanting plants from other areas, especially plants at risk due to proximity to roads, railroads or trails. Activities that will benefit this endangered plant will also benefit a suite of other uncommon sun-loving plants.

Fire Management Objectives

1. Each year an average of 3,000 to 6,000 acres are prescribe burned to create open canopy conditions, reduce midcanopy, and move toward ecological conditions described in goal/desired condition VEG-8. Public and firefighter safety will be the first priority in fire management activities.

Fire Management Approaches

Creating more open conditions by reestablishing or maintaining a more appropriate fire return interval will help with the restoration and maintenance of certain rare plant communities as well as support habitat for Schweinitz's sunflower, and habitat for sensitive species. It will be important to emphasize opportunities for longleaf pine restoration and Schweinitz's sunflower restoration when prioritizing work, such as when deciding what part of the national forest to prescribe burn from year to year.

Prescribed fire is also used to reduce fuel loading and lessen the chances of catastrophic wildfire. Most fuels treatments will occur in the wildland-urban-interface. Burns in the pine forest types would also improve the fire regime condition class.

Soil, Water, and Fisheries Objectives

1. Over the planning period, 1,500 linear feet of aquatic habitat are restored on sites with North Carolina Index of Biotic Integrity (NCIBI) and North Carolina Ephemeroptera, Plecoptera, Tricoptera (NCEPT) ratings below "good." This work entails establishing cover such as by adding large wood or boulders for in-stream habitat, establishing stream-shading riparian vegetation, eliminating sediment sources, etc.

2. Over the planning period, 1,500 linear feet of unstable and/or poorly functioning stream channel are restored (in addition to the aquatic habitat restoration under Objective 1).

3. Over the planning period, native freshwater mussel populations are augmented in one to three appropriate aquatic systems. These reintroductions will include Federally-listed, regionally-sensitive, or locally rare species.

4. During the planning period approximately 10 road or trail crossings are reconstructed to improve water quality.

[Also see water-based recreation objectives under Theme 3.]

Soil, Water, and Fisheries Management Approaches

Strategies for moving toward the soil, water, and fisheries desired conditions include cooperating with other state and federal agencies and the academic and research communities to gather information and monitor conditions. We cooperate closely with the North Carolina Wildlife Resources Commission Inland Fish and Non-game Divisions and North Carolina Division of Water Quality in many inventory and monitoring activities. Inventory of a certain amount of stream occurs each year to help define the range of baseline conditions for aquatic habitat quality and quantity. The NCIBI and NCEPT ratings for the Yadkin River Basin – where most of the Uwharrie NF is located – are established periodically. Any national forest sites that rate below good are considered candidates for restoration activity to improve the aquatic habitat. This may entail establishing cover by adding large wood or boulders for in-stream fish habitat, establishing stream-shading riparian vegetation, eliminating sediment sources, etc.

In addition, management intends to work closely with the US Fish and Wildlife Service to facilitate the reintroduction of rare mussels into selected streams on the Uwharrie NF.

Controlling erosion from roads and trails is crucial in preventing sedimentation of streams. Restoring streams or streamsides that are in a degraded condition from past land use or intense recreational use is always a good opportunity to involve a wide community of knowledgeable partners and volunteers. This work entails reshaping stream banks to stable slopes; removing stream side berm material that disconnects streams from floodplains; constructing instream structures to stabilize the channel and improve aquatic habitat; planting riparian-type vegetation; and treating noxious weeds in riparian areas. Assessment of stream channel conditions has identified stream reaches that are in need of restoration along Big Creek and McClean's Creek. Excessive road- and trail-derived sediments are present in reaches of Moccasin Creek and Dutch John Creek and actions to reduce future inputs of sediment will occur. This may entail road and trail maintenance, reconstruction, rerouting, and/or closure.

Theme 2: Better Managing Cultural Resources

Cultural Resource Objectives

1. Each year, identified deferred maintenance needs are addressed on an average of five significant sites that are vulnerable to degradation.

2. A cultural resources interpretive trail is developed over the course of the planning period.

3. A Passport In Time project is hosted at least every 2 years.

4. Each year complete the evaluation of an average of five known but unevaluated cultural resource sites.

5. During the planning period, complete one thematic evaluation for nomination to the National Register of Historic Places such as gold mines, archaic rock quarries or Revolutionary War sites.

Cultural Resources Management Approaches

Management approaches will be performed in consultation with the NC State Historic Preservation Officer, Tribes, and other interested parties. Meeting the desired conditions for cultural resources depends on identifying significant sites, protecting these sites from damage, and planning for future research and interpretation opportunities. Among the most significant types of sites are archaic rock quarries and historic gold mines. Likely actions in the cultural resources program area involve conducting surveys to identify significant sites and follow-up actions to protect, stabilize, or salvage sites. Law enforcement is an important element of cultural resource protection, since such sites are subject to frequent vandalism and illegal collection of artifacts.

Sites will be identified through surveys that routinely occur prior to management activities to meet the requirements of the National Historic Preservation Act (36 CFR Part 800). In addition, a more in-depth overview survey would help give a forest-wide picture of the various categories of sites that need to be protected, researched and interpreted. This would also help identify needs and opportunities for research and protection, as well as opportunities for interpretive trails and other cultural education aids.

Theme 3: Providing outstanding and environmentally friendly outdoor recreation opportunities, with excellent trails and facilities.

Recreation Objectives

1. Each year an average of 10 combined miles of substandard hiking, bike, horse, or OVH trail are improved, with the emphasis being horse trails and OHV trails in the Badin Lake area.

2. During the planning period all intersections are signed where trails cross open Forest Service roads, to increase visitor safety. Signs are replaced as needed.

3. An average of one trailhead per year is in an improved condition. This may involve increasing visibility of trailhead for ease of locating; providing needed information at the trailhead; or establishing, maintaining or improving the parking area.

4. An average of five annual trail design and/or maintenance workdays occur with a trail partners group. Work may include fixing or maintaining erosion control and proper drainage, and removing litter.

5. A minimum of one mile of unauthorized trails are closed and rehbailitated per year, considering the following priority:
    i. Those impacting significant archeological sites;
    ii. Those impacting threatened, endangered, sensitive or locally rare species;
    iii. Those impacting streams.

6. Fishing opportunities are improved through location and construction of at least one new bank angler access area during the planning period.

7. During the planning period boating opportunities are improved at one existing boating access area and increased by adding one additional boating access area on the Uwharrie River.

8. During the planning period analysis and implementation will be completed for designated horse and mountain bike trail systems.

Recreation Management Approaches

The strategy for trails and dispersed recreation includes developing site-specific recreation plans (separate from the Revised Land Management Plan) as funding permits. We will work to bring all trails to a sustainable standard by redesigning and reconstructing the trail system as necessary to accommodate the designated type of use and to eliminate impacts to other resources. This work may include rehabilitating trails in place or relocating trails as necessary.

Our focus first will be on correcting long standing problems with the trail systems in the Badin Lake Recreation Area, to reduce impacts to water quality and cultural resources, and provide a better experience for users of the horse trails and OHV trails. One way to facilitate trail improvements is to apply for trail improvement grants on a regular basis. It will also be increasingly important to develop strong partnerships with trail users to help with maintenance of trails and to help share information about proper trail use with new users.

Another recreation priority is completing the Uwharrie National Recreation Trail as opportunities become available. Volunteers and cooperators are actively working to secure funds and identify land suitable for sale, exchange, or easements that would fill in the gaps between national forest system parcels.

The main strategy for developed recreation is to finish current construction projects and fix or maintain current facilities. Another strategy is to encourage more consistent use of existing facilities, including on weekdays. Some facilities are full on weekends, but remain sparsely used during the week. Additional facilities might be provided only after evaluating the financial sustainability, environmental sustainability (including capacity of use), and operational effectiveness of the potential facility, as well as the Forest Service's ability to adequately clean and maintain additional facilities.

Water-based recreation is one use that is increasingly popular, and the forest is limited in its ability to provide access to water due to the land ownership pattern. Working with local landowners, conservation organizations, and state agencies to provide improved public access to rivers and streams will be important. We want to provide universal bank angler access areas (accessible to persons with disabilities) at a variety of spots across the Uwharrie NF. Acquiring additional land next to rivers and avoiding disposal of such land will provide better access opportunities for water-based recreation.

The Uwharrie River and Barnes Creek are eligible for consideration for National Wild and Scenic River designation. A suitability study covering the length of these streams on public and private lands would need to be completed before any recommendation for designation or other type of management. Because of the low percentage of stream corridors on the Uwharrie NF, suitability studies on both rivers have been deferred indefinitely.

Additional Objectives

Allowable Sale Quantity

1. During the planning period the volume of timber allowed for sale in any ten year period is 11,647 thousand cubic feet.

Wilderness Objectives

1. During the planning period complete one condition assessment of the trails and dispersed campsites within the Birkhead Mountains Wilderness.

2. During the planning period develop a site-specific Wilderness Management Guide for the Birkhead Mountains Wilderness that incorporates a Limits of Acceptable Change (LAC) or similar approach to monitoring wilderness conditions.

3. During the planning period develop an emergency response plan for the wilderness area.

4. During the planning period develop a fire plan for the wilderness area.

5. During the planning period, increase opportunities for solitude and decrease evidence of human use.

Wilderness Management Approaches

Additional actions may occur if needed to maintain the remote, primitive wilderness experience currently available in Birkhead Mountain Wilderness.

The Birkhead Mountains Wilderness Education Plan will be incorporated in developing the wilderness education and interpretive programs. Also, supporting local governments

and non-profits in their efforts to provide appropriate adjacent land uses on private lands surrounding the Birkhead Mountains will be a focus area.

Visitor Information Objectives

1. At least one Uwharrie NF recreation opportunity guide for public use is produced within five years. Produce additional or updated information as needed thereafter.

2. At least one Uwharrie NF conservation education/natural history guide for public use is produced within five years. Produce additional or updated information as needed thereafter.

3. At least one Uwharrie NF cultural heritage education/preservation guide for public use is produced within five years. Produce additional or updated information as needed thereafter.

Visitor Information Management Approaches

Participants involved in the collaborative process to develop this Plan frequently expressed that if better information were available, the public would be more inclined to behave appropriately, follow regulations, and reduce their impacts to forest resources. Better natural and cultural resource information would also enhance their visit. The public's desire for information often greatly exceeds the Forest Service's capacity to produce it. Sometimes information is more readily available from other sources. However, a certain amount of basic information is within the capacity of the Forest Service to provide, and we intend to work with cooperators and volunteers interested in helping support and fund the task.

Roads Objectives

1. Grade surfaces, and clean culverts and ditches along at least 12 miles of open system roads as needed each year.

2. Over the planning period, all known unauthorized roads are closed, restored or obliterated unless some portion is determined needed for the transportation system.

Roads Management Approaches

The intent is to minimize new road construction and close unauthorized roads. Roads open to passenger vehicles will be maintained as funding allows. Additionally, some highly used Forest roads may be paved to reduce long term maintenance costs and reduce the level of dust in and around recreation areas. System roads that exhibit excessively degraded conditions would be fixed, beginning with areas that pose health and safety concerns. Road construction, reconstruction, and maintenance will provide adequate cross

drainage and filter distance to control sediment delivered to streams. Stream crossings will be designed to maintain or restore passage for aquatic organisms.

Additional Important Resource Management Approaches

Scenery Management Approaches

The resource strategy for scenery management is to manage the Uwharrie NF for either "High" or "Moderate" scenic integrity, except for Birkhead Mountains Wilderness, which will be managed for "Very High" scenic integrity. This could mean employing certain scenery enhancing techniques when management activities such as timber harvest or prescribed burning take place. Highly scenic areas along roads and trails will also have vistas allowing for mid- and long-distance views.

Lands Management Approaches

No quantifiable Objectives are specified since land acquisition priorities are determined apart from the Land Management Planning process. Lands program actions are likely to include maintaining land-lines, and actions associated with adjusting national forest ownership through purchases, exchanges, or other conveyances. The Land Adjustment Plan (a separate document) sets the priorities for acquisition and exchange. The resource priorities are to provide a corridor for the Uwharrie National Recreation Trail, provide for terrestrial wildlife corridors, and increase public access for recreation, especially river access opportunities.

Special Uses Management Approaches

No quantifiable Objectives are specified since proposals for special uses typically arise from external sources. Forest Service regulations require the agency to deny uses that can reasonably be accommodated on private land. Special Uses considered for permit must be of public benefit and can occur without creating irreversible impacts to resources. Special Uses on the forest typically fall into the following broad categories: (1) easements, such as for roads or utility corridors; (2) utility support, such as for electronic sites, convenience stations, and communication towers; (3) recreation outfitters and guides; (4) military exercises and special event activities, and (5) permits for scientific research.

Minerals Management Approaches

Commercial permits for minerals prospecting and minerals development are occasionally issued on the Uwharrie NF, though none were current as of 2010. Mineral leases and activities in recreational gold panning areas must comply with Forest Service regulations and Forest Plan direction.

Community Relations Management Approaches

No quantifiable Objectives are specified since community relations fall outside the typical realm of Plan decisions. Nonetheless, developing and maintaining good community relations are critical for successful planning and project activities. The participants in the collaborative planning process generated a list of concepts that are guiding principles for community relations for Uwharrie NF managers and staff:

1. We are good neighbors and positive members of the community. We are involved in community groups like land trusts, forest use groups, and community planning groups.

2. Projects and activities occur on all parts of the Forest including Randolph, Davidson, and Montgomery County.

3. We consult and inform neighbors of the Forest about Forest plans and programs. We coordinate projects with adjacent landowners whenever possible to promote efficient land stewardship and positive relationships.

4. We welcome visitors and widely distribute information on facilities and programs.

5. We support establishment of a Friends of Uwharrie National Forest group.

6. We support and encourage responsible service providers and outfitters in promoting the Forest, informing the public of its existence, and ensuring responsible usage.

Tribal Relations and Native American Interests Management Approaches

No quantifiable Objectives are specified since tribal relations and Native American interests fall outside the typical realm of Plan decisions. However, we want to be proactive in building relationships and reaching mutual understanding between the Forest Service and Tribal governments. We want to find opportunities for cooperation to the mutual benefit of Federal and Tribal governments. We want to identify and protect traditional cultural properties, and recognize tribal values when planning forest management activities. Guiding principles:

1. The Uwharrie NF is maintained in a condition that allows Native American tribes and individuals to retain traditional connections to the land and to foster both traditional and contemporary cultural uses of the Forest.

2. The Uwharrie NF has active agreements and protocols to facilitate consultation (for all resources) and government-to-government relationships.

FOREST-WIDE STANDARDS AND GUIDELINES

Standards and Guidelines provide information and guidance for project and activity decision making to help achieve Desired Conditions and Objectives. Standards contain the word "shall" while most guidelines contain the word "should." A few other sources of guidance are also referenced that are not considered plan direction but are useful for successfully implementing plan direction. These are included to highlight that other information may be important in meeting the Plan's desired conditions.

Vegetation/Wildlife

[Vegetation and wildlife guidelines are combined since effects to wildlife habitat depend in large part on how projects and activities affect the structure and composition of the vegetation.]

Standards

1. Roadside banks shall not be mowed before flowering and seed development where federally listed, sensitive, or locally rare plants occur.

2. When project activities may negatively impact species having less than five known occurrences on the Uwharrie NF, project documentation shall disclose how the species will be protected and the population will be maintained.

3. When considering restoration by regeneration timber harvest, the maximum size of an opening created by even-aged or two-aged treatments shall be 80 acres for loblolly pine and 40 acres for all other tree species. These acreage limits should not apply to areas treated as a result of natural catastrophic events such as fire, insect or disease attack, or windstorm.

4. When considering restoration by regeneration timber harvest, projects shall be considered through interdisciplinary review, assessing the potential environmental, biological, aesthetic, engineering, and economic impacts on the timber sale area, as well as the consistency of the timber sale with the multiple uses of the area. A harvesting system is not selected primarily because it will give the greatest dollar return or the greatest output of timber.

Guidelines

1. To benefit wildlife:
    - When restoring longleaf or shortleaf pine, an average of 10-25 square feet per acre basal area of hard mast producers (oaks and hickories) should be retained whenever it is present;
    - When restoring or thinning stands, standing live and dead den trees should be retained and clumped with other trees for protection;

- Growth of native soft mast producers should be maintained in all natural communities. Competition from other species should be limited when appropriate.

2. When restoring shortleaf pine, trees should be planted on a wide spacing (less than 350 trees per acre) to allow room for hardwoods to develop as dominant or co-dominant trees. As stands reach 12-15 years old, crown-touching release should be performed (a thinning activity) to favor the best trees and most desirable species as determined in project analysis.

3. When restoring sites following extensive damage to trees from wind, water, insects or disease, use the potential natural vegetation map as a guide to determine the desired species composition.

4. New ground disturbing activities should be located far enough away from rare ecological systems (Glades and Barrens, Mafic Hardpan Woodlands, Depression Swamps, and Seepage Wetlands) to avoid direct and indirect impacts from soil erosion and to protect bogs, swamps, and wetlands from alteration of natural hydrologic functioning.

5. When creating or managing grass/forb habitat, consider making it coincident with the prairie-like openings in the Schweinitz's Sunflower HMA whenever possible.

6. Gaps created for oak and hickory regeneration should average 1/2 - 2 acres in size and comprise 20-30% of a stand. Classify a regeneration area as an opening until the young trees have reached a height that is approximately 20% of the tallest adjacent trees.

7. When restoring woodland structure in existing longleaf pine stands, projects should be designed to leave a sparse hardwood midstory, and at least 45 pine stems greater than 60 years in age and greater than 14 inches in diameter wherever possible.

8. When considering restoration by regeneration timber harvest, openings should be shaped and blended to the extent practicable with the natural terrain.

9. When restoring plant communities by regeneration timber harvest, the following stocking levels should be achieved within 5 years after harvest:

Table 2-5. Minimum and Target Stocking Levels, five years post-harvest.

Forest Type Established	Min. Stocking Level	Target Level
Oak-Hickory, Other Hardwood	150 stems per acre	200-300 stems per acre
Shortleaf Pine/Oak Mix	250 stems per acre	400 (<200 pine) stems per acre
Shortleaf Pine	275 stems per acre	350-400 stems per acre
Longleaf Pine	300 stems per acre	400-500 stems per acre

10. When considering restoration by regeneration harvest, include stands which meet the following minimum ages at the time of timber sale award:

Table 2-6. Minimum Regeneration Age

Existing Forest Type	Minimum Regeneration Age
Shortleaf Pine & Shortleaf Pine/Oak	60 Years
Loblolly Pine and Loblolly Pine/Oak	60 Years
Hardwoods	80 Years

11. When selecting areas for thinning consider:
    - Opportunities to reduce stem density in predominantly pine stands where the stem density is high enough to present a risk of southern pine beetle infestation (basal area over 100 square feet per acre), or;
    - Opportunities to reduce the risk of catastrophic wildfire.

12. When selecting areas for treatment of non-native invasive plants consider the following priority:
    i. Threatened, endangered, sensitive and locally rare species habitat and Schweinitz's Sunflower HMAs;
    ii. Special Interest Areas;
    iii. Streamside Forests;
    iv. Other areas.

13. When using herbicides or pesticides follow the standards and guidelines developed for the USDA Forest Service in the risk assessments and label instructions for approved herbicides and pesticides.

Fire Management

Standards

1. When a prescribed fire is no longer achieving the intended resource management objectives and contingency or mitigation actions have failed, the fire will be declared a wildfire. Once declared a wildfire, it cannot be redesignated a prescribed fire.

2. Fire lines shall be constructed in a manner to minimize soil disturbance near streams.

3. Fire lines shall not be constructed along the length of stream channels.

4. Prescribed burns shall be planned so they do not consume all liter and duff and/or alter structure and color of mineral soil on more than 15 percent of the area.

5. Existing barriers, e.g., streams, lakes, wetlands, roads, and trails, should be used whenever possible to reduce the need for fire line construction and to minimize resource impacts.

6. When rehabilitating tractor fire lines, appropriate measures shall be taken to properly drain water and prevent erosion.

7. All prescribed burning shall comply with the state's smoke management plan.

8. All prescribed burns shall be done under the appropriate weather conditions to meet objectives and to reduce negative impacts to forest resources.

Guidelines

1. When prescribe burning, at least every third burn on a site should be a growing season burn. It is permissible to burn the same acreage in two sequential years and to apply only growing season fire to the same acreage for three or more sequential burning cycles.

2. When prescribe burning, the fire should be allowed to burn in a mosaic pattern resulting from differential influence of topography, fuel loading and moisture, and vegetation type.

3. When prescribe burning, regenerated oak-hickory stands with young trees should be avoided until the young trees are large enough to be resistant to fire damage, including scarring and girdling.

[Other Referenced Direction: When prescribed burning, Region 8 and state management guidelines as detailed in FSM 5140, the North Carolina Prescribed Burning Act 113-60.43, and the North Carolina Open Burning Rule 15A-NCAC 02D-1900 should be followed.]

Soil, Water, and Fisheries

Standards

1. Except for existing (as of 2010) loblolly and shortleaf plantations, the streamside forest is unsuitable for timber production (100 feet either side of perennial streams and alluvial forest).

2. Best management practices shall be used to avoid impacts to water quality, soil productivity, and stream channel structure.

3. When a ground disturbing project could potentially result in direct delivery of sediment to streams, erosion control measures shall be employed.

4. All bare soil shall be seeded and/or mulched at the time of stream crossing construction.

5. Aquatic species management activities shall not introduce or stock non-native aquatic organisms.

Guidelines

1. When thinning in pine plantations in the Streamside Forest, entries should only be every 35 to 40 years, to reduce disturbance.

2. Major soil disturbances that expose the soil surface or substantially alter soil properties such as temporary road, skid trails, landings, and rutting should not occupy more than 15 percent of forest vegetation management treatment areas except for watershed improvements, restoration of species, or to correct soil and water problems.

3. Vegetation cutting and use of mechanized ground disturbing equipment should stay more than 33 feet away from perennial streams unless such activity is needed for riparian wildlife habitat, stream channel stability, to restore riparian vegetation, or to provide access for recreation or stream crossings. Vegetation cutting and ground disturbing equipment should stay more than 50 feet away from perennial streams (with the exceptions listed above) if the following conditions apply: steep slopes adjacent to the stream; highly erodible soils; soil areas with little or minimal groundcover near the waterbody. Refer to North Carolina Division of Forest Resources *Forestry Best Management Practices Manual* for additional guidance.

4. Use of mechanized ground disturbing equipment should stay more than 33 feet away from intermittent streams. Refer to North Carolina Division of Forest Resources *Forestry Best Management Practices Manual* for additional guidance.

5. When trees are felled, generally, tree portions that fall within 33 feet of a perennial stream should remain in place unless their placement is disrupting channel stability, is a public safety hazard, or if removal would benefit the riparian condition.

6. New or re-routed roads or **motorized** trails should be located at least 100 feet from perennial streams and at least 50 feet from intermittent streams, except for designated stream crossings.

7. New or re-routed **non-motorized** trails should be located at least 33 feet from perennial and intermittent streams, except for designated stream crossings and horse watering sites.

8. Where roads or trails cross streams, crossings should be at right angles where possible.

9. The design of stream crossings should first try to simulate the natural stream bottom through use of a bottomless culvert, bridge or other spanning structure. If this isn't feasible, crossings should incorporate the appropriate outlet drops and culvert slopes.

10. Stream restoration designs should utilize the natural stream channel whenever possible.

11. Stream restoration activities should include provisions to maintain or enhance existing ephemeral pools in the associated streamside forest.

12. When selecting aquatic habitat for restoration the following criteria should be used:
    - The condition and vulnerability of the watershed where the site is located - fair or poor sites within otherwise good condition, high vulnerability watersheds should be given first priority.
    - Degree of improvement needed to achieve "good" condition - sites rated "fair" should be restored before sites rated "poor."

Cultural Resources

Guideline

1. When mitigating adverse impacts to cultural resources associated with authorized roads and trails, the least restrictive effective and affordable means should be used from among the following (listed in order from least restrictive to most restrictive):
    i. Road or trail maintenance to eliminate disturbance or erosion of site;
    ii. Access barriers(natural appearing)and stabilization of site;
    iii. Relocation of road or trail;
    iv. Closure of road or trail;
    v. Site excavation and salvage.

Trails (all guidelines refer to authorized, system trails unless noted otherwise)

Guidelines

1. When improving trails or mitigating adverse impacts from trails, consider improving user experience and user safety through reroutes or connectors to make loops.

2. Project designs to construct or improve trails should incorporate ideas and suggestions from trails users as much as practical.

3. New or relocated trails should avoid mine tailings, which have the potential to leach dangerous substances.

4. As trails are maintained, existing vistas should be maintained where appropriate to provide long-distance views and opportunities for new vistas should be considered.

5. When constructing or relocating trails, consider the following when selecting the location:
   - Avoiding damage to cultural resources;
   - Minimizing conflicts between different uses;
   - Minimizing damage to soil, watershed, vegetation, and other resources;
   - Operational feasibility (desired user experience, infrastructure needs, size of usable area, and financial sustainability).

[Other Referenced Direction: Designation of motorized trails should follow procedures outlined in CFR 212.55. Trail projects should follow procedures outlined in FSH 2309.18.]

Facilities

Guideline

1. Project designs to add or improve facilities should use suggestions and information from forest users and district employees as sources of design ideas.

Roads

Standard

1. New or relocated roads shall avoid mine tailings, which have the potential to leach dangerous substances.

Guidelines

1. When constructing or relocating roads, consider the following when selecting the location:
   - Avoiding impacts to the special features of the Special Interest Area;
   - Avoiding the spread of invasive species and;
   - Avoiding impacts to the hydrologic functions.

2. A 70 percent ground cover of permanent vegetation should be established by the end of the first growing season following the end of use of temporary roads, skid trails, and log landings.

3. When constructing or relocating roads look for opportunities for vistas and enhancing scenery.

Scenery

Guidelines

1. Management activities should meet Scenic Integrity Objectives within the respective areas identified on the Recreation and Scenery Settings map.

2. Generally, Very High and High Scenic Integrity Objectives should be met within one to two growing seasons; Moderate Scenic Integrity Objectives should be met in two to three growing seasons. The exceptions are where meeting a goal or desired condition involves restoration; for these long-term goals, Scenic Integrity Objectives may be met over a period of ten or more growing seasons.

[Other Referenced Direction: The Southern Region Scenery Treatment Guide should be referenced to determine suitable management activities on lands within each Scenic Integrity category.]

Wilderness

Standards

1. When suppressing fire:
   - Only allow exceptions to the restrictions on the use of motorized equipment and motorized and mechanical vehicles in cases of extreme emergency during wildfire suppression. Exceptions can be allowed by District Ranger, except tractor plow use which requires Regional Forester approval.
   - Use Minimum Impact Suppression Tactics which employ suppression methods and equipment that cause the least alteration of the wilderness landscape, least disturbance of the land surface, least disturbance to visitor solitude, least reduction of visibility during periods of visitor use, and least effects on air quality related values.
   - With the exception of firelines, only allow rehabilitation of a burned area if necessary to prevent an unacceptable loss of wilderness resources or to protect resources outside the wilderness. Perform necessary revegetation work with plant species native to the wilderness area.

2. After a fire plan for Birkhead Mountains Wilderness has been completed, prescribed fire may be allowed when needed to reduce a buildup of fuels to an acceptable level and to decrease the risks and consequences of wildland fire escaping from the wilderness.

3. Natural barriers such as trails or creeks/streams will be the preferred firebreak for management ignited prescribed fire. Small firebreaks built by hand may be necessary in some instances where natural barriers do not occur.

4. The management of lightning caused wildland fires is allowed when documented in a Wildfire Decision Support System.

5. When managing fires:
   - Hose lays, foam and wetting agents may be used to control fire.
   - Use minimal impact suppression techniques on all fires when possible.

Guidelines

1. Non-restrictive means of managing visitor use such as information and education should be attempted prior to instituting use restrictions.

2. Trail signage should be minimal and only be used for identifying a trail or trail intersections.

3. Management actions should not be designed to encourage more use of the wilderness, in order to maintain the opportunity for solitude. Avoid designating campsites unless needed for resource protection. Avoid increasing trail density.

4. Wilderness condition monitoring should incorporate relevant elements of the Chief of the Forest Service's 10-year Wilderness Stewardship Challenge.

Eligible Wild and Scenic Rivers

Standard

1. Management activities in the Eligible Wilde and Scenic River Corridor shall be designed to retain the identified outstandingly remarkable river values. These are wildlife and fish for Barnes Creek, and scenic, historical and cultural for the Uwharrie River.

Lands

Guidelines

1. Consider the following when setting priorities for land adjustment and acquisition:
   - improving recreation access especially to rivers and lakes;
   - filling ownership gaps along the Uwharrie National Recreation Trail;
   - providing for ecological connectivity with other conservation ownerships; and
   - improving management efficiency.

2. Land exchanges should be designed to improve the biological diversity of the Uwharrie NF.

Special Uses

Standard

1. Special use authorizations shall include terms and conditions to protect any existing federally listed species and suitable habitat present in the area, and direction to reduce impacts to sensitive or locally rare species.

Guideline

1. New special use authorizations should be compatible with the desired conditions for the area.

Minerals and Energy

Standards

1. Minerals and energy exploration and development authorizations shall be compatible with the desired conditions for the area.

2. Minerals and energy exploration and development authorizations in the Schweinitz's Sunflower HMA shall include terms and conditions to protect any existing federally listed species and suitable habitat present in the area, and direction to reduce impacts to sensitive or locally rare species.

Chapter 3 –Management Area Prescriptions

Management Areas (MAs) are areas in the national forest that are similar in some respect. They may have similar features or uses, or contain special attributes that must be taken into account when considering management activities. Certain forest plan direction may apply to some management areas and not to others. Some of the multiple-uses that are typically found on national forests may be appropriate in some management areas but not in others. An example of this is that motorized recreation is not appropriate in wilderness areas. In the language of national forest planning, wilderness areas are not "suitable" for motorized recreation.

Generally national forests are suitable for a variety of uses including various outdoor recreation activities, viewing scenery, sustainable timber harvest, fisheries and wildlife habitat, natural and cultural resource interpretation, and watershed purposes. An area is suitable for uses that are compatible with goals/desired conditions and objectives for that area. Areas suitable for a use may also have limitations on that use set by plan standards and guidelines or other law, regulation, or policy. Any proposed management activity would be evaluated prior to approval to determine if is appropriate for the area and if it complies with all plan direction.

Land within the Uwharrie NF may be assigned to more than one management area. For example, some Streamside Forest is also part of the Eligible Wild and Scenic River Corridor, and may also be within a Special Interest Management Area. In such cases, plan direction for all applicable management areas would apply to the area of overlap.

The Proposed Plan map, an attachment to this Plan, displays most Management Areas except for the Streamside Forest which is difficult to display at the scale of a planning map.

Management Areas (MAs) for the Uwharrie National Forest

General Forest: This is the largest MA and is located predominantly in the northwestern part of the Uwharrie NF. General forest contains common forest types in typical conditions and is suitable for typical multiple-uses. All the management direction in Chapter 2 applies to the General Forest unless it specifically refers to one or more of the other management areas. Most of the restoration of oak-hickory forests would occur in this MA.

Longleaf Pine Restoration Management Area: This is the part of the Uwharrie NF where longleaf pine restoration would be focused. It contains most of the existing longleaf as well as more areas having the characteristics of potential longleaf communities. It encompasses most of the southeastern part of the forest. Within this MA management actions would retain, restore, or enhance the longleaf pine community when the following conditions are encountered:

- Presence of existing remnant longleaf,
- Presence of Piedmont longleaf associated forbs and grasses such as little bluestem and Indiangrass,
- Dry ridges or south facing slopes.

Where these conditions are not met, general forest direction applies to management activities.

Special Interest Management Areas: These are areas with unique or rare botanical, zoological, geological, historical, scenic and/or recreational values. The Special Interest Management Areas and their desired conditions are described in more detail later in this chapter.

Wilderness: An area of land designated by Congress as part of the National Wilderness Preservation System. Birkhead Mountains Wilderness within the boundaries of the Uwharrie National Forest was established in 1984. The desired condition for wilderness is described in Chapter 2.

Potential Wilderness Additions: Four parcels adjacent to Birkhead Mountains Wilderness are appropriate for consideration as additions to the wilderness. These areas would be managed to maintain or enhance current wilderness attributes.

Eligible Wild and Scenic River Corridors: A zone one-quarter mile on either side of those portions of the Uwharrie River and Barnes Creek that are contained within the boundaries of the Uwharrie NF are managed to protect the "Outstandingly Remarkable Values" for which they were determined eligible for Wild and Scenic River designation (such designation – conferred by Congress – has not occurred).

The desired condition for Uwharrie River is an intact floodplain and river channel that is functioning hydrologically. Access points designated and developed in a sustainable way to allow for safe river access that maintains the health of the riparian area and stability of the streambanks, and protects the historic and cultural resources within the area. Additionally, trails along the Uwharrie River are designated and located in areas to reduce impacts to sensitive plant species, cultural resources, floodplain, and water quality.

The desired condition for Barnes Creek is an intact floodplain and stream channel that functions hydrologically. Water quality is maintained or improved to improve aquatic habitat. Habitat is available in Barnes Creek for populations of Carolina darter, Roanoke slabshell, Atlantic pigtoe, Savannah lilliput, Greensboro burrowing crayfish, Carolina elktoe, notched rainbow, Carolina creekshell, Carolina fatmucket, squawfoot, and Eastern creekshell. The visibility of timber, mineral, and development activity along Barnes Creek is minimal.

Schweinitz's Sunflower Habitat Management Areas: These are areas of the Uwharrie NF classified as having the ecological attributes that make them most conducive to restoring Schweinitz's sunflower. The desired condition within Schweinitz's sunflower's management areas is for open conditions within drier portions of the landscape, specifically in Xeric Oak

Forest, Dry Oak-Hickory Forest, Dry-Mesic Oak-Hickory Forest, and Piedmont Longleaf Woodlands. Desirable openings within these habitats will vary from ½ to 2 acres in size. The desirable fire frequency once these habitats are restored would be on a 3-5 year cycle. When this MA overlaps with other MAs, direction for each will be met.

Streamside Forest: Interspersed within other management areas, a 100-foot zone on both sides of all perennial streams, and all alluvial forest (an area of alluvial deposition such as a flood plain or delta). The desired conditions for streamside forests are described in Chapter 2.

Developed Recreation Sites: Interspersed within other management areas, outdoor recreation areas requiring significant capital investment in facilities to handle a concentration of visitors on a relatively small area. Examples are campgrounds and picnic areas. The desired conditions for developed recreation sites are described in Chapter 2.

The Badin Lake Recreation Area: This refers to the area on the Uwharrie NF that is adjacent to the east side of the Narrows Reservoir and Badin Lake, west of NC Highway 109 North, south of SR 1156 (Blaine Road) and north of the confluence of the Uwharrie River and the Yadkin-Pee Dee River. This area is special to the Piedmont Region of North Carolina for the recreational opportunities it offers to the people of North Carolina and the nation. This area provides camping in both developed campgrounds and in primitive, dispersed locations. The trail systems within this area provide for motorized recreation, and non-motorized recreation for horseback riding, mountain biking, and hiking. Additionally, there is a shooting range, developed boat launch and undeveloped boat access points on the Uwharrie River and on to Narrows Reservoir that also allows access to Badin Lake. There are also picnic areas that allow for family recreation on Badin Lake and offer fishing access. The Badin Lake Recreation Area is the main area that people come to when they want to recreate on the Uwharrie N F. This MA overlaps with other MAs. Direction for all relevant MAs will be met. (Refer to Proposed Forest Plan Map – Badin Lake Recreation Area.)

The desired condition of the Badin Lake Recreation Area is that the recreation sites are well maintained and the information and fee boards are up to date and provide appropriate information to the public. User conflicts on the trails, roads and within the recreation area, are minimized. Recreation impacts to the natural resources and cultural resources are reduced through improved conservation education programs, signage, and interaction of Forest Service employees with the users of the National Forest.

Table 3-1. Approximate Amount of Acres in Each Management Area

Classification	Acres (+/-)
General Forest	16,474
Longleaf Pine Restoration	15,094
Special Interest	5,396
Streamside Forest	6,800
Eligible Wild and Scenic River Corridors	2,443
Developed Recreation Sites	Not Determined
Wilderness	5,160
Potential Wilderness Additions	388
Schweinitz's Sunflower Habitat Management Areas	2,307
Badin Lake Recreation Area	10,926

In Table 3-1, total acres exceed Uwharrie NF land total due to many acres falling into more than one category (overlapping MAs).

Certain specific uses (timber harvest, timber production, prescribed fire, special uses, minerals and energy), are more compatible with some portions of the national forest than others. The discussion below identifies if one of these specific uses is likely compatible with the desired conditions for a particular land classification.

Timber Suitability

Forest Service direction provides that most national forest system lands are available for timber harvest with the with the exception of lands where timber harvest is not permitted because:

1. Statute, Executive order, or regulation generally prohibits timber harvest, or the land has been withdrawn from timber harvest by the Secretary of Agriculture or the Chief of the Forest Service;
2. Soil, slope, or other watershed conditions would be irreversibly damaged by timber harvest, or it would cause substantial and permanent impairment of the productivity of the land;
3. There is no reasonable assurance that such lands can be adequately restocked within five years after harvest;
4. Trees are unable to grow due to environmental conditions.

For the Uwharrie NF, 5,160 acres (Birkhead Mountain Wilderness) fall into the first category. No land falls into categories 2, 3, or 4. The remainder of the national forest is classified as tentatively appropriate for timber production.

Within the lands considered tentatively appropriate for timber production, a subset is then determined to be ***suitable for timber production***. Timber production is **compatible** with certain goals/desired conditions and objectives: restoration of longleaf pine, shortleaf pine, oak hickory, and mixed communities on sites currently dominated by loblolly pine or other off-site species; thinning for forest health; creation of gaps for oak/hickory regeneration if natural regeneration is not occurring, and others. USDA Forest Service direction provides that if timber production is compatible with or contributes to the achievements of desired conditions and objectives, and a flow of forest products can be reasonably predicted, those lands should be identified as "suitable for timber production," even if timber production is not the primary emphasis. Therefore, lands potentially needing restoration, regeneration, or forest health work, which amounts to most of the forest, are classified as suitable for timber production.

On the other hand, there are some lands where timber production is generally not compatible with achieving the desired conditions, such as where restoration of natural communities is not needed or other desired conditions predominate. These lands and are not included in the category "suitable for timber production." These are identified as:

(1) **Special Interest Areas** including botanical, archeological, historical, and scenic special areas, since restoration, regeneration and forest health are not driving the desired conditions. These are identified later in this chapter;

(2) **Developed Recreation Sites**, since recreation is driving the desired conditions;

(3) Most of the **Eligible Wild and Scenic River Corridors**, since the "outstandingly remarkable values" are driving the desired conditions; and

(4) Most of the **Streamside Forests** (100-foot zone on either side of perennial streams and alluvial forests), since maintenance of special features (see desired condition description in Chapter 2) is driving the desired conditions.

These other lands might have trees incidentally cut for reasons including health and safety or resource protection, or if needed to better meet the applicable desired conditions.

Portions of streamside forests and portions of the eligible wild and scenic river corridors contain young (<50 years old) pine plantations that will need forest health thinning and eventual restoration to meet the desired conditions. Otherwise, they risk becoming breeding grounds for insect and disease pests. Those portions that will need work, i.e. thinning and restoration activities, will also be classified as "suitable for timber production" **where they are more than 33 feet from the stream**. Table 3-2 displays the approximate acres in the different timber suitability categories.

Table 3-2. Suitability of Areas for Timber Summary

Category	Approximate Acres
Total National Forest Lands	50,814
Non-forest land/uninventoried land	733
Lands generally not available for timber harvest	5,160
Lands tentatively appropriate for timber production	44,921
Lands not appropriate for timber production	11,435
Lands suitable for timber production	33,486
Lands not suitable for timber production	17,328

Prescribed Fire Suitability

The General Forest, Longleaf Pine Restoration Areas, Streamside Forests, Special Interest Areas, Eligible Wild and Scenic River Corridors, and Schweinitz's Sunflower Habitat Management Area are suitable for prescribed fire. Suitability of prescribed fire use in Birkhead Mountains Wilderness will be determined through a separate planning process and is not prohibited by this plan. For all fire management activities, public and firefighter safety are always the first priority, and these concerns may override general determinations of suitability at specific locations and times.

Special Uses Suitability

Generally, national forests are suitable for a variety of special uses if the use cannot be accommodated on private land. Special uses include but are not limited to easements, rights-of-way, wells, events, military exercises, college classes, and commercial activities such as outfitter guide businesses or movie-making. Each request needs individual consideration and

evaluation. Special uses that require permanent structures or facilities (occupying) are suitable in the following locations:

- Outside wilderness,
- Outside Special Interest Areas; and,
- In Special Interest Areas if the use would support the relevant special attributes.

Utility Corridors and Communication Sites Suitability

Existing communication sites and major utility corridors are identified as suitable for such uses. A map of these sites and corridors is available in the planning record.

Minerals and Energy Suitability

The General Forest and Longleaf Pine Restoration MAs are suitable for exploration and mineral sales.

Outdoor Recreation Suitability

All MAs are suitable for outdoor recreation. Wilderness is unsuitable for motorized recreation and developed recreation. Off-highway vehicle use is limited to the designated road, trail system. The plan has an objective to limit horses and mountain bikes to a designated system. There are standards and guidelines that would apply to the location of trails, particularly near water, but no MA is unsuitable for these uses.

Table 3-3. Summary Table of Management Area Suitability

MA	Timber Production	Prescribed Burning	Special Uses	Minerals and Energy	Outdoor Recreation
General Forest	Yes	Yes	Yes	Yes	Yes
Longleaf Restoration	Yes	Yes	Yes	Yes	Yes
Special Interest Areas	No	Yes	Non-occupying	No	Yes
Streamside Forest	Some	Yes	Yes	Yes	Yes
Eligible Wild and Scenic River Corridors	Some	Yes	Yes	Yes	Yes
Developed Recreation Sites	No	No	Yes	No	Yes
Wilderness	No	Yes**	Non-occupying	No	Yes, non-motorized
Potential Wilderness Additions	No	Yes	Non-occupying	No	Yes, non-motorized
Schweinitz's Sunflower Habitat Management Areas	No	Yes	Yes	No	Yes
Badin Lake Recreation Area	Yes*	Yes*	Yes*	Yes*	Yes

* With special consideration of the recreation opportunities
** Once a Fire Management Plan has been completed for Birkhead Mountains Wilderness
When a "Yes" is indicated, all goals/desired conditions, objectives, and standards and guidelines must still be met for the activity. For example a recreation use in a Special Interest Area should not negatively impact the special features of the area.

Special Interest Management Areas

Special Interest Management Areas (SIAs) on the Uwharrie NF include areas with unique or rare botanical, zoological, geological, historical, scenic and/or recreational values. Nominations for SIAs came from the public collaborative process as well as State agency partners. Nominated areas were then evaluated for their unique or rare characteristics. Many of these areas exhibit more than one special attribute, such as geological AND botanical, or botanical AND scenic AND historical, thus reinforcing their identification as a special area. Table 3-4 displays a list of SIAs, their sizes, and their special attributes. For all SIAs the desired condition for scenic integrity is "High." Following the table are descriptions of the desired conditions specific to each area.

Table 3-4. Special Interest Management Areas of the Uwharrie NF

#	Site Name	Special Attributes	Acres
1	Abner Bog	Botanical/Historical	10
2	Badin Upland Depression Swamps and Xeric Woodland	Botanical/Scenic/Historic	129
3	Barnes Creek Bluffs	Botanical/Scenic/Zoological	58
4	Birkhead Upland Forest Natural Area*	Botanical	827
5	Cheek Creek Ridge	Botanical/Geological	23
6	Clarks Grove Longleaf Pine Forest	Botanical/Scenic	140
7	Cotton Place	Historical	76
8	Daniels/Shingle Trap Mountain	Botanical/Recreational/Historical	751
9	Dark Mountain/Jumping Off Rock	Botanical/Scenic/Zoological	233
10	Dutch John Creek	Botanical	134
11	Falls Dam Slope	Botanical/Scenic	245
12	Falls Mountain	Historical	84
13	Goldmine Branch Longleaf Pine Slope	Botanical/Scenic	54
14	Headwaters	Historical	123
15	Horse Trough	Historical	156
16	Little Island Creek Xeric Slope	Botanical/Geological/Scenic	32
17	Nifty Rocks	Scenic/Geological/Historical	64
18	Pleasant Grove Bog and Pine Savanna	Botanical/Scenic/Historical	44
19	Poison Fork Slopes	Botanical/Zoological/Scenic	242
20	Polly Branch Slopes	Botanical	116
21	Rocky Creek Longleaf Pine Forest and Bogs	Botanical/Scenic/Historical	94
34	Roberdo Bog	Botanical/Historical	5
22	Russell Mine	Historical	263
23	Spencer Creek Hillside Seepage Bog	Botanical/Scenic/Historical	52
24	Talbert	Historical	65
25	Thornburg	Historical	168

#	Site Name	Special Attributes	Acres
26	Upper Densons Creek and Abner Mountain	Botanical/Zoological	247
27	Uwharrie Mafic Rock Area	Botanical	92
28	Uwharrie River Boundary Bluff	Botanical/Scenic	28
29	Uwharrie River Slopes	Botanical	49
30	Walker Mountain/Woodrun Natural Area	Botanical	362
32/33	West Branch Eldorado Forest	Botanical	428
31	West Branch Slopes	Botanical	2
	TOTAL		5,396*

*Includes 827 acres inside Birkhead Mountains Wilderness

The following descriptions of desired conditions include ecological community types to be maintained for those special interest areas that are biologically significant. Desired conditions for historical areas may be intentionally vague to protect the integrity of the specific cultural resources at the site.

Abner Bog: Botanical/Historical

The Hillside Seepage Bog natural community is healthy and provides the necessary habitat conditions to support the population of purple pitcher plants. The bog is intact hydrologically and available for paleoclimatological studies.

Badin Upland Depression Swamps and Xeric Woodland: Botanical/Scenic/Historical

The existing Upland Depression Swamp Forest and distinctive Basic Rocky Variant of the Xeric Hardpan Forest type are intact.

Barnes Creek Bluffs: Botanical/Scenic/Zoological

The unique variant of Piedmont/Low Mountain Alluvial Forest with its combinations of montane and coastal species, the glade-like rock outcrop variant of Piedmont Mafic Cliff and the Mesic Mixed Hardwood Forest are intact and properly functioning hydrologically.

Habitat is available for populations of three rare plant species: Piedmont indigo-bush, large witch-alder, and southern anemone.

Roadsides provide habitat for mottled dusky wing.

Birkhead Upland Forest Natural Area: Botanical/Zoological

Existing examples of Piedmont Monadnock Forest, Dry-Oak Hickory Forest, Dry-Mesic Oak-Hickory Forest, and Mesic Mixed Hardwood Forest are intact and functioning properly hydrologically.

Drier upland habitat is available for Piedmont Indigo-Bush. Aquatic habitat is available in North Prong Hannahs Creek for Carolina Creekshell and Eastern Creekshell.

Cheek Creek Ridge: Botanical/Geological

Habitat is available for populations of glade wild quinine and thin-pod white wild indigo.

The basic Rocky variant of Xeric Hardpan Forest is intact.

The existing examples of Basic Oak–Hickory Forest with transitions to small areas of acidic Dry Oak–Hickory Forest on triassic sandstone are intact.

Clarks Grove Longleaf Pine Forest: Botanical/Scenic

The Piedmont Longleaf Pine Forest is maintaining its woodland structure, allowing the endangered Schweinitz's sunflower to thrive in several areas.

Cotton Place: Historical

The cultural resources of the old home site are preserved.

Daniels/Shingle Trap Mountain: Botanical/Recreational/Historical

The Piedmont Monadnock Forest, including the unusual pine areas, dense heath areas, and unusually xeric areas are intact. The Piedmont Acidic Cliff and Piedmont/Coastal Plain Heath Bluff communities are good examples of these uncommon types.

The open communities on upper slopes, tentatively classified as Low Elevation Rocky Summit, are intact.

The examples of Dry Oak–Hickory Forest, Piedmont/Low Mountain Alluvial Forest, and the Low Elevation Seep community are intact and properly functioning hydrologically.

Habitat is available for populations of Carolina thistle and Piedmont indigo-bush.

The recreation experience for trail users is maintained or improved.

The cultural resources are maintained for future study and evaluation.

Dark Mountain/Jumping-Off Rock: Botanical/Scenic/Zoological

Habitat is available for populations of Piedmont indigo-bush and large witch-alder.

The Dry Oak-Hickory Forest, Piedmont Monadnock Forest, and Dry-Mesic Oak–Hickory Forest are intact.

The Low Elevation Seep community in the southwestern part of the site is intact and properly functioning hydrologically.

The small open-canopy grassy glade community and the variant of Piedmont/Coastal Plain Heath Bluff are intact.

Dutch John Creek Area: Botanical

The Piedmont Monadnock Forest, Dry-Mesic Oak–Hickory Forest, and Mesic Mixed Hardwood Forest communities are intact.

Habitat is available for the population of Carolina thistle.

Falls Dam Slope: Botanical/Scenic

The existing two different subtypes of Basic Piedmont Bluff Glade are intact.

The existing Basic Oak–Hickory Forest, Piedmont Monadnock Forest, and Dry Oak–Hickory Forest communities are intact.

Habitat is available for populations of federally endangered Schweinitz's sunflower, Piedmont indigo-bush, and Carolina thistle.

Falls Mountain: Historical

The cultural resources are protected and available for research.

Goldmine Branch Longleaf Pine Slope: Botanical/Scenic

The Piedmont Longleaf Pine Forest community is intact. This example is unique in that it is on a steep rocky slope, and it has characteristics that may represent a distinct variant or subtype.

Habitat is available for the population of the Piedmont indigo-bush.

Headwaters: Historical

The cultural resources are protected and available for research.

Horse Trough: Historical

The cultural resources are protected and available for research.

Little Island Creek Xeric Slope: Botanical/Geological/Scenic

The distinctive occurrence of Piedmont/Coastal Plain Acidic Cliff and the small Piedmont Monadnock Forest are intact.

Habitat is available for the population of Piedmont indigo-bush.

The unusual geomorphic, soil, and scenic features in the near complete rock cover on the south slope are intact.

Nifty Rocks: Scenic/Geological/Historical

The very unusual cluster of huge (house-sized) boulders, which cover much of the ground, are intact. The natural hydrology of the area is properly functioning.

Impacts from the existing trails are minimal, though the public's ability to enjoy the site is maintained.

There is little evidence of non-native invasive Japanese stilt grass.

Pleasant Grove Bog and Pine Savanna: Botanical/Zoological/Scenic/Historical

The Piedmont Longleaf Pine Forest communities, both wet and dry types, are intact.

The Piedmont Boggy Streamhead community is intact and properly functioning hydrologically. The bog is intact and available for paleoclimatological studies.

Habitat is available for the existing population of thin-pod white wild indigo.

The Upland Pool community is intact and properly functioning hydrologically, to support a breeding population of the mole salamander.

Poison Fork Slopes: Botanical/Zoological/Scenic

Habitat is available for a large population of southern anemone.

The Piedmont Mafic Cliff community and Basic Piedmont Glades are intact.

The Low Elevation Seep, Mesic Mixed Hardwood Forest, and Piedmont Alluvial Forest are intact and properly functioning hydrologically.

Habitat is available in Poison Fork for populations of Carolina darter, Roanoke slabshell, Atlantic pigtoe, Savannah lilliput, Greensboro burrowing crayfish, Carolina elktoe, notched rainbow, Carolina creekshell, Carolina fatmucket, squawfoot, and Eastern creekshell.

Polly Branch Slopes: Botanical

The mature Dry Oak-Hickory Forest, Dry-Mesic Oak-Hickory Forest, Mesic Mixed Hardwood Forest, and Piedmont/Low Mountain Alluvial Forest communities are intact.

Rocky Creek Longleaf Pine Forest: Botanical/Scenic

The Piedmont Longleaf Pine Forest is maintaining its woodland structure.

Roberdo Bog: Botanical/Historical

The hydrological functioning is maintained allowing the permanence of open water and emergent vegetation within the rare Upland Pool community. The mole salamander population thrives and continues to breed within the Upland Pool.

Russell Mine: Historical

The cultural resources are protected and available for interpretation.

Spencer Creek Hillside Seepage Bog: Botanical/Scenic/Historical

The Hillside Seepage Bog community and the rare Piedmont Boggy Streamhead community are intact, properly functioning hydrologically, and available for paleoclimatological research.

Habitat is available for the population of large witch-alder.

Talbert: Historical

The cultural resources are protected and available for research.

Thornburg: Historical

The historic attributes as a listed National Register of Historic Places are protected.

The historic home and farm are available for interpretation.

Upper Densons Creek and Abner Mountain: Botanical/Zoological

The Piedmont Monadnock Forest, Dry Oak-Hickory Forest, and Dry-Mesic Oak-Hickory Forest are intact.

The Piedmont Alluvial Forest and Low Elevation Seep are intact and properly functioning hydrologically.

Habitat is available in Upper Denson's Creek for populations of Savannah lilliput, Carolina elktoe, yellow lampmussel, Carolina fatmucket, and triangle floater.

Uwharrie Mafic Rock Area: Botanical

The existing mature Basic Oak--Hickory Forest natural community type, including extensive representation of both the dry-mesic and dry types is intact.

The existing small examples of rare Upland Depression Swamp Forest and Xeric Hardpan Forest communities are intact and properly functioning hydrologically.

Uwharrie River Boundary Bluff: Botanical/Scenic

The existing mature Basic Mesic Forest is intact and properly functioning hydrologically. Habitat is available for the existing population of dissected toothwort.

Uwharrie River Slopes: Botanical

The Basic Mesic Forest, Dry-mesic Oak-Hickory Forest, Rocky Bar and Shore, and Piedmont/Mountain Levee Forest are intact. The Basic Cliff community is intact and allows an uncommon opportunity to observe such species as sedum, chinquapin oak, and mosses which are limited to, or reach best development on, high pH soils.

Habitat is available in the Uwharrie River for populations of Carolina darter, Roanoke slabshell, Atlantic pigtoe, Savannah lilliput, Greensboro burrowing crayfish, Carolina elktoe, notched rainbow, Carolina creekshell, Carolina fatmucket, squawfoot, and Eastern creekshell.

Walker Mountain/Wood Run Natural Area: Botanical

The existing diversity of small patch community types: an acidic glade; an Upland Depression Swamp Forest; a collection of Low Elevation Seep communities, including a unique example in a boulderfield, are intact and properly functioning hydrologically. The dry ridgetop shortleaf pine forest is intact.

The existing exemplary examples of Dry Oak-Hickory Forest, Piedmont Monadnock Forest, Dry-Mesic Oak-Hickory Forest, Basic Oak-Hickory Forest are intact.

The Mesic Mixed Hardwood Forest and Piedmont Alluvial Forest are intact and properly functioning hydrologically. Habitat is available for the population of Piedmont indigo bush.

West Branch Eldorado Forests: Botanical

The existing unusual diversity of natural communities is intact: Mesic Mixed Hardwood Forest, Dry-Mesic Oak–Hickory Forest, Dry Oak–Hickory Forest, Piedmont Monadnock Forest, and Basic Oak–Hickory Forest.

The small existing Upland Depression Swamp Forest, Xeric Hardpan Forest, and Low Elevation Seep are intact and properly functioning hydrologically.

West Branch Slopes: Botanical

The Mesic Mixed Hardwood Forest is intact and properly functioning hydrologically.

Habitat is available for the Ravine Sedge.

Chapter 4 – Monitoring and Evaluation Requirements

Monitoring and evaluation is used to assess the degree to which on-the-ground management is maintaining or making progress toward the goals/desired conditions and objectives in the Plan. This monitoring program was developed with public participation and focuses on key plan components where management projects and activities are likely to cause a change over time. Consideration in the selection of items to be monitored included:

1. Goals/Desired Conditions and Objectives viewed as most important, as determined by the collaborative process participants.
2. The monitoring questions and associated performance measures will provide useful information for the effectiveness of implementing the Plan.
3. The monitoring methodology currently available for a particular item is practical and affordable.

Monitoring may address key desired conditions directly or indirectly by focusing on objectives or guidelines. As part of the collaborative process, the following Goals/Desired Conditions were identified as key conditions to be monitored:

VEG-2. Plant communities that were more common in the past occur on appropriate sites across the forest. Examples include longleaf pine woodlands, shortleaf pine woodlands, and oak-hickory forests.

VEG-3. Non-native invasive species are at low levels that do not interfere with native plant reproduction and distribution. New outbreaks are not spreading. Equestrians understand the need to use weed-free hay and straw.

VEG-4. Schweinitz's sunflowers (federally listed as endangered since 1991) that historically occurred across the Piedmont of North and South Carolina are restored on appropriate sites across the forest (longleaf pine woodlands, dry oak-hickory forests, mafic hardpan woodlands, and xeric forests). Other rare plant species are sustaining or increasing in number of occurrences or the extent of the occurrences.

VEG-5. Biological diversity is evident across the forest, and is further enhanced by a system of botanical special interest areas. All plant communities found on the Uwharrie NF are represented in this system, including rare plant communities and the species they support. These botanical special interest areas are intact and fully functioning; without evidence of unnatural erosion or non-native invasive species, and with intact hydrologic systems.

VEG -8. The composition, structure, and processes of ecological systems are improving.

FM-1. There is increasing evidence of prescribed fire used to restore the structure, composition and ecosystem processes in ecological systems. Forest ecosystems are well-adapted to fire occurrence.

SWF -6. Streamsides are dominated by native riparian vegetation, including trees capable of adding large woody debris for hydrologic stability and instream fish habitat. Aquatic habitat is diverse and relatively free of unnatural sediments. Pool habitats are frequent and provide cover for many species of fish. Vegetated streamside areas are effective in providing shading to the streams and filtering sediments.

ARC-1. Cultural resources are protected from loss. Significant sites are stabilized, treated, managed and preserved for their historical research value.

TRL-1. Exceptional trails are available for hikers, horseback riders, off-roaders, mountain bikers, hunters, and anglers. The trails are designed, constructed, and maintained so that a variety of levels of challenge is available and other forest resources such as soil and water are protected.

TRL-5. The 50-mile Uwharrie National Recreation Trail is complete and marked for hikers. That portion on national forest system lands has high scenic integrity.

In addition to these key Goals/Desired Conditions, additional monitoring may occur as a part of the USDA Forest Service upward reporting structure, and that may be appropriate for monitoring additional goals and objectives.

The table that follows displays the monitoring questions and performance measures that will be used to evaluate movement toward key Goals/Desired Conditions. In some cases the monitoring question and performance measures directly address the Goal/Desired Condition. In other cases they address one or more Objectives associated with the Goal/Desired Condition.

Table 4-1. Monitoring Program

Plan Direction	Monitoring Questions	Performance Measure	Frequency of Measurement/Evaluation	Precision/Reliability
VEG – 2 Plant communities that were more common in the past occur on appropriate sites across the forest. Examples include longleaf pine woodlands, shortleaf pine woodlands, and oak-hickory forests.	What are the trends for Management Indicator Species?	Trends for Management Indicator Species (MIS) and/or habitat. [MIS are identified at the end of this chapter]	5 Years	Moderate
Objective: Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Site appropriate vegetation is established each year on an average 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites.	What are the trends in restoring longleaf pine forests and oak-hickory forests?	Acres of longleaf pine restoration. Acres of oak-hickory restoration.	5 Years	High
VEG – 3 Non-native invasive species (NNIS) are at low levels that do not interfere with native plant reproduction and distribution. New outbreaks are not spreading. Equestrians understand the need to use weed-free hay and straw.	What are the trends in NNIS plants?	Trends for NNIS plants at selected sites.	5 Years	Moderate
Objective: Each year, on average a minimum of 100 acres are treated to eliminate non-native invasive plants.	What are the trends in NNIS plants?	Acres of treatment of NNIS plants by location.	5 Years	High

Plan Direction	Monitoring Questions	Performance Measure	Frequency of Measurement/Evaluation	Precision/Reliability
VEG – 4 Schweinitz's sunflowers (federally listed as endangered since 1991) that historically occurred across the Piedmont of North and South Carolina are restored on appropriate sites across the forest (longleaf pine woodlands, dry oak-hickory forests, mafic hardpan woodlands, and xeric forests). Other rare plant species are sustaining or increasing in number of occurrences or the extent of the occurrences.	[See question below.]	[See performance measure below.]	5 Years	High
<u>Objective:</u> Over the planning period, 5 to13 subpopulations of Schweinitz's sunflower (listed as endangered since 1991) are restored to appropriate sites. Other rare species are sustaining or increasing in number of occurrences or the extent of occurrences.	What are the trends in Schweinitz's sunflower across the Forest? What are the trends in the condition of element occurrences* on the Forest? (*element occurrence or EO may be a rare community or a rare species population)	Amount and kinds of restoration activities performed. Documented condition and extent of occurrences.	5 Years	High Moderate
VEG – 5 Biological diversity is evident across the forest, and is further enhanced by a system of botanical special interest areas (SIAs). All plant communities found on the Uwharrie NF are represented in this system, including rare plant communities and the species they	Are botanical special interest areas fully functioning?	Documented condition and extent of element occurrences in SIAs. Record of NNIS	5 Years	Moderate High

Plan Direction	Monitoring Questions	Performance Measure	Frequency of Measurement/Evaluation	Precision/Reliability
support. These botanical special interest areas are intact and fully functioning; without evidence of unnatural erosion or non-native invasive species, and with intact hydrologic systems.		treatment in botanical SIAs. Record of prescribed fire applied appropriately to botanical SIAs.		Moderate
VEG – 8 The composition, structure and processes of ecological systems are improving.	What are the trends in ecological system conditions? What are the trends for Management Indicator Species?	• Restoration Actions • Acres of prescribed burning • Trends of Management Indicator Species and/or habitat.	5 Years	High High Moderate
FM - 1 There is increasing evidence of prescribed fire used to restore the structure, composition and ecosystem processes in ecological systems. Forest ecosystems are well adapted to fire occurrence.	[See question below.]	[See performance measure below.]	5 Years	High
Objective: Each year an average of 3,000 to 6,000 acres are prescribe burned to create open canopy conditions, reduce midcanopy, and move toward ecological conditions described in	What are the trends in prescribed fire?	Amount, timing, and location of prescribed fire.	5 Years	High

Plan Direction	Monitoring Questions	Performance Measure	Frequency of Measurement/Evaluation	Precision/Reliability
desired conditions VEG-8. Public and firefighter safety will be the first priority in fire management activities.				
SWF – 6 Streamsides are dominated by native riparian vegetation, including trees capable of adding large woody debris for hydrologic stability and instream fish habitat. Aquatic habitats are diverse and relatively free of unnatural sediments. Pool habitats are frequent and provide cover for many species of fish. Vegetated streamside areas are effective in providing shading to the streams and filtering sediments.	What are the trends in conditions for hydrologic stability, instream habitat, and streamside vegetation? What are the trends in instream and streamside habitat conditions for selected stream segments?	Habitat suitability rating. North Carolina Index of Biotic Integrity (NCIBI) and North Carolina Ephemeroptera, Plecoptera, Tricoptera (NCEPT) rating.	5 Years	Moderate Moderate
ARC – 1 Cultural resources are protected from loss. Significant sites are stabilized, treated, managed and preserved for their historical research value.	[See question below.]	[See performance measure below.]	5 Years	High
<u>Objective:</u> Each year, identified deferred maintenance needs are addressed on an average of five significant sites that are vulnerable to degradation.	What are the trends in protection, and/or stabilization and preservation of sites?	Number of High Priority Assets receiving maintenance.	5 Years	High
TRL – 2 Exceptional trails are available for hikers, horseback riders, off-roaders, mountain bikers,	[See question below.]	[See performance measure below.]	5 Years	Moderate

Plan Direction	Monitoring Questions	Performance Measure	Frequency of Measurement/Evaluation	Precision/Reliability
hunters, and anglers. The trails are designed, constructed, and maintained so that a variety of levels of challenge is available and other forest resources such as soil and water are protected.				
Objective: Each year an average of 10 combined miles of substandard hiking, bike, horse or OHV trail are improved, with the emphasis being horse trails and OVH trails in the Badin Lake area.	What are the trends in trail conditions?	Miles of trails maintained to regional standards. Change in the amount of trail maintenance backlog.	5 Years	Moderate
TRL – 5 The 50-mile Uwharrie National Recreation Trail is complete and marked for hikers. That portion on national forest system lands has high scenic integrity.	What is the percentage of completion for the Uwharrie National Recreation Trail?	Additions to the Uwharrie National Recreation Trail.	5 Years	High

Table 4-2. Uwharrie Management Indicator Species (MIS)

SPECIES	HABITAT
Pileated Woodpecker	Habitat specialist – snags and cavities
Brown-headed nuthatch	Longleaf pine woodland
Acadian flycatcher	Streamside forest
Northern Bobwhite Quail	Wildlife demand species
Scarlet tanager	Dry oak and oak-hickory forest

Pileated woodpecker
The pileated woodpecker, *Dryocopus pileatus,* has been selected as the species to indicate management effects to snag dependent wildlife species. This bird species is known to inhabit deciduous, coniferous and mixed forests across its range. The pileated woodpecker is a snag dependent species that uses no less than four cavities per year making it an excellent species by which to gauge management effects on snags. Based on breeding bird surveys conducted on the Uwharrie NF from 1997-2008 (USDA 2010) the pileated woodpecker population on the national forest is currently stable to slightly increasing. Goal WLF-4 ("Den trees, snags, and downed wood are evident in most stands….") and Vegetation/Wildlife Guideline 1 ("When restoring or thinning stands, standing live and dead den trees should be retained and clumped with other trees for protection.") proposed in this LRMP would maintain and improve habitat for the pileated woodpecker which should encourage this trend.

Brown-headed nuthatch
The brown-headed nuthatch, *Sitta pusilla,* has been selected as the species to indicate management effects in longleaf pine woodlands. The primary habitat for this bird species in the coastal plain is the longleaf pine ecosystem (NatureServe 2010). The brown-headed nuthatch relies on cavities, especially in longleaf pine trees, making this species an excellent indicator of management for longleaf pine forests. This species has not been recorded often in the breeding bird surveys conducted on the Uwharrie NF from 1997-2008 (USDA 2010), however, from the limited data collected it appears that the brown-headed nuthatch population, which is quite small, is stable. Objectives proposed in this LRMP to restore 100 acres per year of longleaf pine ecosystems and to maintain existing longleaf pine ecosystems would lead to an increase in habitat and habitat quality for the brown-headed nuthatch which should lead to an increase in the current small population.

Acadian flycatcher
The Acadian flycatcher, *Empidonax virescens,* has been selected as the species to indicate management effects in streamside forests. This bird species habitat is near streams in mature deciduous and mixed forests (NatureServe 2010) making this species an excellent indicator of streamside forest management. Based on breeding bird surveys conducted on the Uwharrie NF from 1997-2008 (USDA 2010) the Acadian flycatcher population on the national forest is stable to slightly increasing. Establishment of the Streamside Management Area, as well as standards and guidelines for conservation of streamside ecosystems as proposed in this LRMP would lead to an increase in habitat quality for the Acadian flycatcher which should encourage this trend.

Northern Bobwhite Quail
The northern bobwhite quail, *Colinus virginianus,* is a wildlife demand species that has been selected to indicate management effects for wildlife demand. This bird species inhabits early successional and open woodland habitats (NatureServe 2010). Early successional habitat was more present on the landscape due to agriculture in the early to mid 1900's, however, this habitat is found less often today and quail are more often hunted in open woodland situations, similar to that of the longleaf pine forest found historically across the southern part of the Uwharrie NF. Hunting demand for this species makes it a good indicator of wildlife demand species. Based on breeding bird

surveys conducted on the Uwharrie NF from 1997-2008 (USDA 2010) the northern bobwhite quail population on the national forest is slightly decreasing. Objectives proposed in this LRMP for restoration and maintenance of longleaf pine ecosystems, including increasing prescribed burning, would lead to an increase in habitat and habitat quality for the northern bobwhite quail which should reverse this trend.

Scarlet Tanager

The scarlet tanager, *Piranga olivacea,* has been selected as the species to indicate management effects in dry oak and oak-hickory forests. This bird species relies on deciduous forests, especially in areas with a fairly closed canopy, dense understory and high shrub diversity (NatureServe 2010) making this species an excellent indicator of dry oak and oak-hickory forests management. Based on breeding bird surveys conducted on the Uwharrie NF from 1997-2008 (USDA 2010) the scarlet tanager population on the national forest is stable. Objectives proposed in this LRMP for restoration of oak-hickory forests would lead to an increase in habitat and habitat quality for the scarlet tanager which should encourage population growth.

Appendix A - Plan Direction Crosswalk

On the following pages the Goals/Desired Conditions, Objectives, Standards and Guidelines, and Monitoring direction in the plan are shown side-by-side to facilitate easier interpretation and implementation of the plan.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
Vegetation		
VEG-1. Woodlands and open forests with small canopy gaps, interspersed with glades and Piedmont prairies, occupy portions of the forest where they occurred historically. These forests contain mixed ages with old trees and old forest conditions, as well as canopy openings that provide habitat for federally listed, sensitive and locally rare species.	Over the planning period, the 2,300 acres identified as existing longleaf pine in 2010 are maintained as longleaf pine woodlands. Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Site-appropriate vegetation is established each year on an average of 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites.	Standards When considering restoration by regeneration timber harvest, the maximum size of an opening created by even-aged or two-aged treatments shall be 80 acres for loblolly pine and 40 acres for all other tree species. These acreage limits should not apply to areas treated as a result of natural catastrophic events such as fire, insect or disease attack, or windstorm. When considering restoration by regeneration timber harvest, projects shall be considered through interdisciplinary review, assessing the potential environmental, biological, aesthetic, engineering, and economic impacts on the timber sale area, as well as the consistency of the timber sale with the multiple uses of the area. A harvesting system is not selected primarily because it will give the greatest dollar return or the greatest output of timber. When using herbicides or pesticides follow the standards and guidelines developed for the USDA Forest Service in the risk assessments and label instructions for approved herbicides and pesticides.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
(Woodlands and open forests with small canopy gaps, interspersed with glades and Piedmont prairies, occupy portions of the forest where they occurred historically. These forests contain mixed ages with old trees and old forest conditions, as well as canopy openings that provide habitat for federally listed, sensitive and locally rare species. Continued)		Guidelines When restoring shortleaf pine, trees should be planted on a wide spacing (less than 350 trees per acre) to allow room for hardwoods to develop as dominant or co-dominant trees. As stands reach 12-15 years old, crown-touching release should be performed (a thinning activity) to favor the best trees and most desirable species as determined in project analysis. When restoring sites following extensive damage to trees from wind, water, insects or disease, use the potential natural vegetation map as a guide to determine the desired species composition. New ground disturbing activities should be located far enough away from rare Ecological Systems (Glades and Barrens, Mafic Hardpan Woodlands, Depression Swamps, and Seepage Wetlands) to avoid direct and indirect impacts from soil erosion and to protect bogs, swamps, and wetlands from alteration of natural hydrologic functioning. When restoring woodland structure in existing longleaf pine stands, projects should be designed to leave a sparse hardwood midstory, and at least 45 pine stems greater than 60 years in age and greater than 14 inches in diameter wherever possible.

<table>
<tr><th>Forest-Wide Goals/Desired Conditions</th><th>Related Objectives</th><th>Standards & Guidelines</th></tr>
<tr><td>(Woodlands and open forests with small canopy gaps, interspersed with glades and Piedmont prairies, occupy portions of the forest where they occurred historically. These forests contain mixed ages with old trees and old forest conditions, as well as canopy openings that provide habitat for federally listed, sensitive and locally rare species. Continued)</td><td>In an effort to achieve a more all-age condition that is desired from both a species sustainability standpoint and for a more even-flow of hard mast production, create or enhance existing gaps in oak-hickory stands to encourage natural regeneration of oak and hickory species. Create or enhance an average of 10 acres of gaps per year.</td><td>Gaps created for oak and hickory regeneration should average 1/2 - 2 acres in size and comprise 20-30% of a stand. Classify a regeneration area as an opening until the young trees have reached a height that is approximately 20% of the tallest adjacent trees.

When considering restoration by regeneration timber harvest, openings should be shaped and blended to the extent practicable with the natural terrain.

When restoring plant communities by regeneration timber harvest, the following stocking levels should be achieved within 5 years after harvest:

<table><tr><th>Forest Type Established</th><th>Min. Stocking Level</th><th>Target Level</th></tr><tr><td>Oak-Hickory, Other Hardwood</td><td>150 stems per acre</td><td>200-300 stems per acre</td></tr><tr><td>Shortleaf Pine/Oak Mix</td><td>250 stems per acre</td><td>400 (<200 pine) stems per acre</td></tr><tr><td>Shortleaf Pine</td><td>275 stems per acre</td><td>350-400 stems per acre</td></tr><tr><td>Longleaf Pine</td><td>300 stems per acre</td><td>400-500 stems per acre</td></tr></table>
When considering restoration by</td></tr>
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<table>
<tr><th>Forest-Wide Goals/Desired Conditions</th><th>Related Objectives</th><th>Standards & Guidelines</th></tr>
<tr><td>(Woodlands and open forests with small canopy gaps, interspersed with glades and Piedmont prairies, occupy portions of the forest where they occurred historically. These forests contain mixed ages with old trees and old forest conditions, as well as canopy openings that provide habitat for federally listed, sensitive and locally rare species. Continued)</td><td>Each year an average of 400 acres are thinned to maintain room for growth and to discourage insect and disease infestation.</td><td>regeneration harvest, include stands which meet the following minimum ages at the time of timber sale award:

<table><tr><th>Existing Forest Type</th><th>Minimum Regeneration Age</th></tr><tr><td>Shortleaf Pine & Shortleaf Pine/Oak</td><td>60 Years</td></tr><tr><td>Loblolly Pine and Loblolly Pine/Oak</td><td>60 Years</td></tr><tr><td>Hardwoods</td><td>80 Years</td></tr></table>
When selecting areas for thinning consider:
Opportunities to reduce stem density in predominantly pine stands where the stem density is high enough to present a risk of southern pine beetle infestation (basal area over 100 square feet per acre), or;
Opportunities to reduce the risk of catastrophic wildfire.</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>VEG-2. Plant communities that were more common in the past occur on appropriate sites across the forest. Examples include longleaf pine woodlands, shortleaf pine woodlands, and oak-hickory forests.</td><td>Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Site-appropriate vegetation is established each year on an average of 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites.</td><td>SEE ABOVE</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>VEG-3. Non-native invasive species are at low levels that do not interfere with native plant reproduction</td><td>Each year, on average an average 100 acres are treated to eliminate non-native invasive plants.</td><td><u>Standard</u>

When using herbicides or pesticides</td></tr>
</table>

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
and distribution. New outbreaks are not spreading. Equestrians understand the need to use weed-free hay and straw.		follow the standards and guidelines developed for the USDA Forest Service in the risk assessments and label instructions for approved herbicides and pesticides. Guidelines When selecting areas for treatment of non-native invasive plants consider the following priority: threatened, endangered, sensitive and locally rare species habitat and Schweinitz's Sunflower HMAs; Special Interest Areas; Streamside Forests; Other areas.
VEG-4. Schweinitz's sunflowers (federally listed as endangered since 1991) that historically occurred across the Piedmont of North and South Carolina are restored on appropriate sites across the forest (longleaf pine woodlands, dry-oak hickory forests, mafic hardpan woodlands, and xeric forests). Other rare plant species are sustaining or increasing in number of occurrences or the extent of the occurrences.	Over the planning period, 5 to13 subpopulations of Schweinitz's sunflower (listed as endangered since 1991) are restored to appropriate sites. Plants from at risk locations will be moved into the reintroduction areas. Over the planning period, 15-30 prairie-like openings of ½ to 2 acres in size are created across longleaf pine and oak-hickory restoration areas that are within the Schweinitz's Sunflower Habitat Management Area.	Standards Roadside banks shall not be mowed before flowering and seed development where federally listed, sensitive, or locally rare plants occur. When project activities may negatively impact species having less than five known occurrences on the Uwharrie NF, project documentation shall disclose how the species will be protected and the population will be maintained.
Fire as a Process and Tool		
FM-1. There is increasing evidence of prescribed fire used to restore the structure, composition, and	Each year an average of 3,000 to 6,000 acres are prescribe burned to create open canopy conditions, reduce midcanopy, and move	Standards When a prescribed fire is no longer

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
ecosystem processes in ecological systems. Forest ecosystems are well-adapted to fire occurrence. (There is increasing evidence of prescribed fire used to restore the structure, composition, and	toward ecological conditions described in Chapter 1 - Goals/Desired Conditions. Public and firefighter safety will be the first priority in fire management activities.	achieving the intended resource management objectives and contingency or mitigation actions have failed, the fire will be declared a wildfire. Once declared a wildfire, it cannot be redesignated a prescribed fire. Fire lines shall be constructed in a manner to minimize soil disturbance near streams. Fire lines shall not be constructed along the length of stream channels. Prescribed burns shall be planned so they do not consume all liter and duff and/or alter structure and color of mineral soil on more than 15 percent of the area. Existing barriers, e.g., streams, lakes, wetlands, roads, and trails, should be used whenever possible to reduce the need for fire line construction and to minimize resource impacts. When rehabilitating tractor fire lines, appropriate measures shall be taken to properly drain water and prevent erosion. All prescribed burning shall comply with the state's smoke management plan. All prescribed burns shall be done under the appropriate weather

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
ecosystem processes in ecological systems. Forest ecosystems are well-adapted to fire occurrence. Continued)		conditions to meet objectives and to reduce negative impacts to forest resources. Guidelines When prescribe burning, at least every third burn on a site should be a growing season burn. It is permissible to burn the same acreage in 2 sequential years and to apply only growing season fire to the same acreage for 3 or more sequential burning cycles. When prescribe burning, the fire should be allowed to burn in a mosaic pattern resulting from differential influence of topography, fuel loading and moisture, and vegetation type. When prescribe burning, regenerated oak-hickory stands with young trees should be avoided until the young trees are large enough to be resistant to fire damage, including scarring and girdling. [Other Referenced Direction: When prescribed burning, Region 8 and state management guidelines as detailed in FSM 5140, the North Carolina Prescribed Burning Act 113-60.43, and the North Carolina Open Burning Rule 15A-NCAC 02D-1900 should be followed.]
FM-2. The composition, structure and density of vegetation reduces potential fire behavior, including the	SEE ABOVE	SEE ABOVE

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
rate of spread, flame length, spotting potential, and the likelihood of a surface fire transitioning to crown fire.		
FM-3. There is defensible space around communities and the risk of catastrophic wildfire is low.		SEE ABOVE
FM-4. Lightning caused fires are allowed to play their natural ecological role as long as they do not pose unmitigated threats to life and property.		SEE ABOVE
Wildlife		
WLF-1. Habitat is present for the diversity of native animal species typical of the Piedmont ecoregion - vertebrates, invertebrates, game and non-game, and including reptiles and amphibians.	Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Site-appropriate vegetation is established each year on an average of 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites. In an effort to achieve a more all-age condition that is desired from both a species sustainability standpoint and for a more even-flow of hard mast production, create or enhance existing gaps in oak-hickory stands to encourage natural regeneration of oak and hickory species. Create or enhance an average of 10 acres of gaps per year.	Guidelines To benefit wildlife: • When restoring longleaf or shortleaf pine, an average of 10-25 square feet per acre basal area of hard mast producers (oaks and hickories) should be retained whenever it is present; • When restoring or thinning stands, standing live and dead den trees should be retained and clumped with other trees for protection; • Growth of native soft mast producers should be maintained in all natural communities. Competition from other species should be limited when appropriate. New ground disturbing activities

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		should be located far enough away from rare Ecological Systems (Glades and Barrens, Mafic Hardpan Woodlands, Depression Swamps, and Seepage Wetlands) to avoid direct and indirect impacts from soil erosion and to protect bogs, swamps, and wetlands from alteration of natural hydrologic functioning.
WLF-2. Wildlife fields and openings in the forest are predominantly filled with native and desired non-invasive non-native grasses, herbs, and shrubs of species that native wildlife use for food. Occasional hard mast producing trees occur in the fields as well. Fields and openings are dispersed across the forest and do not occur within 150 yards of developed recreation areas.	Over the planning period, assess existing grass/forb openings to identify conflicts with developed recreation areas, poor soil productivity, or other factors and develop a plan for relocating them to more appropriate locations. Each year the historic hedgerows, grain fields, fruit trees, etc. are restored or maintained at a minimum of one identified key wildlife area (Thornburg, Quick, Klaussner, and Colonel Crump's).	<u>Standard</u> When using herbicides or pesticides follow the standards and guidelines developed for the USDA Forest Service in the risk assessments and label instructions for approved herbicides and pesticides. <u>Guideline</u> When creating or managing grass/forb habitat, consider making it coincident with the prairie-like openings in the Schweinitz's Sunflower HMA whenever possible
WLF-3. Some non-native, non-invasive plants such as grains are growing in a small portion of wildlife openings in order to provide the wildlife viewing and hunting opportunity experience desired by forest visitors.		
WLF-4. Den trees, snags, and downed wood are evident in most stands,		

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	supporting diverse populations of wildlife that use these habitat components. However, the amount of dead wood is limited near private land developments to reduce the potential of a high severity wildland fire.		Guideline When restoring or thinning stands, standing live and dead den trees should be retained and clumped with other trees for protection;
WLF-5.	Suitable habitat for red-cockaded woodpecker (federally listed as endangered) occurs on mature longleaf pine or pine woodland sites.	Over the planning period, the 2,300 acres identified as existing longleaf pine in 2010 are maintained as longleaf pine woodlands. Move toward restoring the desired vegetation conditions on a minimum of 4,500 acres over the planning period. Site-appropriate vegetation is established each year on an average of 200 acres of potential oak-hickory sites and 100 acres of potential longleaf pine sites.	
WLF-6.	An abundance of hard and soft mast is available across the national forest. Mature oaks and hickories are abundant and well distributed on appropriate sites across the Uwharrie NF, producing abundant crops of acorns and hickory nuts in most years. Regenerating hardwoods (such as oaks and hickories) are evident in tree canopy gaps in multi-age forests to provide for a continuous supply of hard mast. Native fruit producing shrubs and trees are evident in many areas.	In an effort to achieve a more all-age condition that is desired from both a species sustainability standpoint and for a more even-flow of hard mast production, create or enhance existing gaps in oak-hickory stands to encourage natural regeneration of oak and hickory species. Create or enhance an average of 10 acres of gaps per year.	Guidelines To benefit wildlife: • When restoring longleaf or shortleaf pine, an average of 10-25 square feet per acre basal area of hard mast producers (oaks and hickories) should be retained whenever it is present; • When restoring or thinning stands, standing live and dead den trees should be retained and clumped with other trees for protection; • Growth of native soft mast producers should be maintained in all natural communities. Competition from other species

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		should be limited when appropriate.
WLF-7. Ephemeral pools, ponds, swamps, seeps, bogs, and other wetlands are frequent throughout the national forest and visited by many wild animals. Conditions are secure for animals such as amphibians that use these habitats for reproducing.		Guidelines New ground disturbing activities should be located far enough away from rare Ecological Systems (Glades and Barrens, Mafic Hardpan Woodlands, Depression Swamps, and Seepage Wetlands) to avoid direct and indirect impacts from soil erosion and to protect bogs, swamps, and wetlands from alteration of natural hydrologic functioning.
WLF-8. Breeding, wintering and migration, staging and stopover habitat for migratory birds is provided in ways that contribute to their long term conservation.		
Soil, Water and Fisheries		
SWF-1. Aquatic ecosystems are diverse, with properly functioning streams providing high quality habitat for all native aquatic species, including non-game species.	Over the planning period, 1,500 linear feet of aquatic habitat are restored on sites with North Carolina Index of Biotic Integrity (NCIBI) and North Carolina Ephemeroptera, Plecoptera, Tricoptera (NCEPT) ratings below “good.” This work entails establishing cover such as by adding large wood or boulders for in-stream habitat, establishing stream-shading riparian vegetation, eliminating sediment sources, etc. Over the planning period, 1,500 linear feet of unstable and/or poorly functioning stream channel are restored (in addition to the aquatic	Standards Except for existing (as of 2010) loblolly and shortleaf plantations, the streamside forest is unsuitable for timber production (100 feet either side of perennial streams and alluvial forest). Best management practices shall be used to avoid impacts to water quality, soil productivity, and stream channel structure.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
(Aquatic ecosystems are diverse, with properly functioning streams providing high quality habitat for all native aquatic species, including non-game species. Continued)	habitat restoration under Objective 1).	When a ground disturbing project could potentially result in direct delivery of sediment to streams, erosion control measures shall be employed. All bare soil shall be seeded and/or mulched at the time of stream crossing construction. Aquatic species management activities shall not introduce or stock non-native aquatic organisms. <u>Guidelines</u> When thinning in pine plantations in the Streamside Forest, entries should only be every 35 to 40 years, to reduce disturbance. Major soil disturbances that expose the soil surface or substantially alter soil properties such as temporary road, skid trails, landings, and rutting should not occupy more than 15 percent of forest vegetation management treatment areas except for watershed improvements, restoration of species, or to correct soil and water problems. Vegetation cutting and use of mechanized ground disturbing equipment should stay more than 33 feet away from perennial streams unless such activity is needed for riparian wildlife habitat, stream channel

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
(Aquatic ecosystems are diverse, with properly functioning streams providing high quality habitat for all native aquatic species, including non-game species. Continued)		stability, to restore riparian vegetation, or to provide access for recreation or stream crossings. Vegetation cutting and ground disturbing equipment should stay more than 50 feet away from perennial streams (with the exceptions listed above) if the following conditions apply: steep slopes adjacent to the stream; highly erodible soils; soil areas with little or minimal groundcover near the waterbody. Refer to North Carolina Division of Forest Resources *Forestry Best Management Practices Manual* for additional guidance. Use of mechanized ground disturbing equipment should stay more than 33 feet away from intermittent streams. Refer to North Carolina Division of Forest Resources *Forestry Best Management Practices Manual* for additional guidance. When trees are felled, generally, tree portions that fall within 33 feet of a perennial stream should remain in place unless their placement is disrupting channel stability, is a public safety hazard, or if removal would benefit the riparian condition. New or re-routed roads or **motorized** trails should be located at least 100 feet from perennial streams and at least 50 feet from intermittent streams, except for designated stream crossings.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
(Aquatic ecosystems are diverse, with properly functioning streams providing high quality habitat for all native aquatic species, including non-game species. Continued)		New or re-routed **non-motorized** trails should be located at least 33 feet from perennial and intermittent streams, except for designated stream crossings and horse watering sites. Where roads or trails cross streams, crossings should be at right angles where possible. The design of stream crossings should first try to simulate the natural stream bottom through use of a bottomless culvert, bridge or other spanning structure. If this isn't feasible, crossings should incorporate the appropriate outlet drops and culvert slopes. Stream restoration designs should utilize the natural stream channel whenever possible. Stream restoration activities should include provisions to maintain or enhance existing ephemeral pools in the associated streamside forest. When selecting aquatic habitat for restoration the following criteria should be used: • The condition and vulnerability of the watershed where the site is located - fair or poor sites within otherwise good condition, high vulnerability watersheds should

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		be given first priority. • Degree of improvement needed to achieve “good” condition - sites rated “fair” should be restored before sites rated “poor.”
SWF-2. Fish are plentiful in streams and lakes. Water is clean and clear of trash and pollutants, and there is in-stream habitat for fish to hide, spawn, and find food.		SEE ABOVE
SWF-3. Road crossings allow for passage of fish and other aquatic animals up and down stream corridors except when there is a need to prevent non-native invasive species from moving upstream.	During the planning period approximately 10 road or trail crossings are reconstructed to improve water quality.	Guidelines Where roads or trails cross streams, crossings should be at right angles where possible. The design of stream crossings should first try to simulate the natural stream bottom through use of a bottomless culvert, bridge or other spanning structure. If this isn’t feasible, crossings should incorporate the appropriate outlet drops and culvert slopes.
SWF-4. Non-native aquatic species do not threaten national forest lakes, rivers, or streams.		
SWF-5. Native fresh water mussel communities are diverse and represented by multiple age-classes, with signs of reproduction evident. Appropriate habitats support	Over the planning period, native freshwater mussel populations are augmented in one to three appropriate aquatic systems. These reintroductions will include Federally-listed, regionally-sensitive, or locally rare species.	

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	sustainable populations of native freshwater mussels, including those that are federally-listed, regionally-sensitive, or locally rare. Non-native mussel species are not negatively impacting native species.		
SWF-6.	Streamsides are dominated by native riparian vegetation, including trees capable of adding large woody debris for hydrologic stability and instream habitat. Aquatic habitat is diverse and relatively free of unnatural sediments. Pool habitats are frequent and provide cover for many species of fish. Vegetated streamside areas are effective in providing shading to the streams and filtering sediments.	Over the planning period, 1,500 linear feet of aquatic habitat are restored on sites with North Carolina Index of Biotic Integrity (NCIBI) and North Carolina Ephemeroptera, Plecoptera, Tricoptera (NCEPT) ratings below "good." This work entails establishing cover such as by adding large wood or boulders for in-stream habitat, establishing stream-shading riparian vegetation, eliminating sediment sources, etc. Over the planning period, 1,500 linear feet of unstable and/or poorly functioning stream channel are restored (in addition to the aquatic habitat restoration under Objective 1).	<u>Guidelines</u> Stream restoration designs should utilize the natural stream channel whenever possible. Stream restoration activities should include provisions to maintain or enhance existing ephemeral pools in the associated streamside forest. When selecting aquatic habitat for restoration the following criteria should be used: • The condition and vulnerability of the watershed where the site is located - fair or poor sites within otherwise good condition, high vulnerability watersheds should be given first priority. • Degree of improvement needed to achieve "good" condition - sites rated "fair" should be restored before sites rated "poor."
SWF-7.	Stream channels are connected to their floodplains so that high streamflow events can be processed through the	SEE ABOVE	

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
ecosystem without creating gullies or eroding stream banks. Man-made dikes and deposition are absent, allowing the stream to flood out of its banks and onto the floodplain in a natural way.		
SWF-8. Stream channels degraded by historic mining are exhibiting improved biological and hydrological conditions.	SEE ABOVE	
SWF-9. Bogs and seeps are maintained or increasing in size through natural hydrologic processes and fire regimes.		Guidelines New ground disturbing activities should be located far enough away from rare Ecological Systems (Glades and Barrens, Mafic Hardpan Woodlands, Depression Swamps, and Seepage Wetlands) to avoid direct and indirect impacts from soil erosion and to protect bogs, swamps, and wetlands from alteration of natural hydrologic functioning. Stream restoration activities should include provisions to maintain or enhance existing ephemeral pools in the associated streamside forest.
SWF-10. Soil productivity is sustained through nitrogen and carbon fixation, mineral release from parent material, decaying organic matter, and translocation of nutrients. Erosion and compaction are infrequent		

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
occurrences.		
Cultural Resources		
ARC-1. Cultural resources are protected from loss. Significant sites are stabilized, treated, managed and preserved for their historical research value.	Each year, identified deferred maintenance needs are addressed on an average of five significant sites vulnerable to degradation. During the planning period, complete one thematic evaluation for nomination to the National Register of Historic Places such as gold mines, archaic rock quarries or Revolutionary War sites.	Guideline When mitigating adverse impacts to cultural resources associated with authorized roads and trails, the least restrictive effective and affordable means should be used from among the following (listed in order from least restrictive to most restrictive): (1) Road or trail maintenance to eliminate disturbance or erosion of site; (2) Access barriers(natural appearing)and stabilization of site (3) Relocation of road or trail; (4) Closure of road or trail; (5) Site excavation and salvage.
ARC-2. All known cultural resource sites are evaluated for significance.	Each year complete the evaluation of an average of five known but unevaluated cultural resource sites.	
ARC-3. Visitors to the Uwharrie NF have opportunities to learn about the past, and how to protect cultural resources, through interpretive programs and information.	A cultural resources interpretive trail is developed over the course of the planning period. A Passport In Time project is hosted at least every 2 years.	
ARC-4. Archeological sites are available for scientific research.		

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<tr><td></td><td></td><td></td></tr>
<tr><td>ARC-5. A Heritage Program Plan for the Uwharrie NF is complete.</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td><u>Outdoor Recreation - Related Goals/Desired Conditions</u></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>REC -1. Outstanding recreation opportunities draw visitors to the Uwharrie NF, provide opportunities for visitors to experience natural forest settings while enjoying physical activities with family and friends, and provide economic benefits to the local communities. Conflicts among users are rare.</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>REC -2. Expanded recreation opportunities are provided outside the Badin Lake area.</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>REC -3. The following approximate amount of acres are maintained in each of the following Recreation Opportunity Spectrum (ROS) classes, as shown on the Recreation and Scenery Settings Map:
<table>
<tr><th>ROS Class*</th><th>Description</th><th>Acres</th></tr>
<tr><td>SPNM</td><td>Semi-primitive Non-motorized/ Very high scenic integrity</td><td>5,160</td></tr>
<tr><td>RN2S</td><td>Roaded natural/ Less accessible by open roads/ High scenic integrity</td><td>11,144</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines

RN2	Roaded natural/ Less accessible by open roads/ Moderate scenic integrity	20,660
RN1S	Roaded natural/ More accessible by open roads/ High scenic integrity	7,280
RN1	Roaded natural/ More accessible by open roads/ Moderate scenic integrity	6,570

* See the Glossary for a more complete definition of each ROS class.

REC -4. For the Badin Lake Recreation Area: the recreation sites are well maintained; the information and fee boards are up-to-date and provide appropriate information to the public; user conflicts on trails, roads, and within the recreation area are minimized; recreation impacts to the natural resources and cultural resources are reduced through improved conservation education programs, signage, and interaction of Forest Service employees with the users of the national forest.

Trails

TRL-1. Exceptional trails are available for hikers, horseback riders, off-roaders, mountain bikers, hunters, and anglers. The trails are designed, constructed, and

During the planning period analysis and implementation will be completed for designated horse and mountain bike trail systems.

Guidelines

When improving trails or mitigating adverse impacts from trails, consider improving user experience and user

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
maintained so that a variety of levels of challenge is available and other forest resources such as soil and water are protected.	Each year an average of 10 combined miles of substandard hiking, bike, horse, or OVH trail are improved, with the emphasis being horse trails and OHV trails in the Badin Lake area. During the planning period all intersections are signed where trails cross open Forest Service roads, to increase visitor safety. Signs are replaced as needed. An average of one trailhead per year is in an improved condition. This may involve increasing visibility of trailhead for ease of locating; providing needed information at the trailhead; or establishing, maintaining or improving the parking area. A minimum of one mile of unauthorized trails are closed per year, considering the following priority: • Those impacting significant archeological sites; • Those impacting threatened, endangered, sensitive or locally rare species; • Those impacting streams.	safety through reroutes or connectors to make loops. Project designs to construct or improve trails should incorporate ideas and suggestions from trails users as much as practical. New or relocated trails should avoid mine tailings, which have the potential to leach dangerous substances. As trails are maintained, existing vistas should be maintained where appropriate to provide long-distance views and opportunities for new vistas should be considered. When constructing or relocating trails, consider the following when selecting the location: • Avoiding damage to cultural resources; • Minimizing conflicts between different uses; • Minimizing damage to soil, watershed, vegetation, and other resources; • Operational feasibility (desired user experience, infrastructure needs, size of usable area, and financial sustainability). [Other Referenced Direction: Designation of motorized trails should follow procedures outlined in CFR 212.55. Trail projects should follow procedures outlined

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		in FSH 2309.18.]
TRL-2. The trail system has trails of varied lengths, including loop trails and trails with multiple access points, and may connect with trails on other ownerships. Trail users are well-informed about the trails and about ways to minimize their impacts on the environment during their visits. Many trails have vistas – points along the trails that allow for long-range views.	SEE ABOVE	SEE ABOVE
TRL-3. Trails are safe and safe vehicle parking is nearby. Trails and trailheads are well marked and easy to find; trails that cross roads are well marked for safety at all intersections. There are few hazard trees. For added safety, horse use and OHV use occur on separate trails.	During the planning period all intersections are signed where trails cross open Forest Service roads, to increase visitor safety. Signs are replaced as needed. An average of one trailhead per year is in an improved condition. This may involve increasing visibility of trailhead for ease of locating; providing needed information at the trailhead; or establishing, maintaining or improving the parking area.	
TRL-4. Recreation use is dispersed across the Uwharrie NF and there is good trail access for visitors to both northern and southern portions of the national forest.		
TRL-5. The 50-mile Uwharrie National Recreation Trail is complete and marked for hikers. That portion		

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	on National Forest System lands has high scenic integrity.		
TRL-6.	Mountain biking occurs only on roads and designated trails and areas in several parts of the Forest. Mountain biking does not occur on roads signed as closed to bikes.	During the planning period analysis and implementation will be completed for designated horse and mountain bike trail systems.	SEE ABOVE
TRL-7.	Horseback riding occurs only on a designated system of trails, roads, and areas. Riders are informed about how to ride safely in traffic. Horse trails are well designed and maintained to provide varied user experiences (easy to more difficult) while minimizing resource damage. Trails do not usually coincide with roads and crossings occur at designated locations. While trails avoid wet areas, access is available to horse watering areas. While on the horse trails, visitors seldom see evidence of litter, concentrated manure, or erosion and sediment transport into streams.	During the planning period analysis and implementation will be completed for designated horse and mountain bike trail systems.	SEE ABOVE
TRL-8.	An OHV trail system exists that is well designed and maintained to provide varied user experiences (easy to more difficult) while minimizing resource damage. Trails are available for full-size OHVs (greater than 50 inches in		SEE ABOVE

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	width) as well as other types of off-highway vehicles. Designated OHV routes are clearly defined on maps and on the ground, and off-highway vehicles are operating only on designated routes during the established open season. Little sediment can be seen entering streams from the OHV system, and trails are free of litter.		
TRL-9.	Well-trained partners and volunteer groups are working to maintain or improve the trail systems.	An average of five annual trail design and/or maintenance workdays occur with a trail partners group. Work may include fixing or maintaining erosion control and proper drainage, and removing litter.	
Facilities			
FAC-1.	Developed recreation areas such as campgrounds, restrooms, showers, and a shooting range are clean, safe, and in good repair. Campgrounds are available, convenient, and appropriately designed for a variety of Forest visitors.		Guideline Project designs to add or improve facilities should use suggestions and information from forest users and district employees as sources of design ideas.
FAC-2.	Parking areas and trailheads exist for users at convenient locations and are well-designed for their intended use, including parking for vehicles towing trailers to the OHV area and		

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	horse trails. Forest users are parking in a safe manner along roads: not blocking roads, and not impacting adjacent landowners.		
FAC-3.	Trash receptacles are located at high-use areas. Forest visitors are informed to pack out their own trash and as a result generally leave the forest cleaner than they found it.		
FAC-4.	Facilities in flood prone areas will have designated boundaries and signage to alert the public to potential danger during high storm events.		
Water-Based-Recreation			
WBR-1.	Access to the water is available for water-oriented activities such as canoeing, kayaking, power boating, fishing, waterfowl hunting, and horse watering. These access points are located in areas that do not degrade the aquatic resources and provide safe, reliable access for users of all abilities where practical.	Fishing opportunities are improved through location and construction of at least one new bank angler access area during the planning period. During the planning period boating opportunities are improved at one existing boating access area and increased by adding one additional boating access area on the Uwharrie River.	SEE SOIL, WATER, & FISHERIES STANDARDS AND GUIDELINES
WBR-2.	A water-based trail provides recreationists with floating opportunities on the Uwharrie River and may connect with trails on other ownerships.		

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
WBR-3. Fish habitats are healthy and sustainable, promoting a positive angling experience.		
WBR-4. The outstandingly remarkable scenic, historic, and cultural values of the Uwharrie River and the outstandingly remarkable fish and wildlife values of Barnes Creek are evident on those portions that traverse the Uwharrie National Forest.		
Wilderness		
WLD-1. The wilderness provides a primitive recreation opportunity, exhibits little evidence of modern human disturbance, and is remote from the sights and sounds of 21st-century civilization such as traffic from roads. Natural processes such as succession, decomposition, and natural regeneration and disturbance factors such as fire, wind, and water shape the native vegetation. Large areas of uninterrupted habitat provide a safe haven for animals. Wilderness streams can be used as a reference for comparing water quality to other parts of the forest. There is minimal evidence of non-native invasive species or their impacts to native	During the planning period complete one condition assessment of the trails and dispersed campsites within the Birkhead Mountains Wilderness. During the planning period develop a site-specific Wilderness Management Guide for the Birkhead Mountains Wilderness that incorporates a Limits of Acceptable Change (LAC) or similar approach to monitoring wilderness conditions.	Guidelines Non-restrictive means of managing visitor use such as information and education should be attempted prior to instituting use restrictions. Trail signage should be minimal and only be used for identifying a trail or trail intersections. Management actions should not be designed to encourage more use of the wilderness, in order to maintain the opportunity for solitude. Avoid designating campsites unless needed for resource protection. Avoid increasing trail density. Wilderness condition monitoring should incorporate relevant elements

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
vegetation.		of the Chief of the Forest Service's 10-year Wilderness Stewardship Challenge.
WLD-2. Visitors to the area include nature enthusiasts, hikers, hunters, and researchers. No facilities are present other than directional signs. Motorized or mechanical vehicles, equipment, or devices are absent. Information signs are not seen within the wilderness boundary.	During the planning period develop an emergency response plan for the wilderness area. During the planning period, increase opportunities for solitude and decrease evidence of human use.	
WLD-3. Lightning caused fires are allowed to play their natural ecological role as long as they occur within prescribed parameters and do not pose unmitigated threats to life and/or private property, particularly in the wildland urban interface. Prescribed fire helps replace the natural fires interrupted by human activity outside the wilderness boundaries.	During the planning period develop a fire plan for the wilderness area.	<u>Standards</u> When suppressing fire: • Only allow exceptions to the restrictions on the use of motorized equipment and motorized and mechanical vehicles in cases of extreme emergency during wildfire suppression. Exceptions can be allowed by District Ranger, except tractor plow use which requires Regional Forester approval. • Use Minimum Impact Suppression Tactics which employ suppression methods and equipment that cause the least alteration of the wilderness landscape, least disturbance of the land surface, least disturbance to visitor solitude, least reduction of visibility during

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		periods of visitor use, and least effects on air quality related values. • With the exception of firelines, only allow rehabilitation of a burned area if necessary to prevent an unacceptable loss of wilderness resources or to protect resources outside the wilderness. Perform necessary revegetation work with plant species native to the wilderness area. After a fire plan for Birkhead Mountains Wilderness has been completed, prescribed fire may be allowed when needed to reduce a buildup of fuels to an acceptable level and to decrease the risks and consequences of wildland fire escaping from the wilderness. Natural barriers such as trails or creeks/streams will be the preferred firebreak for management ignited prescribed fire. Small firebreaks built by hand may be necessary in some instances where natural barriers do not occur. The management of lightning caused wildland fires is allowed when documented in a Wildfire Decision Support System. When managing fires: • Hose lays, foam and wetting

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
		agents may be used to control fire. • Use minimal impact suppression techniques on all fires when possible.
Eligible Wild and Scenic River Corridors		
The desired condition for Uwharrie River is an intact floodplain and river channel that is functioning hydrologically. Access points designated and developed in a sustainable way to allow for safe river access that maintains the health of the riparian area and stability of the streambanks, and protects the historic and cultural resources within the area. Additionally, trails along the Uwharrie River are designated and located in areas to reduce impacts to sensitive plant species, cultural resources, floodplain, and water quality. The desired condition for Barnes Creek is an intact floodplain and stream channel that functions hydrologically. Water quality is maintained or improved to improve aquatic habitat. Habitat is available in Barnes Creek for populations of Carolina darter, Roanoke slabshell, Atlantic pigtoe, Savannah lilliput, Greensboro burrowing crayfish, Carolina elktoe, notched rainbow, Carolina creekshell, Carolina fatmucket, squawfoot, and Eastern creekshell. The visibility of timber, mineral, and development activity along Barnes Creek is minimal.		Standard Management activities in the Eligible Wilde and Scenic River Corridor shall be designed to retain the identified outstandingly remarkable river values. These are wildlife and fish for Barnes Creek, and scenic, historical and cultural for the Uwharrie River.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
Scenery		
SCE-1. Scenery is natural appearing and generally consists of older, multi-storied, closed-canopy forests, or park like or semi-open forests, except in young regeneration areas, woodlands, prairie-like openings, glades, and wildlife openings.		Guidelines Management activities should meet Scenic Integrity Objectives within the respective areas identified on the Recreation and Scenery Settings map. Generally, Very High and High Scenic Integrity Objectives should be met within one to two growing seasons; Moderate Scenic Integrity Objectives should be met in two to three growing seasons. The exceptions are where meeting a goal or desired condition involves restoration; for these long-term goals, Scenic Integrity Objectives may be met over a period of ten or more growing seasons. [Other Referenced Direction: The Southern Region Scenery Treatment Guide should be referenced to determine suitable management activities on lands within each Scenic Integrity category.]
SCE-2. Viewpoints along roads and trails reveal mid- and long-distance views of attractive environments.		
SCE-3. The Uwharrie National Forest is free of litter and refuse.		

<table>
<tr><th>Forest-Wide Goals/Desired Conditions</th><th>Related Objectives</th><th>Standards & Guidelines</th></tr>
<tr><td>SCE-5. The following approximate amount of acres are maintained in each of the displayed Scenic Integrity categories (refer to the Recreation and Scenery Settings map):
<table><tr><th>Scenic Integrity category*</th><th>Acres</th></tr><tr><td>Very High</td><td>5,160</td></tr><tr><td>High</td><td>18,424</td></tr><tr><td>Moderate</td><td>27,230</td></tr></table>*See Glossary for definitions of Scenic Integrity levels
[The very high scenic integrity acres are the Birkhead Mountains Wilderness. The high scenic integrity acres include, among other areas, all the Special Interest Areas (see Chapter 3), and the Uwharrie National Recreation Trail corridor.]</td><td></td><td>SEE ABOVE</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td><u>Visitor Information</u></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>VIN-1. Visitors have access to accurate maps and detailed information so they can have a safe, positive experience in the forest. Information on trails includes distances, difficulty, and trailhead locations.</td><td>At least one Uwharrie National Forest recreation opportunity guide for public use is produced within 5 years. Produce additional or updated information as needed thereafter.</td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>VIN-2. Up-to-date information such as brochures or visitor guides is widely distributed and available at other area attractions such as the zoo, and at area visitor/welcome centers.</td><td>SEE ABOVE</td><td></td></tr>
</table>

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
VIN-3. Visitors have access to natural and cultural history information, including interpretive exhibits. Information on both aquatic, terrestrial, cultural, and wilderness resources is available.	At least one Uwharrie National Forest conservation education/natural history guide for public use is produced within 5 years. Produce additional or updated information as needed thereafter. At least one Uwharrie National Forest cultural heritage education/preservation guide for public use is produced within 5 years. Produce additional or updated information as needed thereafter.	
VIN-4. Visitors are informed about ways to lessen their impact on the environment, including the importance of staying on trails; minimizing impacts to soil, water, vegetation and wildlife; not littering in the forest or leaving trash at campsites, parking areas, or the rifle range.	SEE ABOVE	
Road		
RDS-1. Roads open to public vehicles are safe for forest visitors in non-4-wheel-drive vehicles and for emergency vehicles: there are no gullies, washouts, or slides; there are adequate turnouts or passing areas and adequate sight distances; the road surface is relatively smooth. Some heavily traveled Forest roads are paved. Some roads may be open seasonally to provide	Grade surfaces, and clean culverts and ditches along at least 12 miles of open system roads as needed each year.	Standard New or relocated roads shall avoid mine tailings, which have the potential to leach dangerous substances. Guidelines When constructing or relocating roads, consider the following when selecting the location: • Avoiding impacts to the special

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
recreation opportunities.		features of the Special Interest Area; • Avoiding the spread of invasive species and; • Avoiding impacts to the hydrologic functions. A 70% ground cover of permanent vegetation should be established by the end of the first growing season following the end of use of temporary roads, skid trails, and log landings. When constructing or relocating roads look for opportunities for vistas and enhancing scenery.
RDS-2. Many existing roads are not open to public motorized vehicles, to reduce human disturbance to wildlife and reduce maintenance costs. Roads **not** open to public motor vehicles are available for use by hikers. Mountain bikers and horseback riders use these only if they are a part of the relevant designated trail system. The road surface is free of gullies and is generally covered with native materials or native grasses and forbs. The road edges are intact and not broken by excessive traffic of forest visitors. During rain events, water is able to seep into the soil gradually without causing		

Forest-Wide Goals/Desired Conditions		Related Objectives	Standards & Guidelines
	erosion.		
RDS-3.	There is little evidence of new road construction. Unauthorized roads are nonexistent.	Over the planning period, all known unauthorized roads are closed, restored or obliterated unless some portion is determined needed for the transportation system.	SEE ABOVE
RDS-4.	A negligible amount of sediment from roads is reaching streams.		SEE ABOVE
Lands			
LND-1.	Uwharrie National Forest land base is sufficient to protect wilderness values; provide habitat, refuges and corridors for native wildlife; provide special areas to improve ecological integrity; provide views and vistas; and provide a variety of outdoor recreation opportunities.		Guidelines Consider the following when setting priorities for land adjustment and acquisition: improving recreation access especially to rivers and lakes; filling ownership gaps along the Uwharrie National Recreation Trail; providing for ecological connectivity with other conservation ownerships; and improving management efficiency. Land exchanges should be designed to improve the biological diversity of the Forest.
LND-2.	The land base is adequate to accommodate completion of the Uwharrie National Recreation Trail.		SEE ABOVE
LND-3.	The land base is adjusted to provide adequate access for water-based recreation,		SEE ABOVE

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
including access to the Uwharrie River.		
LND-4. The land base is mostly contiguous to allow for better resource management; however isolated tracts with special resource values are also a part of the land base.		SEE ABOVE
Special Uses		
SPU-1. Permanent structures associated with special uses are centrally located or concentrated on existing sites or designated corridors, minimizing the number of acres encumbered by special use authorizations.		Standard Special use authorizations shall include terms and conditions to protect any existing federally listed species and suitable habitat present in the area, and direction to reduce impacts to sensitive or locally rare species. Guideline New special use authorizations should be compatible with the desired conditions for the area.
Minerals and Energy		
MIN-1. Minerals and energy developments meet legal mandates to facilitate production of mineral and energy resources on the Forest in a manner that minimizes adverse impacts to surface and groundwater resources, and that do not		Standards Minerals and energy exploration and development authorizations shall be compatible with the desired conditions for the area.

Forest-Wide Goals/Desired Conditions	Related Objectives	Standards & Guidelines
detract from meeting other desired conditions applicable to the area.		Minerals and energy exploration and development authorizations in the Schweinitz's Sunflower HMA shall include terms and conditions to protect any existing federally listed species and suitable habitat present in the area, and direction to reduce impacts to sensitive or locally rare species.
Human Health and Safety		
HHS-1. Management activities, facilities, roads and trails are designed and managed in such a way that human health and safety is a primary consideration.		

Appendix B –Planned Timber Sale Program

The silviculture/timber sale program areas apply active management to the overstory, midstory and understory vegetation in order to move the forest toward desired conditions (see Chapter 1, VEG-1 through VEG-8). Activities described in this section include timber sales such as intermediate timber harvest (thinning), and silvicultural harvest treatments that are even age in nature (clearcut, or two-age regeneration), or uneven age (group selection). The estimated or projected size of the silviculture program (acres of management activity) is based on the ecological needs of the resource, tempered by the historical budget and personnel levels for the Uwharrie National Forest.

Following is a table showing estimated average annual silvicultural treatments to be applied to the Uwharrie National Forest for the first decade covered by this plan:

Estimated Vegetation Management Practices
(Annual Average Treatment Area (Acres) in First Decade for Lands Suitable for Timber Harvest - All acres are approximate)

Practice	Primary Management Emphasis		
Lands where Timber Production Achieves, or is Compatible with Desired Conditions and Objectives	**Fire/Fuels/ Forest Health**	**Ecological Restoration**	**Totals**
Regeneration Cutting (even- or two-aged)		266	266
Uneven-aged Management			
Intermediate Harvest Commercial Thinning Salvage/Sanitation	400	34	434
Other Harvest Cutting			
Reforestation		266	266
Timber Stand Improvement		300	300

Note that timber harvesting activity in the first decade is dedicated primarily toward restoration of ecosystems and commercial thinning for forest health reasons.

The timber sale activities described above will yield wood products to the commercial markets in the form of pulpwood and sawtimber. The following table shows the estimated average annual outputs (MCF = Thousand Cubic Feet) from the harvesting described above. These outputs are predominantly from removing loblolly and shortleaf in an effort to restore either longleaf pine or oaks and hickories to a site. Outputs by forest community type and silvicultural system are documented in the plan set of documents.

Timber Sale Program Quantity
(Annual Average Volume Outputs for First Decade)

Practice	Timber Sale Program Quantity (TSPQ)		
Lands where Timber Production Achieves, or is Compatible with Desired Conditions and Objectives	**Fire/Fuels/ Forest Health**	**Ecological Restoration**	**Totals**
Regeneration Cutting (even- or two-aged)		7244	7244
Uneven-aged Management			
Intermediate Harvest Commercial Thinning Salvage/Sanitation	3963	440	4403
Other Harvest Cutting			
Grand Totals, All Products (MCF)	3963	7684	11647

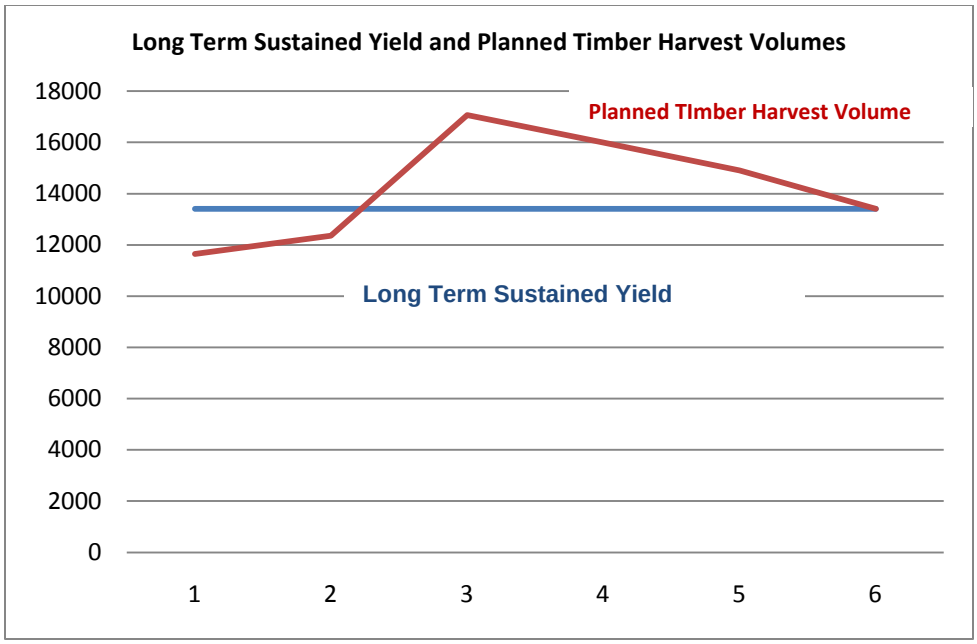
The **Allowable Sale Quantity** (ASQ), the maximum timber volume output for 10 years, would be 11,647 MCF or **11.647 MMCF** (million cubic feet).

Vegetation Management Requirements at the Project Level

This plan makes the general determination about Uwharrie NF lands that are suitable/not suitable for timber harvest, and timber production. Final decisions about a proposed project that involves timber harvest are made at the project level. In making this determination, the following factors must be evaluated at the project level and documented in the project or case file (Reference FSH 1909.12, Chapter 61).

- A determination must be made that the project will not cause irreversible damage to resources such as soil productivity or watershed condition;
- That the area can be adequately re-stocked according to the plan's objectives for achieving desired conditions;
- In the case of regeneration harvest, stands should generally have reached culmination of mean annual increment (CMAI). (Note that the themes of this plan have to do with restoration of ecosystems, and replacing off-site species with more appropriate vegetation)

Finally, the harvest levels proposed must be compared to the long term sustained yield (LTSY) calculated for the Uwharrie National Forest. The following chart depicts the LTSY of 13,402.35 MCF per decade, compared to the estimated harvest volumes based on implementing the Plan, by decade that are in the range of 11,647 MCF to close to 17,000 MCF per decade. The LTSY is based on a forest restored to longleaf and oak/hickory forest communities over the long term, which by their nature produce less volume than loblolly and shortleaf in the same amount of time. After about 50 years the expectation is the restoration activities would be largely complete and harvest levels would then drop below the LTSY.



This chart depicts an initial rise in the timber sale program quantity followed by a decline. This is a reflection the activity needed to restore native ecosystems. A great amount of volume will be available from the loblolly plantations as they are removed in the early decades and the land is restored to longleaf pine and oak-hickory forests. The restored types produce less volume per acre than loblolly plantations. Once the backlog of loblolly is removed, the timber sale program quantity is expected to decline in the latter decades as it approaches the LTSY, which is the amount of timber that could be removed in perpetuity once the forest reaches it desired condition of restored longleaf and oak-hickory communities. For more details, refer to Appendix B of the Draft Environmental Impact Statement.

Appropriateness of Regeneration Harvest Methods

Regeneration methods expected to be used to realize goals/desired conditions include **clearcutting** and **clearcutting with reserves** (even-aged management system), **shelterwood with reserves** (two-aged system), and **group selection** (uneven-aged system). At this time, single-tree selection (uneven-aged management) is not being considered as appropriate in meeting long-term regeneration needs to sustain productive stands of desirable tree species on the Uwharrie NF because regeneration objectives for shade-intolerant species would not be met.

Clearcutting and/or clearcutting with reserves would be used only for the following reasons:

1. To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species.
2. To enhance wildlife habitat or provide for scenic vistas.
3. To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations.

4. To preclude or minimize the occurrence of potentially adverse impacts of insect or disease infestations, windthrow, logging damage, or other factors affecting forest health.
5. To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.
6. To rehabilitate poorly stocked stands or remove off-site tree species that occur due to past management or natural events.
7. To meet research needs.
8. To restore longleaf pine, shortleaf pine, or oak-hickory on sites currently occupied by off-site species.

These circumstances would be referred to on a site-specific basis when showing that clearcutting is optimum for a given stand.

The **shelterwood with reserves (or two-age)** regeneration method perpetuates at least two distinct ages of timber growing on the same site. Since reserve trees do not have to support another operable sale, they do not have to be merchantable and not as many have to be left. The type and arrangement of reserve trees retained would depend on site-specific objectives. Basal area of reserve trees should typically average 15-25 sq ft/acre and should not exceed 30 sq ft/acre fifteen years after harvest to prevent reserve trees from hindering further growth and development of the new stand. The two-age method is appropriate in operable stands on slopes less than 40 percent whenever there are enough leave trees that would live to be a part of the stand for 50-100 years into the future. Two-age could be appropriate to meet objectives other than timber production, e.g. if continuous acorn production is needed within a stand, or if den trees are scarce, or if aesthetics is a consideration. Two-age is not appropriate in stands where there are few suitable reserve trees, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where leaving a loblolly pine or Virginia pine seed source would hinder restoration efforts.

Regeneration using the **group selection** method is appropriate where slopes are gentle enough to allow ground skidding of timber (logging costs are relatively low) and where there is enough volume and value in the stands to make selection cutting operable. Group selection is not appropriate in very small stands, on slopes greater than 40 percent where cable logging is required, where timber volume or value is low, or in stands where insect or disease hazards are high and widespread. It is also not appropriate where partial cutting and leaving a loblolly pine or Virginia pine seed source would hinder restoration efforts.

Uwharrie National Forest Options for Ecosystem Restoration

The following sections describe management options that may be taken during restoration of longleaf pine, oak hickory, or shortleaf pine.

Longleaf Pine Woodlands

Restoration Objectives: Restore functioning longleaf pine (LLP) woodland ecosystems on historically suitable sites.

Site Considerations: Restoration and maintenance objectives may be sought on southeastern interior longleaf pine sites. Especially on xeric or mesic uplands and riparian forests that contain the ultisol soil order. Site constraints should not prevent fire from being used on that portion of the landscape.

Existing Vegetation Conditions: Restoration efforts will vary with the degree of departure from the traditional longleaf pine woodland condition. Assessments should examine the condition and function of the overstory, midstory, and understory.

Prescriptions and Tools:

1) Commercial harvest may be used to address a variety of overstory conditions.
    a. Intermediate Treatments: Prior to entering a regeneration sequence, commercial thinning may be useful for adjusting stand density and reallocating resources in maturing stands.
        i. Where LLP is present but too dense, thinning may be appropriate.
        ii. Thinning may also be useful to remove off site species allowing for retention of LLP in mixed species stands.
        iii. On longleaf sites where other species are present and longleaf is not, thinning accelerates maturity of the stand, accelerating future restoration.
    b. Regeneration Sequences: Where the overstory does not contain LLP or the overstory is in a damaged state and restoration objectives allow for establishment of LLP, clearcutting may be the most appropriate silvicultural system. Where regeneration is desired and LLP exists in a mixed overstory, silvicultural systems such as shelterwood with reserves or similar two age treatments may provide a more naturally structured woodland condition. On sites already dominated by longleaf pine the uneven-aged system group selection may be appropriate.
2) Non-commercial or pre-commercial harvest may also be appropriate to manage the density of LLP on sites under a restoration objective.

a. In non-merchantable stands due to density, damage, or maturity; non-commercial means of removing the non-desirable species in the overstory should benefit a LLP restoration prescription.

b. Timber Stand Improvement (TSI) and Release are also tools used to manage younger stands within a LLP restoration sequence. The TSI or release tool used may be mechanical, prescribed fire, or chemical.

3) Cultural Treatments: These activities are implemented throughout the LLP restoration sequence.

a. Prescribed Fire: Probably the most widely used tool in LLP ecosystems, it is beneficial through all phases of a regeneration prescription, albeit for different objectives.

i. Prior to initiation of restoration: Fire is used to reinvigorate the native grasses and forbs, increasing seed production and root development, and helping the understory survive future overstory harvest. Prescribed fire in this phase of the prescription will also control understory hardwood encroachment.

ii. Post harvest fire may be used for site preparation to control woody stems, reduce logging slash, and prepare the seedbed for planting.

iii. Fire may also be used post planting to release LLP regeneration from competition primarily with hardwoods and other fire intolerant pine species. This situation may also occur when the stand is regenerating naturally after a shelterwood with reserves, other two-aged harvest, or group selection.

b. Herbicide: Complimentary to fire, herbicide may be used in many phases of the regeneration sequence to reduce competition from hardwoods not killed by fire, reduce sprouting after harvest or fire, remove invasive species, and release regeneration.

c. Mechanical treatments: Similar to the use of herbicide, mechanical control of undesirable of species may satisfy LLP restoration objectives. Mechanical treatments may be used alone or in combination with herbicide or fire to enhance establishment of conditions suitable for LLP regeneration or release of existing longleaf pine regeneration.

Oak Hickory Forests

Restoration Objectives: To improve health, diversity, stocking, and the regeneration potential of mixed oak forests or pine dominated stands with a mixed oak component on historically suitable sites.

Site Considerations: Restoration and maintenance objectives may be sought on a variety of sites across the topographic gradient present on the Uwharrie NF. Sites may include ridge tops, knolls, exposed hillsides, and mid to lower slopes. Soil pH varies from acidic to slightly basic depending on the parent material. Site constraints should not prevent fire from being used on that portion of the landscape.

Existing Vegetation Conditions: The existing vegetation conditions will determine the degree of restoration effort. The existing condition may range from degraded and cutover oak forests, mixed oak forests with mesic encroachment, and sites dominated by pine forests. Restoration efforts will need to address conditions present in the three main layers of the forest canopy.

Prescriptions and Tools:

1) Overstory management options may include commercial harvest to manipulate density, light levels, species composition, or remove offsite species or degraded and damaged individuals.

    a. Commercial thinning may remove undesired or off site species especially in mixed species stands dominated by pine. Thinning may also be used to focus growth on desired species in lower value stands and increase growth of retained trees in overcrowded stands.

    b. Regeneration harvests focus on regenerating desired species. Their objective is to establish the new age class in high light conditions to maximize growth and development. Regeneration harvests may occur in several stages or a sequence once certain conditions are present within the stand.

        i. Preparatory cut: This step removes low shade from the stand improving conditions for oak regeneration to become established. The lower light levels maintained by this entry will keep more light intolerant species like tulip poplar in check. In younger or poorer -stocked forests this may be a non-commercial treatment accomplished mechanically or with herbicides.

        ii. First Step Removal Harvest: This second entry occurs in oak forests once oak regeneration has become established on the forest floor. Typically a first step harvest removes a third to half of the overstory density providing light levels capable of growing established oak seedlings into competitive oak seedlings and saplings.

        iii. Final Removal Harvest: Once competitive oak regeneration is present in sufficient stocking the remaining overstory is removed to release the new forest to full sunlight. This harvest may be modified to retain desired overstory trees for diversity, aesthetic, or habitat reasons.

c. Non-commercial overstory treatments may occur at several stages within the stands development. Release of newly regenerated stands two to five years after final harvest. Crop tree release in stands 10 to 20 years old. Non-commercial felling of degraded or damaged stems to release more desirable regeneration.

2) Cultural Treatments: These treatments are designed to manipulate midstory and understory conditions during restoration. Cultural treatments control undesirable or restore desirable species. Undesirable conditions that include the presence of shade tolerant, mesic, or offsite species require treatment to facilitate restoration of oak-hickory forests.

   i. Mechanical Treatments: Mechanical treatments that remove non-desirable species in the sub-merchantable size classes reduce low shade and facilitate better understory conditions. Mechanical treatments occur at various times over the life cycle of a stand. Pre-regeneration treatments occur when the midstory is preventing establishment of new regeneration. Mechanical treatments occur after or concurrent with harvest to release already established regeneration. Mechanical treatments may be completed by hand or through use of a machine.

   b. Chemical Treatments: Herbicide treatments may be used separately or in combination with mechanical treatments to remove undesirable midstory vegetation. Applications usually occur through broadcast spraying or as individual tree or stump treatments.

   c. Prescribed Fire: Prescribed fire may also be used to accomplish similar results to mechanical treatments if non-desired species are thinned bark and sensitive to thermal injury. Burn intervals should be frequent enough to control sprouts of non-desired species. Prescribed fire may also be used to set back or remove competing vegetation or prepare the seedbed.

   d. Care with herbicide applications and fire use. Applications of these two methods in the presence of oak regeneration may cause significant damage if used at the wrong times.

   e. Scarification techniques may also be used to facilitate better germination of oak seedlings by increasing seed to soil contact.

Shortleaf Pine-Oak Woodlands

Restoration Objectives: To restore and enhance mixed shortleaf pine / oak forests on historically suitable sites.

Site Considerations: Shortleaf pine is found on primarily acidic ultisols across its native range. It does not grow well on basic soils. On moist sites, it occurs in mixed stands with loblolly pine and hardwoods. On drier sites, shortleaf grows in pure stands or in mixed stands with upland hardwoods. On oak site indices less than 65, shortleaf has its highest abundance. At oak site indices greater than 65, it exists as a mixed of scattered component of stands (Brinkman and Rogers 1967). Due to the presence of littleleaf disease, shortleaf restoration should not be pursued on poorly drained sites. Site limitations should not preclude fire from use on the site.

Existing Vegetation Conditions: Restoration efforts will vary with the degree of departure from traditional shortleaf pine-oak woodland conditions. Assessments should examine the condition and function of the overstory, midstory, and understory. Existing conditions may vary from sites occupied by pure loblolly pine or hardwoods to mixed compositions of loblolly pine, longleaf pine, shortleaf line and hardwoods.

Tools Available: Management options for restoration of shortleaf pine are similar to those required for restoration of mixed oak forest communities. On the Uwharrie National Forest the majority of the shortleaf pine will exist in mixed pine and oak woodlands. As with longleaf and oak, reintroducing historic fire frequencies is important to restoring shortleaf pine. Many other management techniques are also similar.

1) Overstory management options may include commercial harvest to manipulate density, light levels, species composition, or remove offsite species or degraded and damaged individuals.

    a. Commercial thinning:

        i. In pure shortleaf stands thinning will increase growth on remaining trees and also reduce the threat of littleleaf disease on wet sites.

        ii. On sites dominated by loblolly pine or oak species where shortleaf is present in less than desirable densities, thinning of other species leaving shortleaf will ensure its presence remains for future regeneration harvests.

        iii. On shortleaf sites where other species are present and shortleaf is not, thinning accelerates maturity of the stand accelerating future shortleaf restoration.

    b. Regeneration harvest treatments focus on increasing or providing a window of opportunity for restoration of shortleaf pine. Shortleaf pine responds to a variety of even and uneven-aged regeneration treatments with uneven aged treatments achieving their best results on lower quality sites. Even aged treatments achieve regeneration success on a wide spectrum of sites.

i. Shelterwood or two-aged treatment takes advantage of shortleaf present in the overstory to contribute seed to the site for regeneration. The treatment may retain future shortleaf into the next stand while capturing stand growth as a future product. The increased shade from these retention style overstory treatments captures the ability of shortleaf pine to tolerate shade better than loblolly pine. However, these treatments if applied wrong or without the proper cultural treatments may favor mesic hardwood development over shortleaf pine.

ii. Clearcutting removes the entire overstory where suitable advanced regeneration is in place or planting is prescribed as a follow up reforestation treatment. Clearcutting may be desirable during full restoration of an offsite species such as mature loblolly pine.

iii. On lower quality sites, especially dry sites, where shortleaf pine is more competitive, group selection and individual tree selection regeneration methods may be accomplished. Individual tree selection should only be accomplished on the lowest quality sites where shade tolerant competition is at a minimum. On all but the poorest sites, where mesic species development is controllable, these non-desirable species will benefit from the decreased light levels more than shortleaf.

c. Non-Commercial Release treatments including TSI are also important for controlling species composition within regenerating shortleaf pine and mixed forest communities. Cleaning and weeding treatments should be completed within two to five years of the final regeneration harvest. This treatments is usually area based and removes non-desired species either chemically or mechanically through cutting. Depending on the site quality, follow up treatments may be needed. Crop tree release is accomplished through similar means at later stages of development (between 10 o 20 years of age).

2) Cultural Treatments are designed to control the development of the midstory or understory prior to entering or during a regeneration harvest sequence. These treatments are an important consideration during restoration when sub-canopy conditions may prevent establishment and growth of shortleaf advanced regeneration or inhibit the growth of released regeneration. Similar to oak species, young shortleaf pine will sprout readily when top killed. Many of these cultural treatments are designed to take advantage of this sprouting potential to accumulate desirable regeneration.

a. Mechanical Treatments: Mechanical treatments that remove non-desirable species in the sub-merchantable size classes reduce low shade and facilitate

better understory conditions. Mechanical treatments occur at various times over the life cycle of a managed forest. Pre-regeneration treatments occur when the midstory is preventing establishment of new regeneration. Mechanical treatments occur after or concurrent with harvest to release already established regeneration. Mechanical treatments may be completed by hand or through use of a machine.

b. Chemical Treatments: Herbicide treatments may be used separately or in combination with mechanical treatments to remove un-desirable midstory vegetation. Chemical applications usually occur through broadcast spraying or as individual tree or stump treatments. Chemical treatments have the added benefit of controlling sprouting from competing, mesic hardwoods such as red maple which shortleaf is unable to outgrow if the red maple regenerate from stump sprouts.

c. Prescribed Fire: Prescribed fire may also be used to accomplish the similar results as mechanical treatments if non-desired species are thinned bark and sensitive to fire. Burn intervals should be frequent enough to control sprouts of non-desirable species. Prescribed fire may also be used to set back or remove competing vegetation or prepare the seedbed. Care with herbicide applications and fire use. Applications of these two methods in the presence of oak regeneration may cause significant damage if used at the wrong times.

d. Scarification techniques may also be used to facilitate better germination of shortleaf seedlings by increasing seed to soil contact. This treatment should be timed just before of soon after the sporadic seed production of the species.

A Restoration Emphasis

The restoration of LLP, Oak-Hickory, and Shortleaf forest communities has many similarities. In many cases, combinations of treatments and careful consideration of the existing stand are necessary to address conditions of site variation. Regardless of the type of community being restored to its desired future condition, the restoration sequence as a whole may be too large to tackle in one rotation. Incremental steps of improvement in the vegetation condition should be considered an accomplishment and future efforts should follow-up upon those already made.

a. On sites with an overstory dominated by loblolly pine, restoration treatments may be more abrupt depending on the level of hardwood understory development and its species make-up. On certain sites, tree planting (or seeding), may facilitate greater restoration success or increased species diversity (i.e. reintroduction of American Chestnut) when combined with cultural treatments.

b. On mixed species sites, reductions in density featuring retention of desired residual species in the overstory may follow a more natural restoration path.

c. The reintroduction of fire at historical return intervals is important to establishing long-term restoration success. However, each forest community has key fire exclusion periods early in its physiological development.

d. On many sites where historic fire suppression has occurred, the encroachment of mesic, shade tolerant species into the understory and over time into all canopy layers has produced many structural and compositional changes in the forests of the Uwharrie. The presence of these species was likely facilitated by the development of canopy gaps from mortality and disturbance. This condition represents one of the greatest restoration hurdles for all forest communities on the Uwharrie. Treatments need to mitigate this condition by developing good longleaf, shortleaf, oak or hickory seedlings in the understory prior to increasing light levels in the overstory. Providing too much light to the understory early in the restoration process will perpetuate the presence of shade tolerant and faster growing species making it harder to establish pine, oak and hickory. The more advanced this condition the more intensive the restoration.

e. On challenging sites where mesic species are present in high abundance, combinations of chemical and mechanical treatments may be necessary to remove them from the landscape prior to initiation of historical fire return intervals.

f. Restoration is not complete without return of the native herbaceous and shrub species to the sites slated for restoration. These components are necessary for function of the ecosystem as a whole and facilitate natural disturbance patterns. In many cases restoration of these components may be costly and difficult.

Maintenance Post Restoration

Follow up treatments to restoration primarily includes the use of prescribed fire on a historically correct return interval. Once the three ecosystem components (overstory, midstory, understory) are in place, maintenance with fire is paramount. Periodic adjustment to stand density through thinning may be needed to control loblolly pine volunteers in recently restored stands, the density of desired natural regeneration, or to control competition from other species. Restored communities may continue to be managed using a variety of overstory management techniques including both even aged and uneven aged.

Appendix C – Species Scientific Names and NatureServe Community References

Species Scientific Names

Common name	Scientific Name
Plants	
American beech	*Fagus grandiflora*
American holly	*Ilex opaca*
American strawberry bush	*Euonymus americanus*
Black cohosh	*Cimicifuga racemosa*
Black highbush blueberry	*Vaccinium atrococcum*
Black oak	*Quercus velutina*
Black-edge sedge	*Carex nigromarginata*
Blackjack oak	*Quercus marilandica*
Blaspheme-vine	*Smilax laurifolia*
Bloodroot	*Sanguinaria canadensi*
Blue huckleberry	*Carex nigromarginata*
Broomsedge	*Andropogon virginicus virginicus*
Bushy broomsedge	*Andropogon glomeratus*
Butterfly pea	*Clitoria mariana*
Buttonbush	*Cephalanthus occidentalis occidentalis*
Carolina shagbark hickory	*Carya carolinae-septentrionalis*
Carolina supplejack	*Berchemia scandens*
Carolina thistle	*Cirsium carolinianum*
Chalk maple	*Acer leucoderme*
Cherrybark oak	*Quercus pagoda*
Chestnut oak	*Quercus montana*
Christmas fern	*Polystichum acrostichoides*
Common chinquapin	*Castanea pumila* var. *pumila*
Common foamflower	*Tiarella cordifolia var. collina*
Common pawpaw	*Asimina triloba*
Common spicebush	*Lindera benzoin*
Common winterberry	*Ilex verticillata*
Cross-vine	*Bignonia capreolata*
Deerberry	*Vaccinium stamineum*
Dissected toothwort	*Cardamine dissecta*
Eastern red maple	*Acer rubrum var. rubrum*
Ebony spleenwort	*Asplenium platyneuron* var. *platyneuron*
Elliott's broomsedge	*Andropogon gyrans*
Evergreen bayberry	*Andropogon gyrans*
Farkleberry	*Vaccinium arboretum*
Fringetree	*Chionanthus virginicus*

Common name	Scientific Name
Galax	*Galax urceolata*
Giant cane	*Arundinaria gigantea*
Glade wild quinine	*Parthenium auriculatum*
Green ash	*Fraxinus pennsylvanica*
Highbush blueberry	*Vaccinium corymbosum*
Hillside blueberry	*Vaccinium pallidum*
Horsesugar	*Symplocos tinctoria*
Indian grass	*Sorghastrum nutans*
Indigo-bush	*Amorpha schwerinii*
Inkberry	*Ilex decidua*
Ironwood	*Carpinus caroliniana ssp caroliniana*
Lamp rush	*Juncus effuses*
Large witch-alder	*Fothergilla major*
Little bluestem	*Schizachyrium scoparium*
Loblolly pine	*Pinus taeda*
Longleaf pine	*Pinus palustris*
Long-stalked Aster	*Symphyotrichum dumosum* var. *dumosum*
Maidenhair fern	*Adiantum pedatum*
Mockernut hickory	*Carya alba*
Mountain laurel	*Kalmia latifolia*
Muscadine	*Vitis rotundifolia*
New Jersey tea	*Ceanothus americana*
Northern green-and-gold	*Chrysogonum virginianum*
Northern oat grass	*Danthonia spicata*
Northern red oak	*Quercus rubra*
Overcup oak	*Quercus lyrata*
Persimmon	*Diospyros virginiana*
Piedmont indigo-bush	*Amorpha schwerinii*
Pignut hickory	*Carya glabra*
Post oak	*Quercus stellata*
Poverty oat-grass	*Danthonia spicata*
Purple pitcher plant	*Sarracenia purpurea*
Ravine sedge	*Carex impressineriva*
Red hickory	*Carya ovalis*
Red maple	*Acer rubrum*
Red oak	*Quercus rubra var. rubra*
Redbud	*Cercis Canadensis*
River birch	*Betula nigra*
Royal fern	*Osmunda regalis spectabilis*
Sand hickory	*Carya palida*
Schweinitz's sunflower	*Helianthus schweinitzii*
Sedges	*Carex* spp.
Shagbark hickory	*Carya ovata*
Ship nuthatch	*Scleria triglomerata*
Shortleaf pine	*Pinus echinata*

Common name	Scientific Name
Silky oat grass	*Danthonia spicata*
Silverbell	*Halesia tetraptera var. tetraptera*
Southern anemone	*Anemone berlandieri*
Southern blackhaw	*Viburnum rufidulum*
Southern red oak	*Quercus falcate*
Southern wild raisin	*Viburnum nudum* var. *nudum*
Sphagnum moss	*Sphagnum* spp.
Splitbeard bluestem	*Andropogon ternarius var. ternarius*
Squaw-huckleberry	*Vaccinium stamineum*
Starved witch grass	*Dichanthelium depauperatum*
Swamp chestnut oak	*Quercus michauxii*
Swamp red maple	*Acer rubrum* var. *trilobum*
Sweetgum	*Liquidambar styraciflua*
Sycamore	*Platanus occidentalis*
Tag alder	*Alnus serrulata*
Thin-pod white wild indigo	*Baptisia albescens*
Ti-ti	*Alnus serrulata*
Tulip poplar	*Liriodendron tulipifera*
Virginia goat's-rue	*Tephrosia virginiana*
Virginia pine	*Pinus virginiana*
Virginia red cedar	*Juniperus virginiana var. virginiana*
Virginia sweetspire	*Itea virginica*
Water oak	*Quercus nigra*
White ash	*Fraxinus americana*
White oak	*Quercus alba*
Whorled milkweed	*Asclepias verticillata*
Whorled milkweed	*Asclepias verticillata*
Willow oak	*Quercus phellos*
Winged elm	*Ulmus Americana*
Winged sumac	*Rhus copallinum*
Wood anemone	*Anemone quinquefolia* var. *quenquefolia*
Woodland tick-trefoil	*Desmodium nudiflorum*
Yellow indiangrass	*Sorghastrum nutans*
Yellow pitcher plant	*Sarracenia flava*
Yellow root	*Xanthorhiza simplicissima*
Yellow yam	*Xanthorhiza simplicissima*
Terrestrial animals	
Bald eagle	*Haliaeetus leucocephalus*
Black bear	*Ursus americanus*
Black duck	*Anas rubripes*
Canada goose	*Branta canadensis*
Dove	*Zenaidura macroura*
Eastern cougar	*Felis concolor*
Mallard	*Anas platyrhynchos*
Mole salamander	*Ambystoma talpoideum*

Common name	Scientific Name
Mottled dusky wing	*Erynnis martialis*
Pintail	*Anas acuta*
Quail	*Calinus virginianus*
Rabbit	*Sylvilagus floridans*
Red-cockaded woodpecker	*Dendrocoposn borealis*
Squirrel	*Sciurus carolinensis*
Turkey	*Meleagris gallopava*
Whitetail deer	*Odocoileus virginianus*
Wood duck	*Aix sponsa*
Aquatic animals	
Atlantic pigtoe mussel	*Fusconaia masoni*
Carolina creekshell mussel	*Villosa vaughaniana*
Carolina darter (central Piedmont population) fish	*Etheostoma collis (population 1)*
Carolina elktoe mussell	*Alasmidonta robusta*
Carolina fatmucket mussel	*Lampsilis radiata conspicua*
Carolina fatmucket mussel	*Lampsilis radiata conspicua*
Eastern creekshell mussel	*Villosa delumbis*
Greensboro burrowing crayfish	*Cambarus catagius*
Notched rainbow mussel	*Villosa constricta*
Roanoke slabshell mussel	*Elliptio roanokensis*
Savannah lilliput mussel	*Toxolasma pullus*
Squawfoot mussel	*Strophitus undulatus*
Squawfoot mussell	*Strophitus undulatus*
Triangle floater mussel	*Alasmidonta undulata*
Triangle floater mussel	*Alasmidonta undulata*
Yellow lampmussel mussel	*Lampsilis cariosa*

Rare Communities and NATURESERVE Reference

NAME	NATURESERVE REFERENCE
Acidic glade	Piedmont Acidic Cliff, CEGL003979
Basic Cliff	in part CEGL003982
Basic Mesic Forest	CEGL008466
Basic Oak–Hickory Forest	CEGL007773 and CEGL004541
Basic Piedmont Bluff Glade	CEGL004443
Basic Piedmont Glade	CEGL004443
Basic Rocky Variant of the Xeric Hardpan Forest	CEGL003713
Dry Basic Oak--Hickory Forest	CEGL007773 and CEGL004541
Dry Oak–Hickory Forest	CEGL007244
Dry ridgetop shortleaf pine forest	no Natureserve equivalent
Dry-mesic Basic Oak--Hickory Forest	CEG7237, CEGL007236, and CEGL007232
Dry-Mesic Oak–Hickory Forest	CEGL008475
Dry-Oak Hickory Forest	CEGL007244
Hillside Seepage Bog	CEGL004781
Low Elevation Rocky Summit	derivative of CEGL008437
Low Elevation Seep	no Natureserve equivalent
Mesic Mixed Hardwood Forest	CEGL008465
Open-canopy grassy glade community	in part CEGL004443
Piedmont Acidic Cliff	CEGL003979
Piedmont Alluvial Forest	in part CEGL004549, CEGL004550, and CEGL007388
Piedmont Boggy Streamhead	CEGL004551
Piedmont Longleaf Pine Forest	in part CEGL008437 and CEGL003663
Piedmont Mafic Cliff	CEGL003982
Piedmont Monadnock Forest	CEGL006281
Piedmont/Coastal Plain Acidic Cliff	CEGL003979
Piedmont/Coastal Plain Heath Bluff	CEGL004446
Piedmont/Low Mountain Alluvial Forest	in part CEGL004549, CEGL004550, and CEGL007388
Piedmont/Mountain Levee Forest	CEGL004419
Rocky Bar and Shore	CEGL004286
Upland Depression Swamp Forest	CEGL007403
Xeric Hardpan Forest	CEGL003714