Whitehall Plantation Game Land Management

Plan

2015 – 2024

N.C. Wildlife Resources Commission staff has extensively contributed to the development and preparation of this plan through their various fields of professional expertise. All content, management strategies, recommendations, goals, and needs for change were developed using the best available science and professional working knowledge of Whitehall Plantation Game Land, its habitats, and terrestrial and aquatic species. Careful consideration has been given to all input received from the public, external agencies, and organizations that have an interest in or use the game land to ensure a that comprehensive management program is administered on Whitehall Plantation Game Land. The successful implementation of the plan will depend on the continued input and support from all interested parties.

PLAN DEVELOPMENT TEAM MEMBERS

- **David Allen**, Coastal Wildlife Diversity Supervisor, Division of Wildlife Management
- **John Carpenter**, Avian Wildlife Diversity Biologist, Division of Wildlife Management
- **Richie Clark**, Central Coastal Ecoregion Management Biologist, Division of Engineering and Lands Management
- **Michael Fisk**, District 4 Fisheries Biologist, Division of Inland Fisheries
- **Jeff Hall**, Wildlife Diversity Biologist, Division of Wildlife Management
- **Mark Hamlett**, Design Services Section Chief, Division of Engineering and Lands Management
- **Isaac Harrold**, Program Manager, Division of Engineering and Lands Management
- **Tommy Hughes**, Coastal Ecoregion Supervisor, Division of Engineering and Lands Management
- **Bill Johnstone**, Southern Coastal Ecoregion Technician Supervisor, Division of Engineering and Lands Management
- **Josh McConnell**, District 4 Area Sargent, Division of Enforcement
- **Colleen Olfenbuttal**, Bear/Furbearer Biologist, Division of Wildlife Management
- **Thomas Padgett**, District 4 Wildlife Biologist, Division of Wildlife Management
- **Casey Phillips**, Central Coastal Ecoregion Wildlife Forester, Division of Engineering and Lands Management
- **Ken Shughart**, Southern Coastal Ecoregion Wildlife Forester, Division of Engineering and Lands Management
- **Evin Stanford**, Deer/Turkey Biologist, Division of Wildlife Management
- **Benjy Strope**, Corporate CURE Biologist, Division of Wildlife Management
- **David Turner**, Northern Coastal Ecoregion Management Biologist, Division of Engineering and Lands Management
- **Chesley Ward**, Southern Coastal Ecoregion Management Biologist, Division of Engineering and Lands Management
- **Brent Wilson**, Northern Coastal Ecoregion Wildlife Forester, Division of Engineering and Lands Management

EXECUTIVE SUMMARY

Whitehall Plantation Game Land is 1,663 acres in size and occurs in Bladen County. It is owned by the state of North Carolina and the North Carolina Wildlife Resources Commission is the primary custodian. State ownership of this property dates back to 2009. Whitehall Plantation Game Land is managed for primary users which include hunters, trappers, anglers, and wildlife viewers. Some of the property's signature species include white-tailed deer, black bear, eastern wild turkey, and a variety of waterfowl species. In addition to primary users, there are an increasing number of non-traditional users on North Carolina Game Lands that include hikers/walkers, horseback riders, researchers, paddlers, target shooters, and others. Three different habitat types occur on Whitehall Plantation Game Land, each with its own ecological value. Floodplain forest habitat, by far, makes up the largest portion of the cover types on this property covering 61.6%. Twelve threatened, endangered, rare, or special concern animal species are thought or know to occur in the habitats found on this game land. Management goals include providing a diversity of habitat types and forest age classes through science based land management that are properly interspersed and juxtaposed across the landscape to ensure that a wide variety of terrestrial and aquatic wildlife species are maintained on the game land. Land managers strive to maintain game species at huntable levels through science based land management and sound regulations and to provide quality habitat for endangered, threatened, and rare species located on the game land to ensure their populations are maintained or increased. Additionally, extensive effort is made to provide sufficient infrastructure and opportunities to allow all game lands users a quality experience while on the game land with minimal habitat degradation and minimal conflict among user groups. To ensure these goals are met the NCWRC will need to collect various types of information regarding the species on the game land and the users of the game land, secure funding to accomplish management goals, acquire additional properties as they become available, maintain and develop regulations that promote sustained use of natural resources, and develop relationships with conservation partners that help meet management goals.

TABLE OF CONTENTS

ii. Public Fishing Areas
iii. Shooting Ranges

e. Non-traditional Uses
f. Recreational Facilities Maintenance

6. Public Uses

a. Discussion of Traditional Game Land Users
   i. Waterfowl Hunters
   ii. Deer Hunters
   iii. Turkey Hunters
   iv. Small Game Hunters
   v. Webless Migratory Game Bird Hunters
   vi. Trappers
   vii. Anglers
b. Discussion of Non-traditional Game Land Users
   i. Paddlers
   ii. Hikers and Runners
   iii. Horseback Riders
   iv. Researchers, universities, and museums
   v. Photographers and Artists
   vi. Sight Seers
   vii. ATV Riders and Other Off-road Vehicles
   viii. Campers
   ix. Stargazers
   x. Target Shooters
   xi. Bicyclists
   xii. Geocachers

7. Information Needs

a. Non-game Animals
   i. Birds
      1. Bachman's Sparrow
      2. Anhinga
      3. Mississippi Kite
      4. Cooper's Hawk
      5. Little Blue Heron
   ii. Non-game Mammals
      1. Rafinesque's Big-eared Bat
      2. Star-nosed Mole
   iii. Amphibians
      1. Mabee's Salamander
      2. Dwarf Salamander
      3. Four-toed Salamander
      4. Oak Toad
   iv. Reptiles
      1. Pigmy Rattlesnake
      2. Timber (Canebrake) Rattlesnake

INTRODUCTION

North Carolina Wildlife Resources Commission

The North Carolina Wildlife Resources Commission (hereafter referred to as NCWRC) was established in 1947. Prior to 1947, the tasks of managing state owned Wildlife Management Areas were executed by the Department of Conservation and Development. General dissatisfaction with the program led to the creation of the Wildlife Resources Law in 1947 that established the North Carolina Wildlife Resources Commission.

Since 1947, the NCWRC has been dedicated to the conservation and sustainability of the state's fish and wildlife resources through research, scientific management, wise use, and public input. The NCWRC is the state regulatory agency responsible for the enforcement of fishing, hunting, trapping and boating laws and provides programs and opportunities for wildlife-related educational, recreational and sporting activities.

Game Lands Program

The NCWRC's Game Lands Program is administered by the Division of Engineering and Lands Management and is an important component of the Division. This program and the land it supports are historic in nature and are recognized by hunter and non-hunter alike as one of the gems of the NCWRC. Land management practices on NCWRC holdings allow the agency to play a critical role in managing, acquiring, recovering, and enhancing wildlife habitat for rare and common species identified in various action plans to be applied on a landscape scale. North Carolina's Game Lands Program includes approximately 2,000,000 acres of public and private lands managed through professional staff for public hunting, trapping, and fishing. These lands are spread all across the state. North Carolina's national forests are designated as game lands, collectively comprising more than a million acres.

Since the program's beginnings in the early 1970's, game lands have been acquired and managed largely with funds derived from the sale of North Carolina's hunting and fishing licenses, as well as appropriations from the federal excise tax (Federal Aid in Wildlife Restoration Act) on sporting arms, ammunition, and archery equipment. Appropriately, the NCWRC and the public viewed these lands as hunting, trapping, and fishing grounds. That viewpoint is expanding as both funding sources and public interest have changed.

As the number of licensed hunters both nationally and in North Carolina has been declining, non-consumptive activities such as bird watching, hiking, and biking have been on the rise. At the same time, the majority of new money used to purchase game lands has come from state trust funds designed to promote clean water, aid in conservation of endangered species, and from the mitigation of wetlands lost to construction and highway projects. This has prompted state officials and conservation groups to see a larger role for North Carolina's game lands. The NCWRC recognizes the need to provide for a larger and more diverse group of game land users.

Game Lands Program Mission Statement

Consistent with the original establishment legislation for the NCWRC, the mission of the Game Lands Program is:

> "...to enhance, facilitate, and augment delivery of comprehensive and sound wildlife conservation programs. Inherent in delivery of a lands program consistent with this mission is the feasibility and desirability of multiple uses on lands owned by the state within the system. In addition to hunting, fishing, trapping, and wildlife viewing as primary uses, we recognize the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses."

The NCWRC's Game Lands Program management objectives are:

- To provide, protect, and actively manage habitats and habitat conditions to benefit aquatic and terrestrial wildlife resources
- To provide public opportunities for hunting, fishing, trapping, and wildlife viewing
- To provide for other resources-based game land uses to the extent that such uses are compatible with the conservation of natural resources and can be employed without displacing primary users
- To provide an optimally sustainable yield of forest products where feasible and appropriate and as directed by wildlife management objectives

PURPOSE AND NEED FOR THE PLAN

The NCWRC developed this Game Land Management Plan (hereafter referred to as Plan) to provide a foundation for the management and use of Whitehall Plantation Game Land (hereafter referred to as Whitehall Plantation) in Bladen County, North Carolina. The Plan will serve as a guide for the NCWRC's management actions and direction over the next 10 years and is considered amendable. The Plan will be periodically reviewed and compared to successes and failures of objectives set forth. Amendments will be made based on these successes and failures providing the NCWRC with the ability to implement adaptive resource management. Fish and wildlife conservation will receive top priority in game lands management, and wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the Game Lands Program or the purpose for which it was established. Hunting, fishing, trapping, and wildlife viewing are recognized as traditional uses on game lands and will continue to be allowed and encouraged. Non-traditional uses will be allowed on game lands as long as they are feasible and consistent with agency's mission and compatible with these traditional uses.

The Plan was prepared by a development team composed of NCWRC staff that provided various expertise to address different components of the Plan, which included staff from the divisions of

Engineering and Lands Management, Wildlife Management, Inland Fisheries, and Law Enforcement. In developing this Plan, the development team incorporated the input of state agencies, nongovernmental organizations, local citizens, and the general public through a series of public input meetings, as well as an online comment session through the NCWRC's website. This public involvement and the planning process itself are described in other sections of the Plan.

All aspects of game land management were considered in the development of the Plan and include but are not limited to; fish and wildlife communities, forest management, infrastructure development and maintenance, public uses, fish and wildlife information needs, financial assets and future needs, future plans for acquisition, regulations and enforcement, and existing and needed partnerships and collaboration.

The purpose of the Plan is to develop proposed actions that best achieve the purpose of the Game Lands Program. It will serve to attain the goals and objectives developed for the game land, contribute to the Game Lands Program mission, address key problems, issues, and relevant mandates, and provide consistency with sound principles of fish and wildlife management.

More specifically, the Plan is needed to:

- Provide a clear direction for game land management
- Provide game land neighbors, users, and government officials with an understanding of NCWRC management actions on and around the game land
- Ensure that NCWRC management actions, including wildlife management and recreational activities, are consistent with the mandates of the Game Lands Program
- Provide a basis for the development of budgetary requests for operations, maintenance, and improvement needs

Again, this Plan is written based on a ten year planning horizon and is considered a living document that can be amended and updated based on adaptive resource management. This will give managers the ability to make changes to the Plan based on varying conditions such as: updates and improvements on management strategies, changes created by catastrophic weather events, informative data received through research and surveys, and changes of wildlife population and ecosystem responses to implemented management strategies.

REGIONAL CONTEXT

Mid-Atlantic Coastal Plain of North Carolina

In North Carolina, a large diversity of fish and wildlife habitats exist across three distinct regions of the state: the Coastal Plain, the Piedmont, and the Mountains (Figure 1). These regions fall within much larger ecoregions, span state borders, and link North Carolina to neighboring states. Whitehall Plantation is located in Bladen County, which lies within the Mid-Atlantic Coastal Plain of North Carolina. This ecoregion is characterized by flat lands extending inland from the coast an average of 125 miles (NCWRC 2005), with the combined land and water areas covering nearly half the area of the state. Elevations increase inland at roughly one foot per mile. This ecoregion ranks among the top 10 in the continent in number of reptile, bird, and tree species (Ricketts et al. 1999) and is particularly diverse from an avifauna standpoint because it lies at the southern end of the range for many northeastern bird species and the northern end for many southeastern bird species. In fact, North Carolina is the only state where some bird species are found year round.

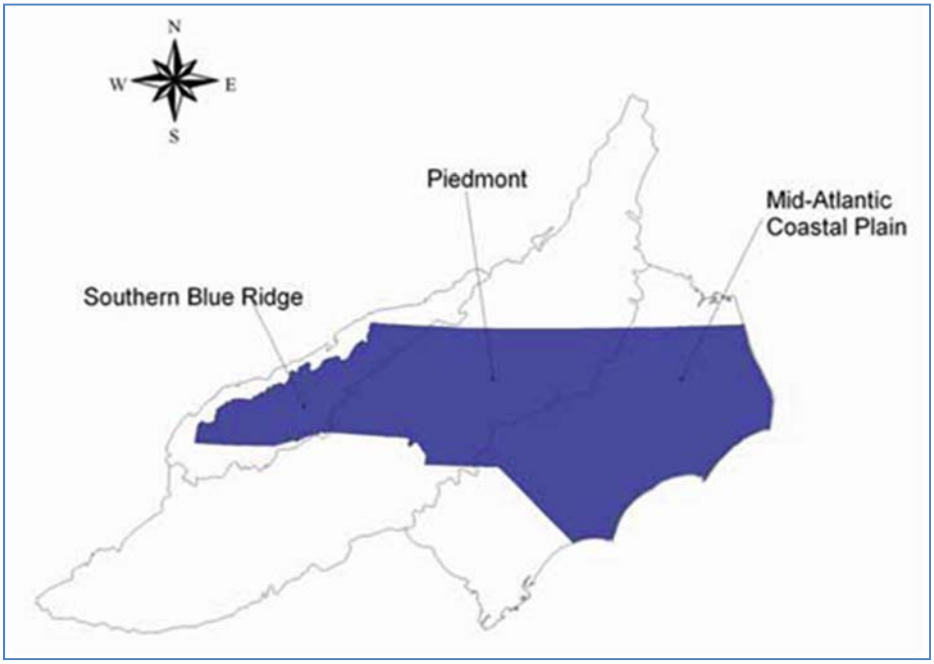
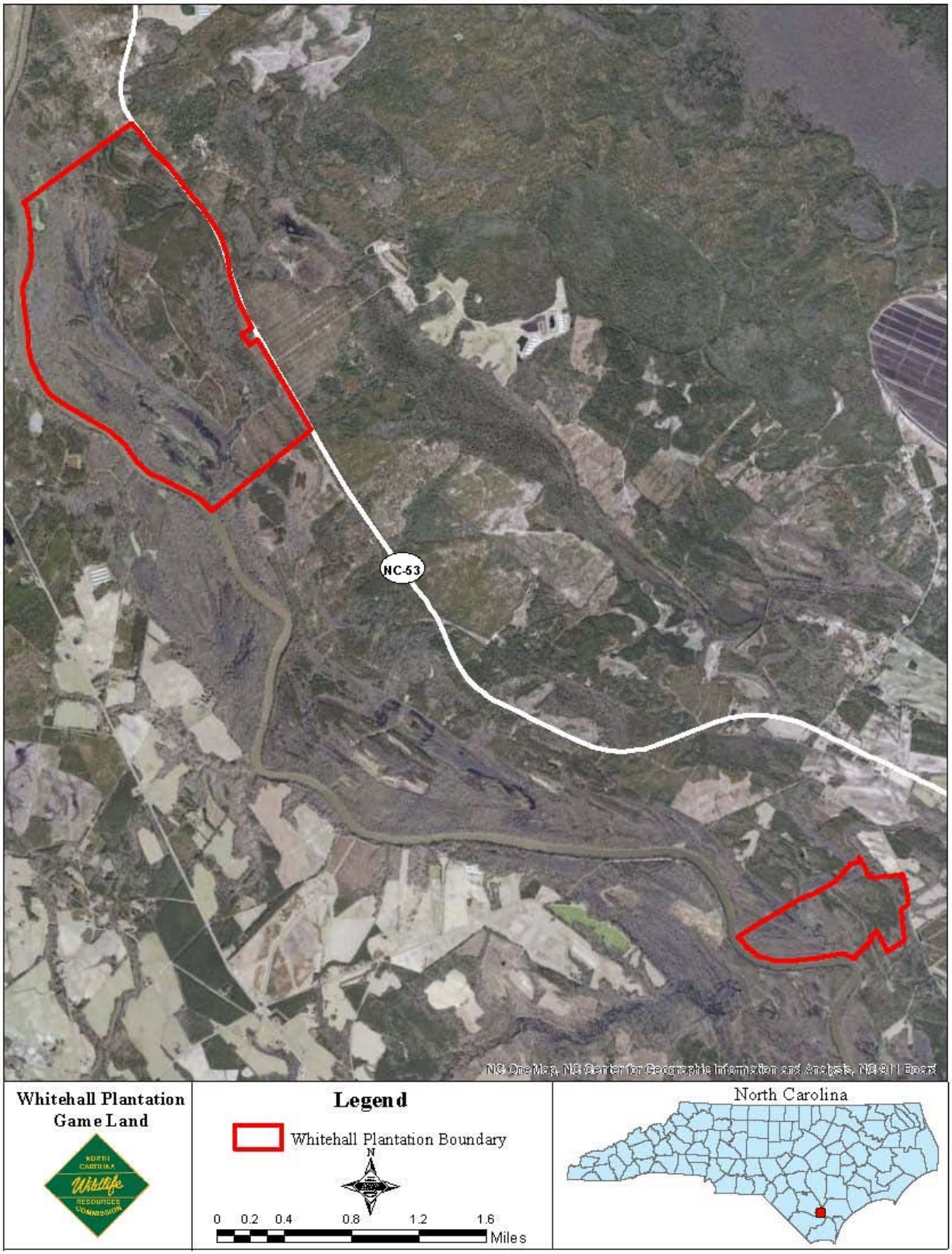


Figure 1 - Ecoregion delineations of North Carolina (data source: NC GAP; ecoregions as defined by Bailey 1995).

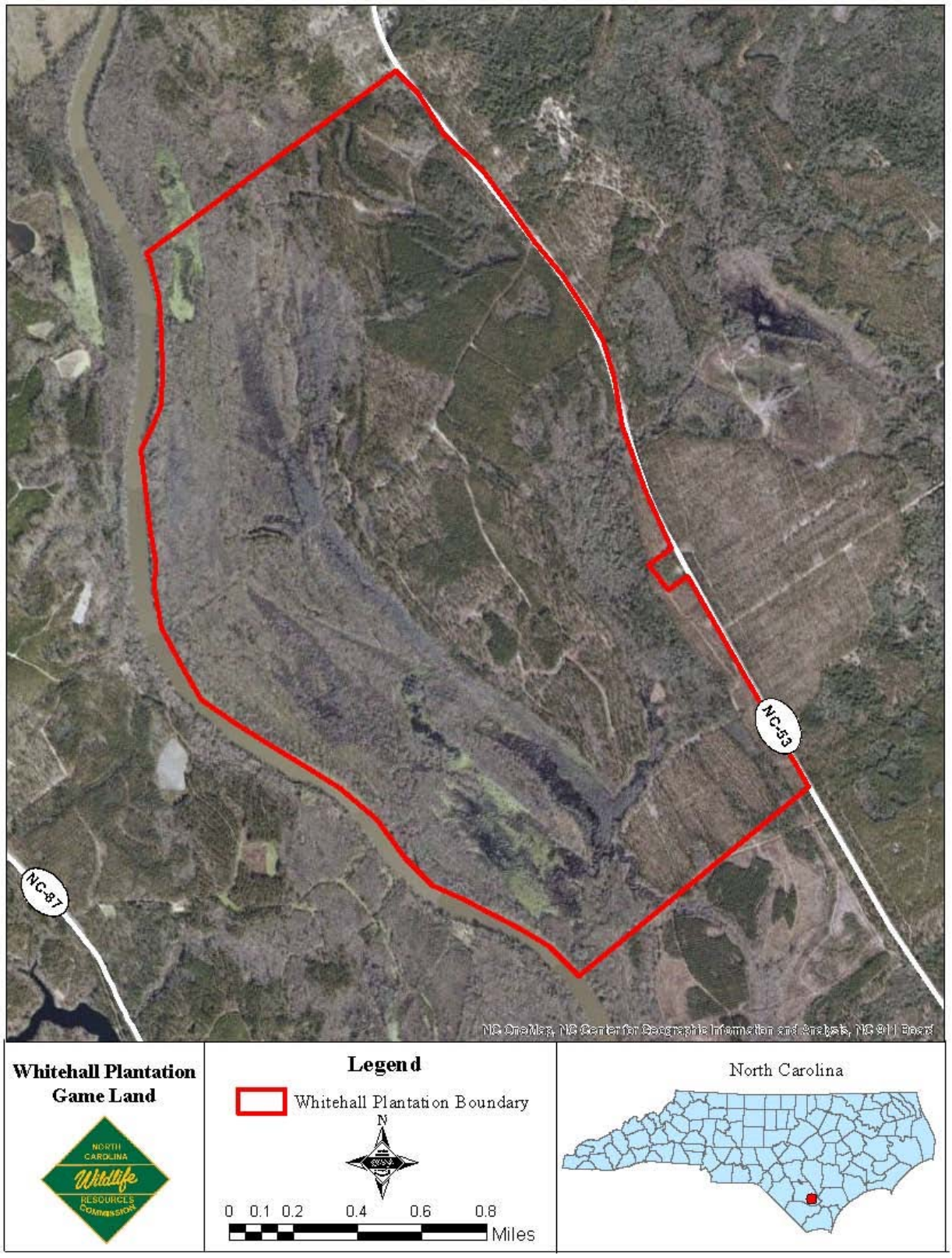
Many of the factors impacting wildlife species conservation can be traced to larger, landscape-level issues with habitat loss being the most obvious threat. Longleaf pine was historically found in all but the wettest sites in the Coastal Plain but now only exists on less than 3% of its

historical range (Frost 1993). Over 97% of these forests have been lost to agriculture, pine plantations, and the interruption of historical fire regimes (Brockway and Outcalt 1998). Habitat fragmentation largely due to land conversion and fire suppression also greatly impact habitats in the Coastal Plain of North Carolina. As habitats in this area become more dissected and isolated, they become smaller, sometimes causing them to become ecologically dysfunctional.

Whitehall Plantation lies within a region that was historically dominated by fire driven ecosystems. Fire has been an important sculptor of the landscape, and has been used as a management tool for thousands of years (Van Lear et al. 2005). In the early twentieth century, there was a push to eliminate fire from the landscape in the United States. People portrayed fire as both destructive and damaging, largely unaware of the beneficial and maintenance aspects of burning. The U.S. Forest Service and other state forestry agencies preached and practiced fire exclusion (Van Lear et al. 2005), and this has led to increased fuel loading across the United States on both private and public lands. The suppression of fire on the landscape has taken a toll and altered many fire-adapted ecosystems and adjacent ecotones (Duerr 2007). The Mid-Atlantic Coastal Plain was no exception to these events.



Map 1 – Whitehall Plantation Game Land.



Map 2 – Whitehall Plantation Game Land.

Map 3- Whitehall Plantation Game Land.

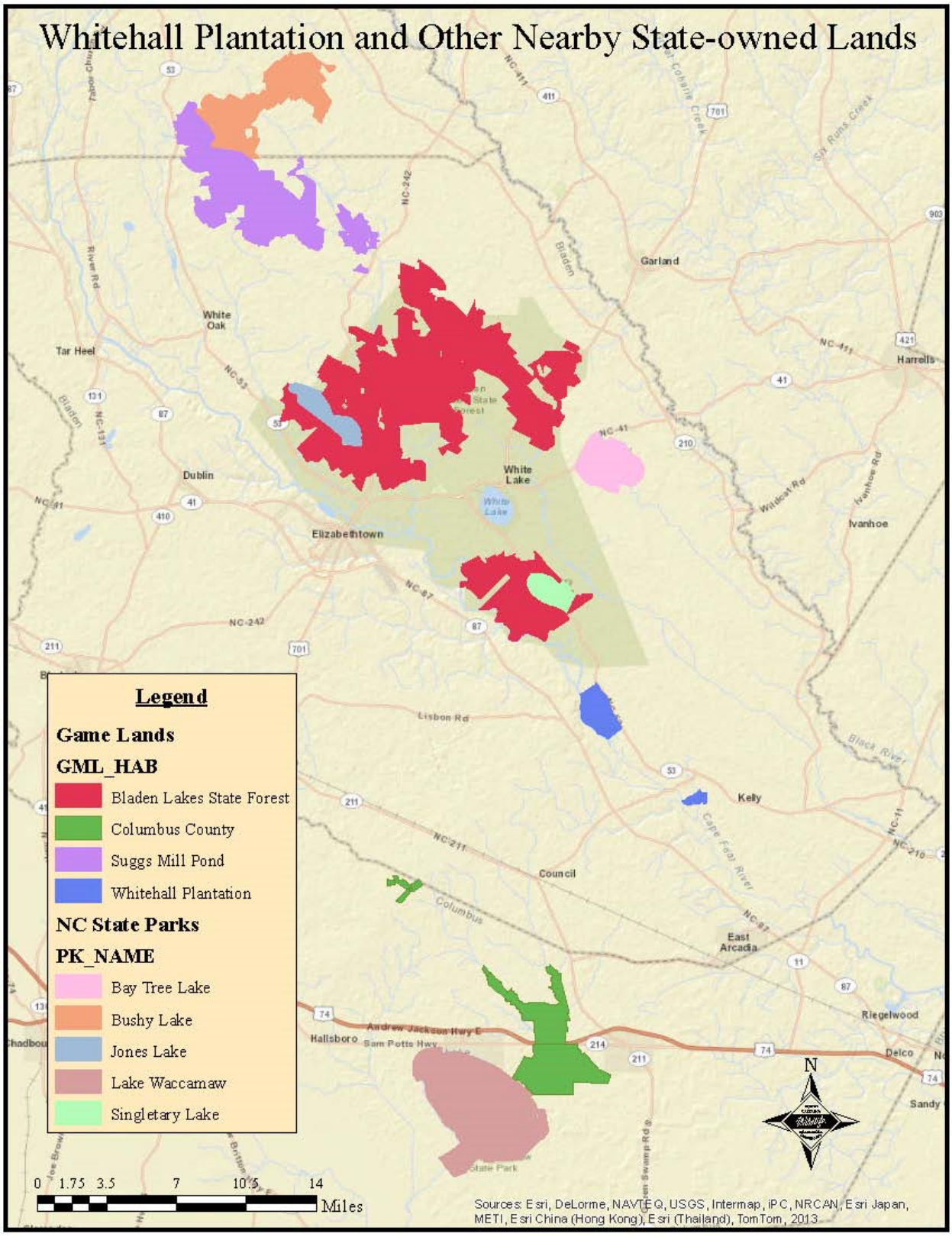
Role and importance of Whitehall Plantation Game Land

Whitehall Plantation is a 1,673 acre game land located in Bladen County (see Map 1). This area of the state lies in the Bladen Lakes region and is characterized by the largest concentration of mostly unaltered Carolina bays remaining throughout the range of this unusual geological feature (LeBlond and Grant 2005). Carolina bays are shallow, elliptical depressions, oriented on a northwest-southeast axis, which are found on the Atlantic coastal plain from northern Florida to southern New Jersey (Moellenbrock 1998). They are particularly numerous in Bladen County, North Carolina. A Carolina bay is an elliptical wetland basin partially to fully surrounded by an arch-shaped and usually dry sand ridge called a bay rim. Some bays are filled by lakes while other support dense, shrubby pocosin communities. A few have both open water and pocosin communities. Under natural conditions, the bay rims support natural communities of longleaf pine and intervening flats support a mix of longleaf pine and pocosin communities.

Both tracts of land that make up Whitehall Plantation border the Cape Fear River and exhibits excellent examples of semi-permanent wetlands. They both lie within the floodplain of the river and serve many ecological functions beneficial to biological productivity and the integrity of riverine ecosystems. Floodplains, in general, support a high rate of plant growth which helps maintain biodiversity. They provide excellent habitats for fish and wildlife by providing feeding and breeding grounds. They also create and/or enhance waterfowl habitat by providing stop-over areas during migration and wintering grounds for important activities like courtship and pair-bonding.

Outside of the floodplain forests, Whitehall Plantation contains areas that were once inhabited by the longleaf pine ecosystem, a fire-driven habitat that has been reduced to approximately 3% of its native range. These sites on Whitehall Plantation were converted to offsite species of loblolly and slash pine for timber production. Fire has been excluded resulting in dominate midstories and sparse groundcover in some areas. Restoration of these sites to the native longleaf pine, along with grassy and herbaceous groundcover is the ultimate goal for future management these upland sites.

Its proximity to other protected lands makes it a key area for the connectivity of large tracts of state owned lands in the Mid-Atlantic Coastal Plain (see Map 4). It is less than three miles from Bladen Lakes State Forest (32,870 acres) and Singletary Lake State Park (1,221acres). Bay Tree Lake State Park (1,447 acres) is 8 miles north and the Wannanish (6,035 acres) and Winnie Moore Bay (302 acres) Tracts of Columbus County Game Land are less than ten miles south. Bushy Lake State Natural Area (6,343 acres), Lake Waccamaw State Park (10,553 acres), Jones Lake State Park (2,208 acres), and Suggs Mill Pond Game Land (11,044 acres) are all within 20 miles of Whitehall Plantation. It should be noted that Jones Lake State Park is bordered by Bladen Lakes State Forest to the northeast and southwest and Singletary Lake State Park is all but completely surrounded by Bladen Lakes State Forest.



Map 4 – Whitehall Plantation Game Land and other nearby state-owned lands.

Role and importance within regional conservation partnerships, priorities, and plans

There are several conservation partnerships, priorities, and plans that, in some respects, dictate and obligate management practices that occur on Whitehall Plantation. These obligations stem from: criteria set by entities that allocate monies used to purchase land and/or fund habitat management projects, memorandums of understanding between partners, rare and endangered plant and animal species, public utilities right-of-ways, and research and surveys objectives set forth by the NCWRC. Along with the NCWRC's legal mandates and initiatives, other planning activities directly influence the development of the Plan. Various groups and agencies develop and coordinate planning initiatives involving regional, state, and local agencies, local communities, non-governmental organizations, and private individuals to help restore habitats for fish and wildlife on and off public lands.

The NCWRC is involved in cooperative partnerships in an effort to reduce the declining trend in biological diversity. Management considerations for habitats targeted in this Plan reflect the North American Waterfowl Management Plan which includes the Atlantic Coast Joint Venture, Partners in Flight Plan, the South Atlantic Migratory Bird Initiative (SAMBI), and the North Carolina Wildlife Action Plan.

The Atlantic Coast Joint Venture focuses on the middle and upper Atlantic Coast and concentrates their efforts on the conservation of habitat for native birds in the Atlantic Flyway. Within the Atlantic Coast Joint Venture is the joint venture formed between the NCWRC, U.S. Fish and Wildlife Service, and private conservation organizations.

The Partners in Flight Plan emphasizes land bird species as a priority for conservation. Habitat loss, population trends, and the vulnerability of species and threats to habitats are all factors used in the priority ranking of species. Further, biologists from local offices of the U.S. Fish and Wildlife Service, the NCWRC, and conservation organizations have identified focal species for each habitat type from which they will determine population and habitat objectives and conservation actions.

In 2001 Congress, recognizing the need for funding and planning to support the conservation, protection, and restoration of the full range of wildlife species, began providing annual funding allocations to supplement existing state fish and wildlife conservation programs. The new funding required each state and territory to develop a Wildlife Action Plan. The North Carolina Wildlife Action Plan was submitted in 2005 to meet this obligation. The Action Plan provides a conservation outline for agencies, organizations, industries, and academics across the state to advance the sound management of North Carolina's fish and wildlife resources into the future. It identifies critical fish and wildlife resources and priority conservation needs and promotes proactive conservation measures to ensure cost-effective solutions ("keeping common species common") instead of reactive measures enacted in the face of imminent losses (NCWRC, 2005)

In 2009, the North Carolina Natural Heritage Trust Fund assisted with funding used to purchase approximately 1,330 acres of land that comprises the largest portion of Whitehall Plantation. The North Carolina Natural Heritage Trust Fund provided supplemental funding to select state agencies for the acquisition and protection of important natural areas, to preserve the state's ecological diversity and cultural heritage, and to inventory the natural heritage resources of the state.

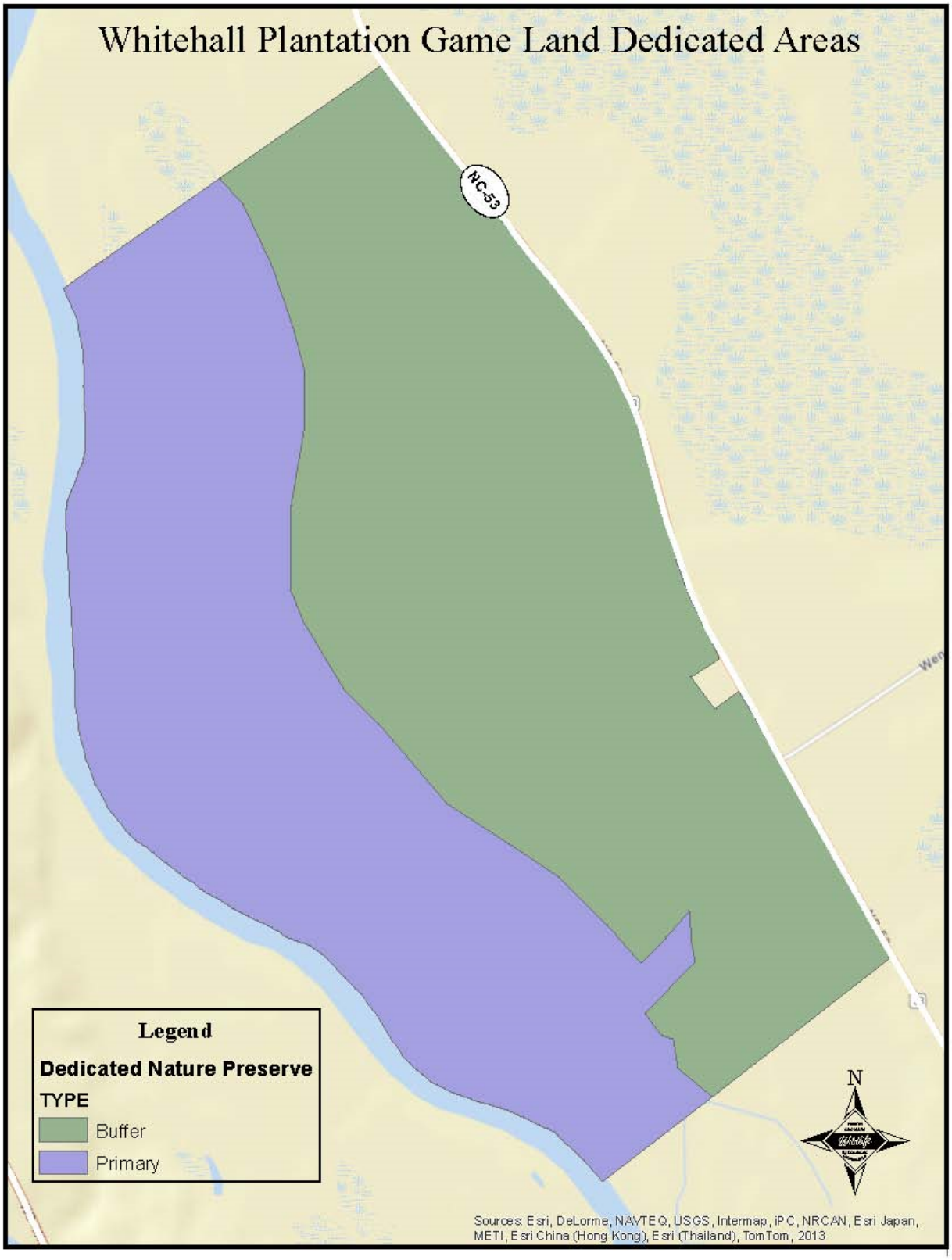
Lands pursued with these funds are subject to be dedicated under the North Carolina Nature Preserves Act and based on ecological values are designated into two classifications, Primary and Buffer Areas (see Map 5). These designations determine the type of protection that an area receives within a property.

The Primary area of the game land is the portion which has the highest quality, receives the greatest protection, and has the greatest ecological significance. The primary boundary is drawn to include the good quality communities and rare species locations and makes up 659 acres of Whitehall Plantation. It includes the floodplain forest along the Cape Fear River and two tributaries extending eastward from the floodplain into the upland half of the tract.

The remainder of the tract, 775 acres, is dedicated as a buffer area and serves as a buffer to the primary area. It includes all the lower quality vegetation which can contribute habitat for wider ranging species, especially if it is restored to a more natural condition. The majority of this buffer area, 559 acres, exists at present as various stages of loblolly and slash pine plantations. In 2014, 254 acres of plantation habitat were clearcut and will be reforested with site-specific tree species.

Rules for management of Primary and Buffer areas can be found in the Articles of Dedication for Whitehall Plantation Game Land Dedicated Nature Preserve (*Appendix XIII*).

In 2008, the NCWRC entered into a Memorandum of Understanding (MOU) with the North Carolina Forest Service to facilitate the cooperation of the two parties in fire management activities. These activities include, but are not limited to, mitigation, training, wildfire prevention, and wildfire suppression. Among others, the guidelines set by this MOU mandates the NCWRC to conduct all prescribed fire operations pursuant to the North Carolina Smoke Management Plan.



Map 5 – Whitehall Plantation Game Land dedicated areas.

GAME LAND SPECIFIC INFORMATION

Topographic features

The land and water areas of the Coastal Plain make up nearly half the area of the state. It can be divided roughly into two sections: the tidewater area, which is mostly flat and swampy, and the interior portion, which is gently sloping and naturally well drained. Throughout both sections, the soils consist of soft sediment with little or no underlying hard rock near the surface.

Climate

Whitehall Plantation's climate is characterized by hot, humid summers with temperatures occasionally climbing above 95 degrees Fahrenheit, and moderate winters with temperatures seldom going below 20 degrees Fahrenheit. Since the flow of air over North Carolina is predominately from west to east, the continental influence is much greater than the ocean influence. Therefore, the state experiences a fairly large variation in temperature from winter to summer.

The most important single influence contributing to the variability of North Carolina's climate is altitude. In all seasons of the year, the average temperature varies more than 20 degrees Fahrenheit from the lower coast to the highest elevations (SCONC).

In the winter, the greater part of North Carolina is partially protected by the mountain ranges from the frequent outbreaks of cold air which move southeastward across the central states. Such outbreaks often move southward all the way to the Gulf of Mexico without attaining sufficient strength and depth to cross the heights of the Appalachian Mountain Range. When cold waves do break across, they are usually altered by the crossing and the descent on the eastern slopes of the Appalachian Range. Winter temperatures in the Coastal Plain are altered by the Atlantic Ocean which raises the average winter temperature and decreases the average day-to-night range.

In the spring of the year, the storm systems that bring cold weather southward reach North Carolina less often and less forcefully, and temperatures begin to modify. The rise in average temperatures is greater in May than in any other month (SCONC).

Differences in temperature across the state are no less pronounced in the summer than in the winter. The warmest days in the summer are found in the interior rather than near the coast. In Elizabethtown during the warmest month of the year, July, the average maximum temperature is 89.3 degrees Fahrenheit. In the coldest month of the year, January, the average minimum temperature is 31.7 degrees Fahrenheit (SERCC).

While there are no distinct wet or dry seasons in North Carolina, average rainfall does vary throughout the year. Precipitation is normally greatest in the summer, with July being the

wettest month. Summer rainfall is also the most variable, occurring greatly in connection with spotty showers and thunderstorms. Daily showers are not uncommon, nor are periods of one to two weeks without significant rainfall. Fall is the driest season, with November being the driest month. Precipitation in winter and spring occurs mostly in connection with migratory low pressure systems that appear more regularly and in a more even distribution than summer showers (SCONC). Snow and sleet occur on an average once or twice a year on the coast with little more occurrences over the southeastern half of the state. Average winter snowfall in the Coastal Plain is about one inch.

All rivers in North Carolina commonly have a maximum flow in late spring, with a minimum flow in the fall of the year. It is rare for any but the smallest streams to be dry at any time, however, all are likely to flood. The most severe floods are those during autumn which are typically associated with hurricanes. Rarely will a single hurricane cause major flood damage, but two in succession, or one coming after a very wet spell, can be very destructive (SCONC).

Soils

In general, the soils of Bladen County are composed of sands or loamy sands and have low fertility with high acid content (low pH). Soils near and west of the Cape Fear River generally have higher loam content and are therefore more suitable for cultivation. Soils associated with the Cape Fear River floodplain and adjacent low terraces have slightly higher fertility due to their origin in the Piedmont. Large areas east of the river have nutrient-poor soils due to the sand on bay rims and adjacent upland terraces and ridges, while wetland basins have shallow to deep peat soils. In these areas, the soils of upland ridges and hills tend to be well drained dry sands with peats and mucks accumulating in the drainages, basins, and low flats.

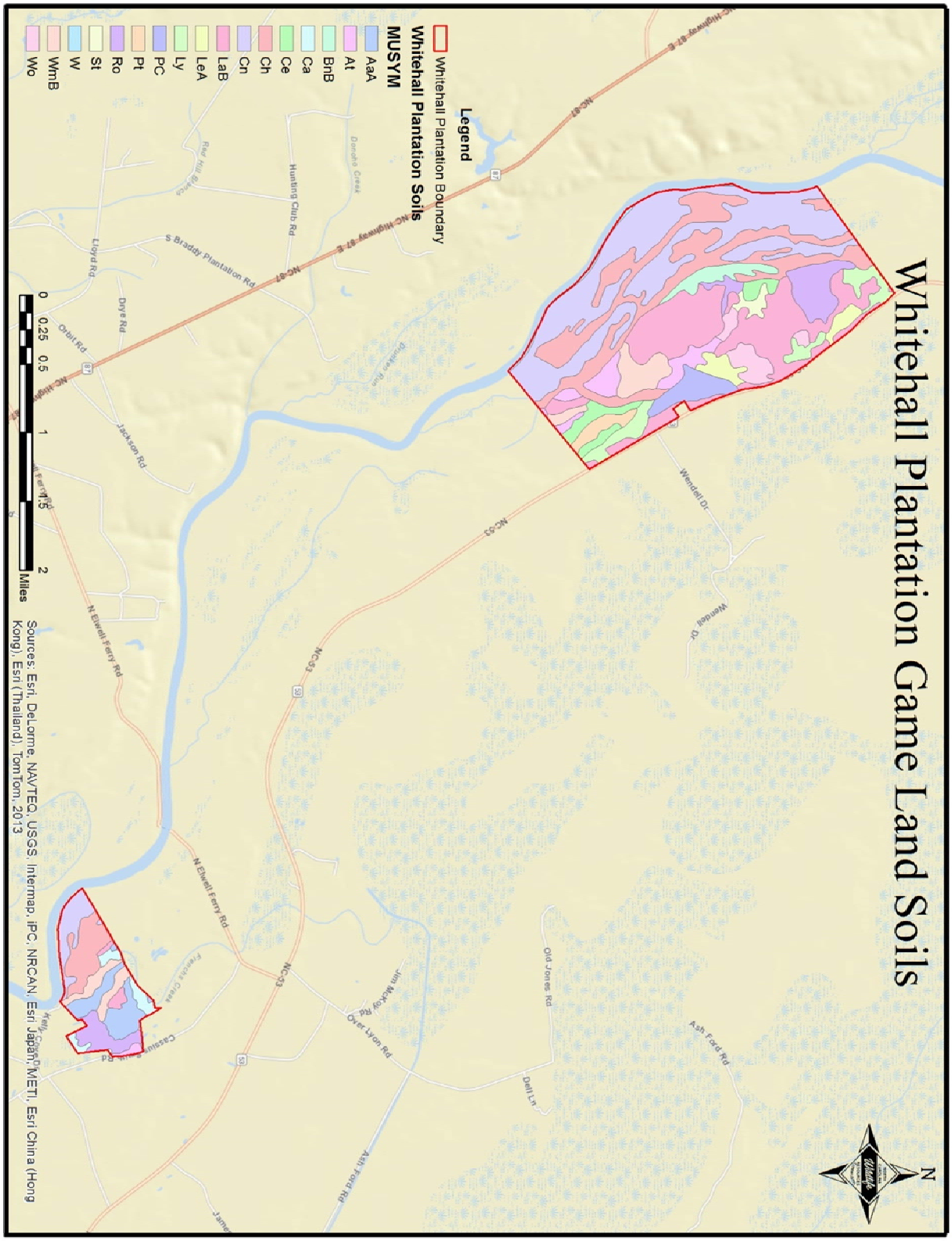
The site's soils reflect the geomorphic processes, climatic conditions, and ecological processes. The region's warm, humid climate and abundant rainfall hasten the decomposition of organic matter. Particular soils' drainage qualities determine the how long the organic matter stays in the soil.

As the geologic history suggests, sandy soil horizons dominate the site. Carolina bays, with poorly drained organic or loamy subsoils, retain decomposed materials and therefore maintain organic surface horizon. However, most of the site's sandy, mineral soils are well drained and are therefore highly weathered and highly leached.

Soils identified on Whitehall Plantation are: Altavista fine sandy loam, Augusta sandy loam, Blanton sand, Cape Fear loam, Centenary sand, Chewacia and Chastain soils (frequently flooded), Congaree silt loam (frequently flooded), Lakeland sand, Leon sand, Lynn Haven and Torhunta soils, Pamlico muck (frequently flooded), Portsmouth mucky sandy loam, Roanoke loam, Stallings loamy sand, Wickham fine sandy loam, and Woodington loamy sand (USDA, Soil Conservation Service, 1990). (See Table 1 and Map 6).

Soil Series	Abbreviation
Altavista fine sandy loam	AaA
Augusta sandy loam	At
Blanton sand	BnB
Cape Fear Loam	Ca
Centenary sand	Ce
Chewacia and Chastain soils	Ch
Congaree silt loam	Cn
Lakeland sand	LaB
Leon sand	LeA
Lynn Haven and Torhunta	Ly
Pamilico muck	PC
Portsmouth mucky sandy loam	Pt
Roanoke loam	Ro
Stallings loamy sand	St
Water	W
Wickham fine sandy loam	WmB
Woodington loamy sand	Wo

Table 1 – Table of soil series and abbreviations for Whitehall Plantation Game Land.



Map 6 – Whitehall Plantation Game Land soils.

Hydrology

Whitehall Plantation lies in the Cape Fear River Basin, which is the largest river basin in North Carolina, draining 9,322 square miles, with 6,049 stream miles (NCDWQ 2000a). There are 26 counties and 116 municipalities in the basin and the population is 160 people/sq. mile. Land cover in the basin includes 56% forest land, 24% agricultural lands, 9% urban areas, and 11% other, which includes rural transport, small water areas, lakes, and estuaries (NCDWQ 2000b). This major river basin is divided into six sub-basins, two of which the game land is within. It lies almost entirely in the Cape Fear River Sub-basin and only a small portion lies within the South River Sub-basin.

Ground water provides the fresh water resources for this area but ground water level declines have been documented in the Upper Cape Fear aquifer since monitoring wells were constructed in that aquifer in the 1970s (NCDWR 2002). Studies done through monitoring well sites throughout Bladen County have shown that the ground water reservoir consists of two types of aquifers: a water table aquifer which extends from the land surface to the first confining beds of clays, sand, and silt, and confined, or semi-confined aquifers beneath and between these beds.

Monitoring wells throughout Bladen County and closest to Whitehall Plantation indicate that below it lays four aquifers in addition to the water table aquifer: the Pee Dee, Black Creek, and the Upper and Lower Cape Fear Aquifers.

Maintenance of the fresh groundwater depends on the amount of rainfall. Due to the sandy nature of the soils on upland sites, rainfall infiltrates the soil and enters the water table aquifer with little or no surface runoff. However, after the ground becomes saturated during periods of extensive rainfall, some runoff occurs in roadside ditches and small intermittent freshwater ponds.

The floodplain forests of Whitehall Plantation both directly and indirectly serve several hydrological functions critical to the health and viability of plant and animal communities and their watersheds. They filter out toxins, attenuate floodwaters, and store water for other ecological functions.

Periodic flows of water that overtop the banks of the Cape Fear River and that encroach upon these floodplain forests are the lifeblood this riparian corridor. This riverine ecosystem is shaped and nurtured by the characteristics of the water, including from where it originates and its flow. The seasonal and storm-generated variations in water flow, including periodic flooding, are part of the normal function of the floodplain zone. These variations mold stream banks, keep erosion and accretion in equilibrium, replenish soils, recharge groundwater, and filter impurities.

Habitats

Whitehall Plantation is made up of four different habitat types varying in size and location. Floodplain Forest habitat makes up the majority of this site consisting of 61.6% of the area. Loblolly and Slash Pine Plantation habitat comprises 33.7%. Pocosin habitat makes up less than 1% and Dry Coniferous Woodlands comprise 4.3%. Each of these habitat types plays its own important role in the ecology of the region and will be described in greater detail later in the Plan.

Surrounding land use

Historically, this area of the state has been valued for its agricultural and silvicultural output. The production of tar, turpentine, and pitch from Bladen County's extensive longleaf pine forests played an important role in North Carolina's socioeconomic history, resulting in the "Tar Heel State" nickname. After that industry declined in the nineteenth century, agriculture and timber production increased. Overexploitation of these natural resources contributed to the region's economic struggles during the era of the Great Depression. During that time, public works projects helped establish State Parks and the Bladen Lakes State Forest, which both lie in close proximity to Whitehall Plantation.

During the last sixty-five years, many Carolina bays have been drained for agriculture as development in the area increased. Federal and state environment and agricultural regulations have, however, helped decrease the rate of degradation over the past 30 years. The last sixty-five years have also seen an increase in diversity in Bladen County's economy. Agriculture remains dominant, but industry has grown dramatically. Both crop agriculture and industrial growth are primarily taking place far from Whitehall Plantation. Timber production remains the dominant economic force within close proximity to this site, due to its less fertile soils and limited transportation infrastructure.

History

The first recorded owner of property on Whitehall Plantation was John Baptista Ashe who moved to North Carolina around the year 1700. Being well connected to the Royal Governor and the Lord Proprietors, he received land grants in 1727 of over 8,000 acres which included property on the Cape Fear River. He added to this grant until he had over 3,000 acres on both sides of the river and named it Ashwood Plantation.

Ashe died in 1734 and willed Ashwood Plantation to his daughter Mary, who married George Moore. In 1757, George and Mary Moore sold Ashwood Plantation to William Bartram. Bartram had other property in Bladen County, including White Lake, which was known as Bartram's Lake in colonial times. Bartram's brother John, and nephew William, were America's best known naturalists of the colonial period. John was appointed Royal Botanist for the colonies in 1765. He stayed with his brother William and explored the rivers, lakes and woods

of southeastern North Carolina and recorded his findings in his journal. John's son William continued his work, visiting Ashwood Plantation often. His book *Travels Through North and South Carolina, Georgia, East and West Florida* mention his visits to Ashwood and his findings there.

At William Bartram's death, his two daughters, Sarah and Mary, inherited Ashwood. The two sisters sold the property on the northeast side of the river at Whitehall Landing to John Lucas of Fairfax, Virginia in 1772. This created Whitehall Plantation as free standing. Whitehall remained in the Lucas family until the 1890's. Since then it passed through many hands and has been used as managed timber land.

Ownership of Whitehall Plantation by the NCWRC dates back to 2009 when 1434 acres were purchased by the state. In 2014, an additional tract totaling 224 acres was purchased by the North Carolina Coastal Land Trust with monies that were matched with North American Wetland Conservation Act funds. This land was gifted to the NCWRC.

Historically, upland mineral soils on Whitehall Plantation would have supported longleaf pine-wiregrass systems, which burned naturally on about 1-3 year intervals. The tract has been managed by a variety of timber management scenarios over time, which initially perpetuated longleaf pine. Effective control of wildfires beginning in the 1940's impacted longleaf pine regeneration and maintenance of the longleaf pine community. Subsequently, plantations of slash and loblolly pine were established on this property.

To promote early successional vegetation within the upland forested sites, timber harvesting was initiated in 2012 when 370 acres were thinned with an additional 172 acres thinned in 2013. With the onset of a pine beetle infestation coupled with extensive damage from an ice storm in February of 2014, 254 acres of these previously thinned sites were clearcut in the spring of 2014. Prescribed burning had not been initiated on this property prior to the clearcutting because of high fuel loads in heavily stocked stands and the inability to burn until after stands were thinned. However, prescribed burn plans have been developed for many of the upland sites but to date, no burning has occurred.

North Carolina is not only known for its natural history, but also its rich historical/cultural resources. Several archaeological sites have been identified on Whitehall Plantation that provide tangible evidence of the varied use of the property by the past residents of the area. These archaeological sites include prehistoric Indian habitation sites, tar kilns, river landings, and colonial plantations. Because the sites can be easily damaged, unauthorized artifact collecting activities on all state owned property including NCWRC owned lands are prohibited by the Archaeological Resources Protection Act (G.S 70 Article 2) (see *Appendix XII*).

DATE	ACRES	COST	FUNDING SOURCE	COST/ACRE	TOTAL ACREAGE	TOTAL COST
2009	1,434	$4,212,000	Natural Heritage Trust Fund and donation from Ducks Unlimited	$2,937.24	1,434	$4,212,000
2014	224	Gift	Gifted by North Carolina Coast Land Trust	$0.00	1,658	$4,212,000

Table 2: History of land acquisition for Whitehall Plantation Game Land

Purpose of Whitehall Plantation Game Land and its importance within the region

Whitehall Plantation serves to augment the mission and objectives of the Game Lands Program which was stated previously in the Introduction. Its uniqueness is defined by the region that it is a major component of, the Bladen Lakes Region, which is recognized for having the highest concentration of relative unaltered Carolina bays in North Carolina. Whitehall Plantation itself is dominated by Floodplain Forest habitat with 61.6% of its area made up of this unique and valuable habitat type. It is part of a unique and larger mosaic of peatland and pond communities surrounded by sandy longleaf pine and creek floodplain communities. This outstanding cluster of numerous palustrine and terrestrial communities supports an extraordinary number of rare plants and animals.

With a significant amount of land in this region, and in close proximity to Whitehall Plantation, already in North Carolina state ownership (including Suggs Mill Pond Game Land, Bladen Lakes State Forest, Bushy Lake State Natural Area, Salters Lake State Natural Area, and Jones Lake State Park), and still limited development in the area, there is an excellent opportunity to permanently protect a substantial portion of this unique mosaic, with spatial relationships intact.

It is clear that the interactions between the natural communities found within this region, and on the game land, are important; in fact, many of the rare species of plants and animals are found in the communities' ecotones. Therefore, protecting these communities and their spatial relationships is critical to the successful achievement of the Game Lands Program objectives.

In addition to its ecological importance, Whitehall Plantation offers recreational opportunities for the public interest and makes it a destination for many user groups. Traditional game land users seek out this game land and are provided the opportunity to hunt, fish, trap, and watch wildlife found in the various habitats.

All hunting on this game land is allowed through the NCWRC's Permit Hunting Opportunities Program, which allows for managed participation and provides unique hunting opportunities for this special area for species such as deer, waterfowl, turkey, small game, and furbearer trapping. This program also includes special opportunities for youth. The program offers quota and non-

quota (point-of-sale) hunts. Due to certain management practices conducted and it's highly valuable habitat communities, Whitehall Plantation offers excellent hunting opportunities that some other game lands don't.

Specific goals of Whitehall Plantation Game Land

It's participation in the Permit Hunting Opportunities Program has resulted in excellent opportunities to enjoy a quality experience with managed participation. The concept behind the permitting the hunts on Whitehall Plantation is to provide a managed number of hunters on a managed number of hunt days in order to allow for a high quality hunting experience and opportunity to harvest game. Extra time and effort is spent managing habitat and resources that supplement the opportunity to enjoy these experiences. In the interest of maintaining these opportunities, the goal is to continue to be enrolled in this program.

Restoration of longleaf pine on all sites where it was historically found is a long-term goal of Whitehall Plantation. Longleaf pine was historically found in all but the wettest sites in the Coastal Plain but now only exists on less than 3% of its historical range (Frost 1993). Prior to ownership by the State, all of the upland sites on this game land had been converted to loblolly and slash pine plantations. Prescribed fire will be the most appropriate management technique to manage these sites and will be applied on a 1–3 year interval.

Not only will fire be used on the restored longleaf sites, but it will also be the dominate tool used manage other sites on this game land. Ecotones, transitional areas between two communities, require the application of prescribed fire to remain as areas that have a great diversity of plants and animals. Not only does fire in pine communities affect the composition and structure of the pine communities themselves, but also affects surrounding ecosystems and ecotones that exist in between (Duerr 2007). Upland sites that are currently occupied by slash and loblolly pine will also be maintained and managed with the use of prescribed fire.

Additionally, the goals of Whitehall Plantation are to:

- Provide for a diversity of habitat types and forest age classes though science based land management practices that are properly interspersed and juxtaposed across the landscape to ensure that a wide variety of terrestrial and aquatic wildlife species are conserved on the game land.
- Conserve popular sport fish and game species at huntable/fishable levels through science based land management and sound regulations.
- Provide quality habitat across the game land for endangered, threatened, and rare species to promote sustainable and perpetual populations.
- Provide sufficient infrastructure and opportunity to allow compatible and appropriate game lands users a quality experience while on the game land with minimal habitat degradation and minimal conflict among user groups.

Measures of success for Whitehall Plantation Game Land

- Wildlife and fish inventories/surveys indicate that a wide variety of species are present at sustained levels and are properly managed on the game land.
- Surveys and inventories of target sport fish and game species indicate that population levels of these species are being managed at sustained levels.
- Inventories/surveys indicate that populations of endangered, threatened, and rare species found on the game land are being maintained or restored.
- Inventories/surveys indicate that previously unknown populations or previously unknown endangered, threatened, and rare species are found on the game land.
- Surveys of game land users indicate a high level of user satisfaction.

HABITAT COMMUNITIES

Floodplain Forest

The Coastal Plain floodplain forest habitat includes several different community types, three of which are found on Whitehall Plantation; levee forests, bottomland hardwoods, and cypress-gum swamps. The presence of small stream swamps that hold waters from the drainage of adjacent uplands and semipermanent impoundments created by beavers within these floodplain forest communities make this property even more unique in its composition of wetland communities. Floodplain forests are typically located near rivers, lakes, and streams, but some of this property's floodplain forests are simply low-lying areas or depressions where water naturally collects after rain events or occurs within wetland habitats.

These forest systems of the Coastal Plain are now only small fragments and sections of the original millions of acres present before European settlement and have been lost or altered by development, drainage, agriculture, and logging (Weller and Stegman 1977). Several wildlife species that once occupied large floodplain systems are gone or greatly reduced in numbers.

Bottomland hardwoods in blackwater systems occur on high parts of the floodplain away from channels and may be dominated by laurel oak, water oak, willow oak, red maple, sweetgum, and loblolly pine (Schafale and Weakley 1990). They are characterized and maintained by a natural hydrologic regime of alternating wet and dry periods generally following seasonal flooding events. Shrub layers can be very dense and switch cane can be common. Vines can be dense and the herb layer is usually sparse. Flooding occurs in these sites occasionally but they are seldom disturbed by flowing water. They are important natural communities for maintenance of water quality, providing a very productive habitat for a variety of fish and wildlife species, and are important in regulating flooding and stream recharge. Blackwater rivers carry little inorganic sediment so flooding does not provide a substantial nutrient input (Schafale and Weakley 1990). These areas may carry fires (due to dense lower layers of vegetation) when dry and the occurrence of fire would affect the plant community composition and structure.

Cypress-Gum Swamps contain just a few tree species tolerant of nearly permanent flooding: bald cypress, pond cypress, and swamp black gum. These communities get little input of nutrients due to the poor inorganic sediment load carried by blackwater rivers and the infertile acidic soils and wetness produce slow growth in the trees (Schafale and Weakley 1990). The difference between cypress and gum dominance is probably related to logging history, but environmental factors such as flooding frequency and depth, water chemistry, soil type and latitude also contribute (Schafale and Weakley 1990). Since cypress-gum swamps flood for long periods of time, their vegetational diversity is usually low but they may serve as important habitat for some aquatic animals and plants. Hollow cypress and swamp black gum are particularly important for

bats, chimney swifts and other cavity dwelling species. Additionally, several colonial waterbird species rely on swamp forests for nesting habitat.

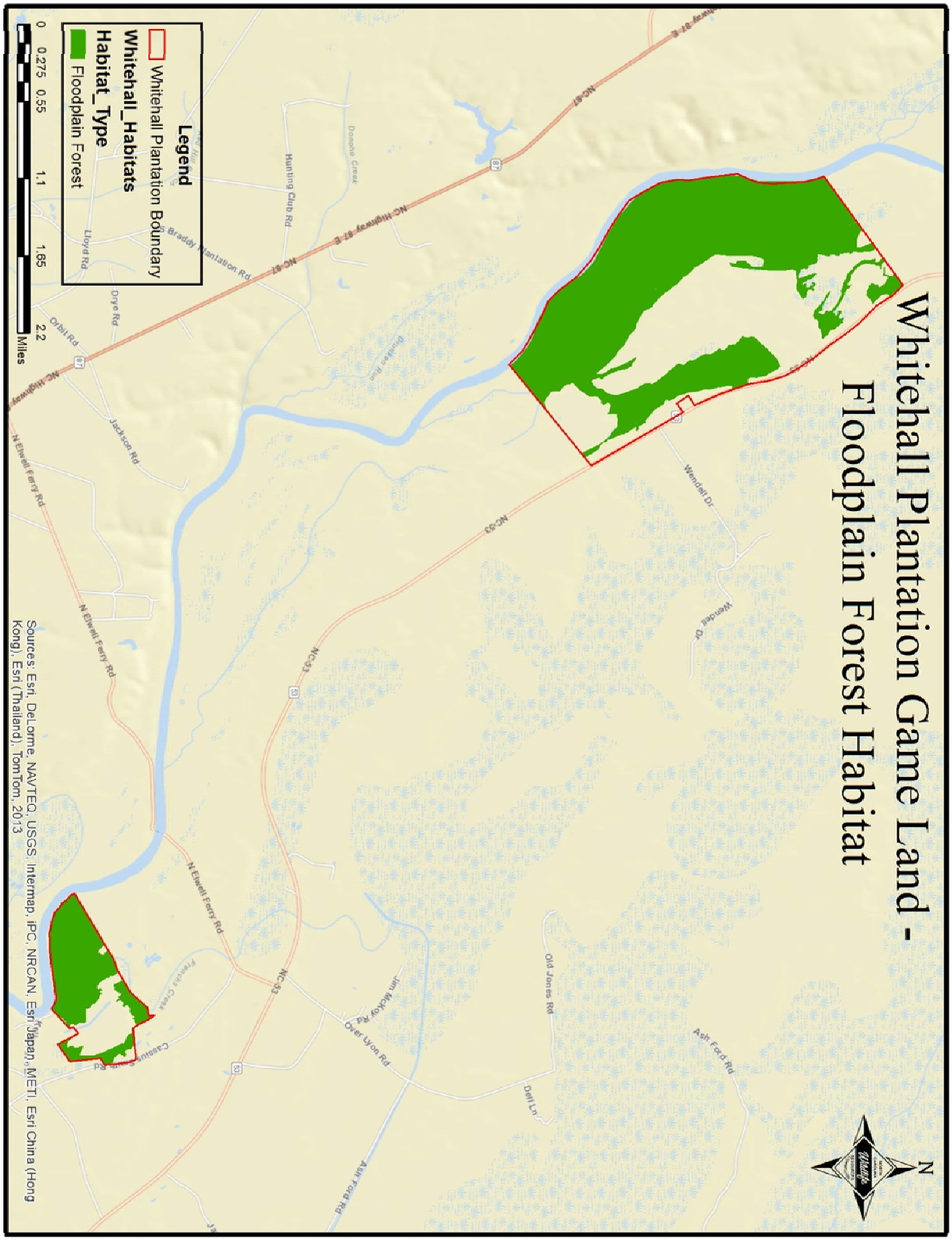
A. Location and condition of habitat (see Map 7)

Approximately 1,025 acres (61.6%) of floodplain forests occur on Whitehall Plantation. The condition of Coastal Plain floodplain forests of all types have been greatly reduced in recent years throughout North Carolina and the entire southeast (Weller and Stegman 1977, Schafale and Weakley 1990) by a variety of anthropogenic factors.

Factors that impact these systems include flooding regime patterns that have been changed by dams and other development, habitat fragmentation, changes in water chemistry and organic matter loads, increased nitrogen from agricultural and development-related runoff, exotic species and high-grading of stands and logging that reduces wide buffers. All of these factors individually or interactively produce abrupt or gradual changes in floodplain plant and wildlife communities.

Non-point source and point source pollution from a variety of human introduced activities has greatly increased in many drainages due to growing human population. Untreated stormwater runoff from large cities and towns is a major problem that impacts both aquatic life and terrestrial wildlife associated with floodplain forests.

Currently there aren't any acres of floodplain forest communities on Whitehall Plantation in an active burn rotation. The vast majority of these habitats are unburnable because of wet fuels. Upon implementation of a prescribed fire regime on this property, sites that will be burned consist of transitional areas between upland sites and the wetter bottomlands.



Map 7 – Floodplain forest habitat on Whitehall Plantation Game Land.

Priority non-game species associated with floodplain forest habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Anhinga	*Anhinga anhinga*	SR	
	Mississippi Kite	*Ictinia mississippiensis*	SR	
Mammals	Star-nosed Mole	*Condylura cristata*	SC	S_2, G_5T_2Q
	Rafinesque's Big-eared Bat	*Corynorhinus rafinesquii*	T	S_3,$G_3G_4T_3$
Amphibians	Mabee's Salamander	*Ambystoma mabeei*	SR	S_2, G_4
	Dwarf Salamander	*Eurycea quadridigitata*	SC	S_2, G_5
	Four-toed Salamander	*Hemidactylium scutatum*	SC	S_3, G_5
Reptiles	Timber (Canebrake) Rattlesnake	*Crotalus horridus*	SC	S_3, G_5

Priority game species associated with floodplain forest habitat

Taxonomic Group	Common Name	Scientific Name
Birds	American Woodcock	*Scolopax minor*
	Wood Duck	*Aix sponsa*
	Hooded Merganser	*Lophodytes cucullatus*
	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
Mammals	North American River Otter	*Lontra canadensis*
	American Beaver	*Castor canadensis*
	White-tailed Deer	*Odocoileus virginianus*
	American Black Bear	*Ursus americanus*
	Raccoon	*Procyon lotor*
	Bobcat	*Lynx rufus*
	Eastern Gray Squirrel	*Sciurus carolinensis*

B. Problems affecting species and habitat

Lack of old growth characteristics (canopy gaps, vine tangles, hollow trees, dead and downed woody debris) and fragmentation of stands are concerns for floodplain forest communities on Whitehall Plantation. A lack of standing dead or older trees has impacted the availability of quality bat and chimney swift roosting and breeding sites and nesting productivity for species such as wood duck and hooded merganser. Lack of downed woody material has impacted a variety of amphibians and reptiles.

Fragmentation of stands throughout the last century has contributed to the loss of intact, large riparian corridors and the width of many corridors has been greatly reduced. Breeding area-sensitive bottomland hardwood birds have likely been impacted by the loss of intact woodland systems. High-grading of stands has changed plant species diversity and stand vegetative structure. Forestry activities (e.g., logging) have reduced colonial waterbird and eagle nesting areas. Increases in amounts of non-native plants (e.g., privet, Japanese grass, Chinaberry, Japanese honeysuckle) and the overall loss of large canebreaks are partly due to the lack of

infrequent fire and also certain logging practices. Understory vegetative diversity has declined in many areas due to modified flooding regimes and increases in invasive non-native plant species.

Drainage of wetlands has exacerbated the problems in and adjacent to floodplain forest habitats. This habitat loss impacts all floodplain species, including furbearers, breeding amphibians, overwintering birds, and migrant species that use these areas as stopover sites. Water quality is also an issue in certain major river drainages that negatively affects many invertebrates, fish, amphibians and reptiles.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Efforts should be made to retain mature floodplain forests which would provide large trees that could potentially contain natural cavities and provide food beneficial to wildlife. Large tracts of mature bottomland forests will naturally provide quality food and cover without human efforts.

One of the most important resources bottomland forests provide for wildlife is mast produced by mature trees. Production of hard mast from trees such as oaks and hickories, and soft mast from plants such as black gum and wild grapes can be increased by clearing small areas around individual trees and shrubs. This will reduce competition and increase vigor, resulting in greater mast production. Natural events such as tree falls and wind storms will create small disturbed openings where many plants that provide food for wildlife can thrive

There is a need to monitor floodplain forests for non-native plant and animal species such as nutria, Chinese privet, multiflora rose, Chinaberry and Japanese honeysuckle. Invasive plants are usually characterized by fast growth rates, high fruit production, rapid vegetative spread and efficient seed dispersal and germination. Not being native to North Carolina, they lack the natural predators and diseases which would naturally control them in their native habitats. The rapid growth and reproduction of invasive plants allows them to overwhelm and displace existing vegetation and, in some cases, form dense one-species stands. Invasive exotic plants and animals disrupt the ecology of natural ecosystems, displace native plant and animal species, and degrade biological resources. Aggressive invaders reduce the amount of light, water, nutrients and space available to native species.

To control invasion of these habitats by non-native species, efforts should be made to prevent accidental introductions, eradicate existing infestations, and minimized disturbance to these habitats.

D. Desired future condition

The desired future condition of floodplain forests on Whitehall Plantation is to allow them to grow to maturity and contain old growth characteristics. This includes cavity trees located throughout the stands for cavity nesting birds and dens for mammals, dead and stressed trees

throughout the stand for future cavities and structure for insect foraging birds, vines that provide foraging habitat for songbirds, and coarse debris (10 inches in diameter or greater) on the ground to provide den sites and habitat for invertebrates, amphibians and reptiles.

Buffers of 300-600 feet will be maintained along streams and their adjacent wetlands, floodplain, and slopes. Buffer width will be adjusted to include contiguous, sensitive areas such as slopes or erodible soils where disturbance may adversely affect water quality, streams, wetlands, or other water bodies.

E. Future forest management

To reach the desired future condition of mature stands with old growth characteristics, no timber harvests will occur in floodplain forests on Whitehall Plantation. Where a floodplain forest occurs within or adjacent to a burn compartment, prescribed fire will be allowed to run into the stand. If invasive plant species become a problem and prescribed fire does not prove to be an effective method of control, mechanical and/or chemical controls may be employed to remove the invasive species.

Loblolly and Slash Pine Plantations

This cover type consists of loblolly and slash pine species. The understory and midstory in these areas ranges from dense growing pocosin shrubs (e.g., wax myrtle, fetterbush, and titi) and hardwood tree species (e.g., oaks, hickories, sweetgum or red maple) to bare ground or pine straw. Midstory and understory species composition and structural diversity in plantations are influenced by soil type, fire regime, the amount of sunlight reaching the forest floor, and previous disturbances to these sites. This in turn determines the wildlife species present at various stages in the history of the stands.

A. Location and current condition of habitat (see Map 8)

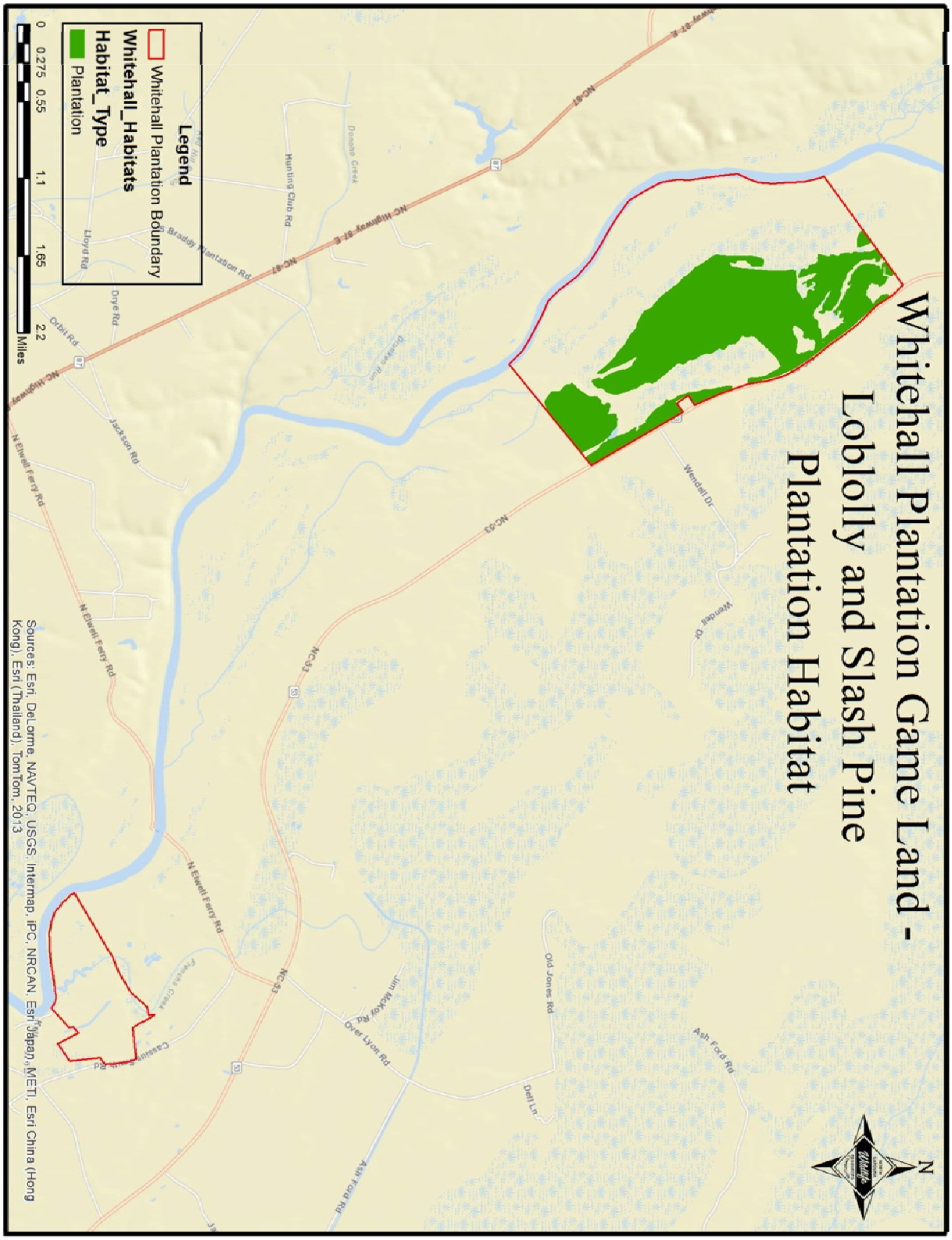
This cover type consists of 560 acres, which makes up 33.7 % of the total cover of this game land. Under previous ownership, this cover type was managed for maximum timber production, which was the justification for planting off-site species of loblolly and slash pine on historical longleaf sites and the drainage of wetter sites. Consequently, many stands in this habitat still consist of these off-site species and were heavily stocked upon acquisition. Furthermore, these habitats were guarded from fire for a significant time, which greatly impacted the diversity and structure of other vegetation within them. To date, none of these sites have been incorporated into active burn units with permanent fire breaks in place.

Thinning operations on these sites began in 2012 when 370 acres were thinned to a basal area of 60 ft^2/ acre. Pre-thinning basal areas ranged from 85 - 230 ft^2/ acre. Since then, the remaining 190 acres have also been thinned. However, following the thinnings in 2012, approximately 254 acres suffered significant mortality due to a pine beetle infestation and were severely damaged from an ice storm in the February of 2014. This substantial loss of overstory tree species warranted the need to clearcut these acres and work towards reestablishing site-suitable longleaf pine trees. Currently, these 254 acres are in a phase in between treatments that would allow for the reforestation of longleaf pines and for the time being, are classified as loblolly and slash pine plantation habitat.

These prescribed burning activities have resulted in improvements to the condition of this habitat. Thinnings and burning have created and maintained an open canopy in many of the stands and the condition of this habitat continues to improve with continued use of these management techniques.

Diversity in plant species composition and the configuration of vertical layers and horizontal patterns of vegetation define the differences between naturally regenerating stands and plantations (Allen et al. 1996). From stand initiation to final harvest, plantation forestry provides habitat for early successional species, pine specialist, and some forest species for short periods of time. Plantations provide habitat for edge- and grassland-dependent species during the initial years following establishment (Stauffer et al. 1990, Allen et al. 1996). On Whitehall Plantation, there are stands in different stages of rotation, creating what could be considered an uneven-aged

forest. With uneven-aged forests, the mosaic created by clearcut stands interspersed through stands of older trees creates a diverse environment that provides habitat for a variety of wildlife.



Map 8 – Loblolly and slash pine plantation habitat on Whitehall Plantation Game Land.

Priority non-game species associated with loblolly and slash pine plantations

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Cooper's Hawk	Accipiter cooperii	SC	S_3S_4B, S_4N, G_5
	Bachman's Sparrow	Peucaea aestivalis	SC	
Reptiles	Timber Rattlesnake	Crotalus horridus	SC	S_3G_4
	Pigmy Rattlesnake	Sistrurus miliarius	SC	S_3, G_5

Priority game species associated with loblolly and slash pine plantations

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	Meleagris gallopavo silvestris
	Northern Bobwhite Quail	Colinus virginianus
	Mourning Dove	Zenaida macroura
Mammals	American Black Bear	Ursus americanus
	White-tailed Deer	Odocoileus virginianus
	Eastern Fox Squirrel	Sciurus niger
	Eastern Gray Squirrel	Sciurus carolinensis

B. Problems affecting species and habitat

Besides the obvious conversion of these stands to off-site species of loblolly and slash pine, fire suppression prior to NCWRC ownership is the greatest problem affecting the condition of this habitat. This has caused some stands to consist of a dominant midstory of hardwoods, increased heavy fuel loads, inhibited the growth of grasses and forbs on the forest floor, and decreased the occurrence of rare and endangered species. Most of the understory grass, forb, and shrub layers are lost when the canopy of a newly planted timber stand closes, typically 7 - 15 years after planting. The forest canopy is one of the foremost determinants of the microhabitat within a forest. It affects plant growth and survival, hence determining the nature of the vegetation, and wildlife habitat (Jennings et al. 1999). Additionally, these intensively managed pine plantations lack age diversity within the stands and none of the stands will reach maturity within the 10-year planning horizon.

As stated earlier, these sites have not yet been burned under NCWRC ownership and were not burned under previous ownership for an unknown number of years, if they were even burned at all. Heavily stocked stands, extremely high fuel loads, and lengthy timber contracts have delayed the application of prescribed fire on these sites during ownership by the state. However, these upland sites have been assigned as burn compartments and burn plans have been written that simply await implementation. Because of the lack of fire on these areas, it will take multiple burns over many years to overcome impacts to the vegetative communities that fire suppression has caused.

Long-term damage from extensive site preparation and drainage of some of these sites pose problems to this habitat as well. Because poorly drained soils with high seasonal water tables greatly affected survival and growth of planted seedlings, drainage by previous owners was conducted to improve soil trafficability for harvesting and planting operations and to reduce stress on planted trees caused by excessive soil water conditions. Furthermore, these techniques have affected the hydrology of these sites in the form of altering outflow rates, evapotransporation, and reduction of water table elevations.

These intensive site preparation techniques can also affect soil quality in many ways. Powers et al. (1990) cited that intensive site preparation can lead to soil nutrient loss, organic matter removal, and the alteration of soil structure and site hydrology. Childs et al. (1989) cited compaction, surface soil mixing and displacement, and soil removal as being serious threats to the physical quality of forest soils as well.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Unlike nearly all other forest types mentioned in this Plan, the loblolly and slash pine forest is mostly non-natural. Therefore, there is a need to return acreage in this cover type to natural communities, most notably longleaf pine communities where soils are appropriate, in turn decreasing the overall acres of loblolly and slash plantations. Restoring site-appropriate stands back to dry longleaf communities should be the primary goal of this cover type.

In order to accomplish this goal, loblolly and slash pine overstories should be removed and regenerated to longleaf pine using the most appropriate silvicultural technique to the site. Once longleaf is established, it should be managed in uneven-aged stands using selection cuts in the same manner as current longleaf stands on this game land.

Additional older aged pine acreage is needed. Therefore, on sites with soils not conducive to longleaf restoration, pine stands should be managed on long rotation (e.g., 60 - 100+ years) or in uneven-aged stands. Where appropriate, forest management techniques should be used to mimic the characteristics of older stands, which include canopy gaps, dead and downed material, and the retention of cavity trees. Basal areas should be maintained at levels that allow for an herbaceous understory, i.e., 40 - 60 ft^2/ acre. When available, mature hardwood trees should be retained and released during harvest operations.

Equally high in priority is for this cover type is the restoration and continued implementation of a natural fire regime, regardless of the overstory pine species. This will involve working towards resolving smoke management issues, negative public sentiment, and liability concerns associated with prescribed burning. Restoration of natural fire frequency, intensity, and seasonality is critical for pine-related reptiles, amphibians, and their prey (Bailey et al. 2004), as well as other pine-related wildlife.

The upland forested areas on Whitehall Plantation will continue to be managed for open canopies to allow sunlight to reach the forest floor. This will be accomplished through thinnings of pine stands and conversion of loblolly and slash pine plantations to longleaf pine where appropriate. Stands with hardwood dominated midstories will be controlled on a site-specific basis. Prescribed fire will be the primary tool to prevent hardwoods from dominating the midstory and causing canopy closure. When and if fire proves to be ineffective at accomplishing this goal, herbicide or mechanical removal will be considered for a midstory treatment. Prescribed fire will also be used to maintain, restore, and improve existing native vegetation.

Cooperative efforts related to management activities need to continue and expand with largescale "commercial" forest landowners to continue to try and improve habitat conditions at the landscape and stand level for a variety of wildlife species (Measells et al. 2002). Additionally, continued cooperative efforts with red-cockaded woodpecker working groups (for translocation, or to manage the Sandhills and coastal populations of red-cockaded woodpeckers) is needed.

D. Desired future conditions

The desired future condition for this habitat type is restored, site-suitable vegetation communities with a primary emphasis on the longleaf pine/wiregrass ecosystem and a 3-year fire return interval.

Due to the young age of the majority of the plantations on Whitehall Plantation (ages range from 20 to 53 years), our first goal within the ten year planning horizon is to restore 25%, or approximately 140 acres, to longleaf pine. We will consider an acre "restored" once longleaf has been planted. We plan to achieve this goal utilizing the following timber management practices. See Future Forest Management below for planned restoration strategies. Once longleaf is established it will be managed as dry or wet pine savanna, depending on soil and site conditions.

Our second goal is to implement a 3 year fire return interval. It is our thought that with perpetual application of prescribed fire and the continued growth of timber within these young stands, we will be able to accomplish management objectives with a 3 year burning cycle. Older, larger trees will produce more fine fuels to carry fire throughout the burn compartments and the grassy and herbaceous ground cover should improve and be less sparse, hence further improving the ability to carry fire throughout the stand. Burning of these compartments will be accomplished with the use of existing natural and engineered fire breaks. The 3 year fire return interval will continue to restore the understory component, which will facilitate conversion to longleaf savanna cover type.

E. Future forest management

Where soil types are appropriate, plantations of loblolly pine will be converted to longleaf pine/wire grass communities. Stand age, stocking, site index, soil type, and spatial orientation will determine when and how appropriate stands are converted to longleaf pine. Silvicultural

techniques for conversion will include row thinning, selection harvest, and clear-cutting. Some stands may be thinned to a low basal area (20 - 30 ft^2/ acre) and underplanted with longleaf pine. Specific timber harvest prescriptions will be made in the annual forest management plans.

During harvest operations, attempts will be made to establish permanent locations for loading decks and primary skid trails that will facilitate the continuous entries required for selection harvests and uneven-aged management. All harvest operations will follow North Carolina Forestry Best Management Practices for soil and water quality.

Once the final harvest of loblolly or slash has been made, containerized longleaf plugs will be planted with a spacing that allows for multiple future wildlife management options (i.e., >500 trees per acre). Mechanical site preparation practices (e.g., v-sheering, bedding) will be avoided for longleaf restoration sites to minimize disturbance of native ground cover. Native understory plantings will be considered following timber harvests in areas lacking native understory or a substantial native seed-bank.

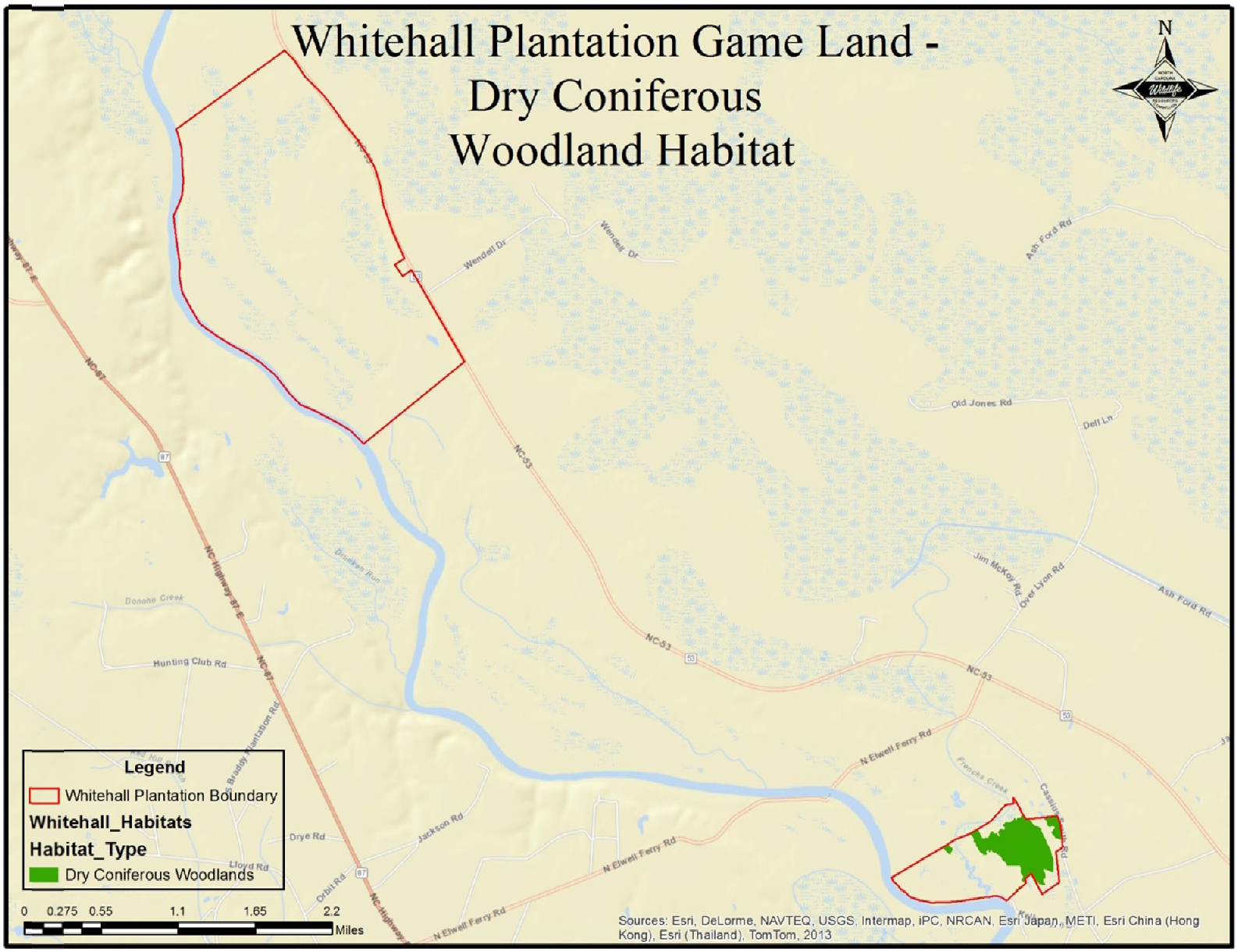
While stands are growing to an age appropriate for harvest and conversion, basal areas will be maintained at 50 - 80 ft^2/acre. When stands become overstocked and basal areas are too high, they will be commercially thinned. This will maintain an open canopy and promote a vigorous understory.

Dry Coniferous Woodlands

Non-longleaf pine coniferous woodlands occur throughout the Coastal Plain in areas that have naturally regenerated after being harvested or, due to the lack of fire, lost their original longleaf component and naturally regenerated in other pine species. The understory and midstory in these areas may be dominated by dense growing pocosin shrubs and/or hardwood species such as oaks, hickories, sweetgum, or maple. The exact midstory and understory species composition and structural diversity in these habitats is greatly influenced by management strategies which include timber harvests, prescribed burning, and treatments of the midstory component. This in turn determines the wildlife species present at various stages in the history of the stands.

A. Location and condition of habitat (see Map 9)

Dry coniferous woodland sites on Whitehall Plantation are found in small isolated patches and make up 4.3% (71 acres) of the game land. These sites were spared conversion to pine plantations and were probably allowed to naturally regenerate after they were last harvested under previous ownership. Decades of fire suppression is evident. These sites are in generally poor structural condition with a dense midstory and sparse to moderate understory. Herbaceous ground cover consisting of grasses and forbs is generally sparse due to the overall lack of sunlight availability. Based off of the fact that these sites contain well-drained, upland soils (Altavista fine sandy loam, Lakeland sand, Roanoke loam, and Wickham fine sandy loam), they are thought to have historically been dry longleaf communities, but because of improper management and the exclusion of fire, they naturally evolved into loblolly pine dominated stands.



Map 9 – Dry coniferous woodlands habitat on Whitehall Plantation Game Land.

Priority non-game species associated with dry coniferous woodlands

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Birds	Cooper's Hawk	Accipiter cooperii	SC	S_3S_4B, S_4N, G_5
	Bachman's Sparrow	*Peucaea aestivalis*	SC	
Reptiles	Timber Rattlesnake	*Crotalus horridus*	SC	S_3G_4
	Pigmy Rattlesnake	*Sistrurus miliarius*	SC	S_3, G_5

Priority game species associated with dry coniferous woodlands

Taxonomic Group	Common Name	Scientific Name
Birds	Eastern Wild Turkey	*Meleagris gallopavo silvestris*
	Northern Bobwhite Quail	*Colinus virginianus*
	Mourning Dove	*Zenaida macroura*
Mammals	American Black Bear	*Ursus americanus*
	White-tailed Deer	*Odocoileus virginianus*
	Eastern Fox Squirrel	*Sciurus niger*
	Eastern Gray Squirrel	*Sciurus carolinensis*

B. Problems affecting species and habitat

Besides the obvious regeneration of these stands to off-site species of loblolly pine, fire suppression is the greatest problem affecting the condition of this habitat. This has caused stands to consist of a dominant midstory of hardwoods, increased fuel loads, inhibited the growth of grasses and forbs on the forest floor, and decreased the occurrence of rare and endangered species. Most of the understory grass, forb, and shrub layers are lost when the canopy of a newly harvested and naturally regenerated timber stand closes, typically 7-15 years after planting. The forest canopy is one of the foremost determinants of the microhabitat within a forest. It affects plant growth and survival, hence determining the nature of the vegetation, and wildlife habitat (Jennings et al. 1999).

Currently, none of the dry coniferous woodlands acres on Whitehall Plantation are in an active burn rotation. These areas have never been burned under NCWRC ownership and consist of sites that are located in areas that are inaccessible or prove to be difficult to burn. Locations include areas adjacent to the property line where burning may not be feasible, between large floodplain forest habitats, or in isolated areas that are inaccessible.

In addition to being inaccessible, the lack of sufficient fine fuels to carry prescribed fires poses obstacles in burning these habitats. The dense shrub layer and lack of grasses and forbs don't allow fires to burn at the intensity needed to accomplish management objectives. Conversely, the weather conditions that do allow these habitats to burn present issues with fires that are too intense, having the potential for wildfire situations or intensities that would cause undesired harm

to trees. In other words, when weather conditions are favorable for burning these sites, the ignition of the heavy fuels found in the dense shrub layers burns with intensities greater than desired and may burn out of control.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

Inaccessibility to these few acres of dry coniferous woodland communities makes active management of these sites a goal that is potentially unattainable. At this time, the only option is to allow these areas to grow to maturity which would provide large tress that could potentially contain natural cavities and provide food beneficial to wildlife. The hardwood tree component of these communities could provide hard mast from trees such as oaks and hickories and other vegetation such as black gum and wild grape could provide soft mast. On sites with soils not conducive to longleaf restoration, pine stands should be managed on long rotation (e.g., 60-100+ years) or in uneven-aged stands. Where appropriate and feasible, forest management techniques should be used to mimic the characteristics of older stands, which include canopy gaps, snags, dead and downed material, and the retention of cavity trees. Mature hardwood trees should be retained.

Any areas of this cover type that are accessible areas should be managed for open canopies to allow sunlight to reach the forest floor. Where appropriate, this will be accomplished through thinnings of pine stands and conversion of dry coniferous woodlands to longleaf pine communities. Stands with hardwood dominated midstories should be controlled on a site-specific basis. Prescribed fire will be the primary tool to prevent hardwoods from dominating the midstory and causing canopy closure. When and if fire proves to be ineffective at accomplishing this goal, herbicide or mechanical removal will be considered for a midstory treatment. Prescribed fire will also be used to maintain, restore, and improve existing native herbaceous vegetation.

D. Desired future conditions

The desired future condition for this habitat type is restored, site-suitable vegetation communities with a primary emphasis on the longleaf pine/wiregrass ecosystem and a 3-year fire return interval. As previously stated, at this time these isolated and inaccessible areas provide no opportunity to actively manage the vegetation communities and achieving our desired future condition is almost entirely dependent on the ability to access them. If the opportunity presents itself to conduct management activities, necessary and appropriate actions will be taken to improve their habitat quality. This may include thinning of stands that have closed canopies, application of prescribed fire, or midstory treatments that serve to eliminate its dominance.

An alternative desired future condition for these sites is to allow them to grow to maturity and contain old growth characteristics. This includes canopy gaps with cavity trees located throughout the stands for cavity nesting birds and dens for mammals, dead and stressed trees

throughout the stand for future cavities and structure for insect foraging birds, vines that provide foraging habitat for songbirds, and coarse debris (10 inches in diameter or greater) on the ground to provide den sites and habitat for invertebrates, amphibians and reptiles.

E. Future forest management

Stands that are accessible will be managed for low basal areas and open canopies via commercial thinnings. Where accessibility and soils allow, stands will be converted back to longleaf pine when the current stands mature or when they can be incorporated into sales of adjacent stands.

Pocosin

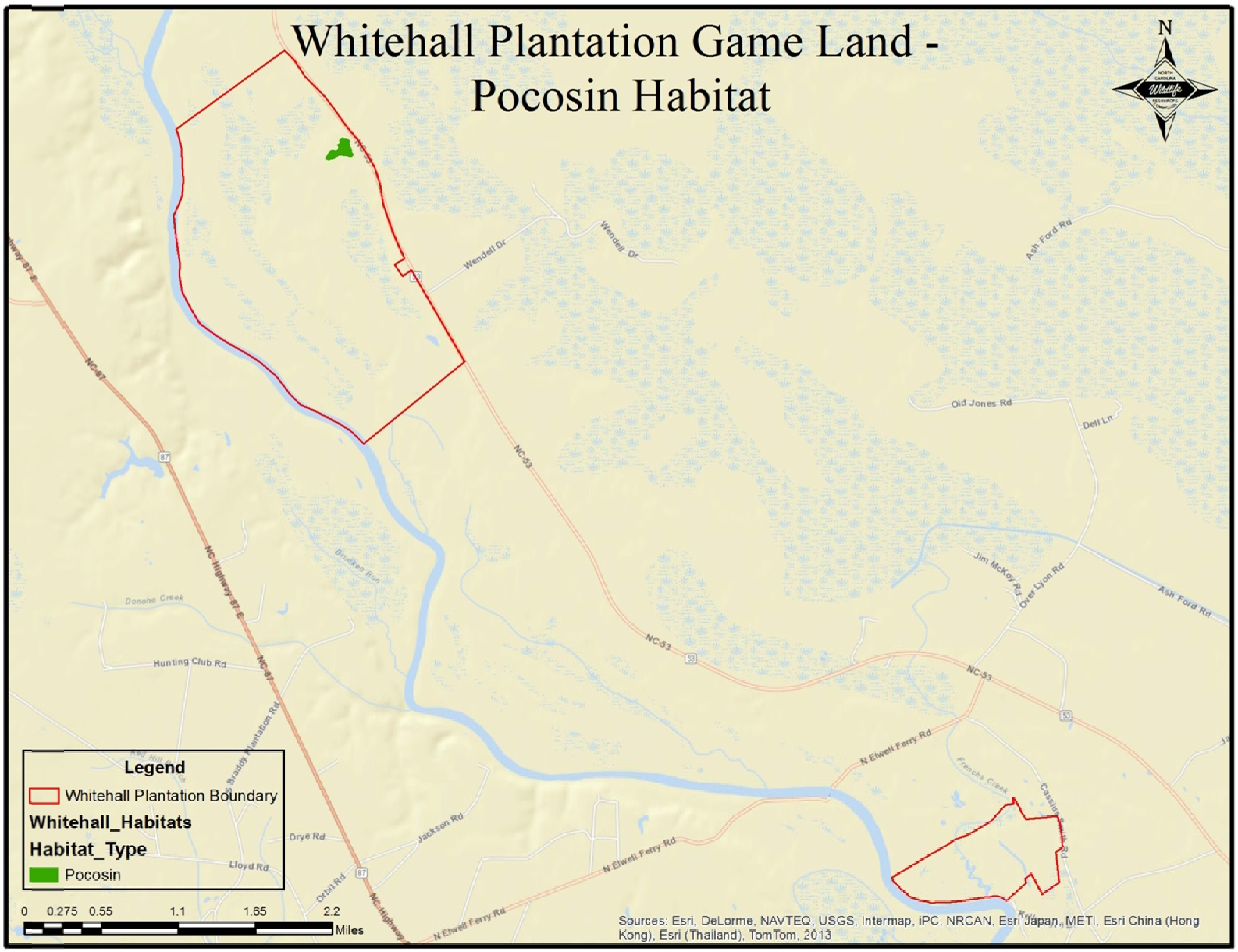
7 acres of Whitehall Plantation is made up of pocosin habitat, which makes up less than 1% of the property. This peatland community includes the high pocosin community type and is totally surrounded by upland pine stands. These communities typicallyt occur on peatlands of poorly drained interstream flats, and peat-filled Carolina bay depressions and swales of the eastern Coastal Plain (Schafale and Weakley 1990).

Extremely acidic in nature due to organic soils, generally these habitats are nutrient poor and usually continuously saturated with water. Fires were historically associated with droughts, and fire frequency and intensity strongly influence vegetative structure dominance, composition, stature, and diversity. All but the streamhead communities occur along a gradient of moisture, nutrients, and peat depth and typically occupy different locations with the domed peatlands of interstream flats and Carolina bays and swales. The wettest sites, typically the center of bays, may contain only low shrubs and stunted pond pine, with beds of sphagnum, pitcher plants, and cranberry. Higher, drier sites are characterized by an extremely dense shrub layer.

High pocosins are extremely nutrient poor with little normal nutrient input other than rainfall. Under natural conditions, fire was an important component shaping the structural diversity of these communities. Compared to other pocosin habitats in North Carolina, they are intermediate between low pocosin and pond pine woodlands in terms of location, depth of peat, shrub height and density, and stature of trees. The shrub layer is typically 1.5-3 meters in height and trees still tend to be scattered and small in stature.

Location and condition of habitat (see Map 10)

The condition of pocosin habitats in much of the Coastal Plain is poor due to fire suppression, changes in hydrology, intensive silviculture, and conversion of forest types. Whitehall Plantation lies in the Bladen Lakes region which is characterized by the largest concentration of mostly unaltered Carolina bays remaining throughout the range of this unusual geological feature (LeBlond and Grant 2005). Fire suppression has undoubtedly altered the condition of pocosin habitats on this game land but fire will soon be reintroduced into these communities where feasible. However, ever increasing obstacles of using prescribed fire (e.g., smoke sensitive areas and public misconceptions) limit the feasibility and opportunity to reintroduce fire into these communities. The ecotones between upland sites and the lowland pocosin habitats can be burned when feasible and when great effort has been put forth to reduce and sometimes eliminate the installation of fire breaks in these ecotones.



Map 10 – Pocosin habitat on Whitehall Plantation Game Land.

Priority non-game species associated with pocosin habitat

Taxonomic Group	Common Name	Scientific Name	State Status (Federal Status)	Natural Heritage Program State and Global Rank
Mammals	Star-nosed Mole	Condylura cristata	SC	S_2, G_5T_2Q
Amphibians	Oak Toad	Bufo aquercicus	SR	S_3, G_5

Priority game species associated with pocosin habitat

Taxonomic Group	Common Name	Scientific Name
Mammals	American Black Bear	Ursus americanus
	White-tailed Deer	Odocoileus virginianus
	Raccoon	Procyon lotor

Problems affecting species and habitats

Fire suppression is an important factor threatening the pocosin habitat on Whitehall Plantation due to the strong influence fire has on their vegetative structure, composition, and diversity. As stated previously, the constraints associated with prescribed fire and its reintroduction of fire into these communities creates a challenge for game land managers. The volatility of fuels in these communities and smoke management concerns also pose everlasting challenges to addressing this threat. It is our concern that the build-up of fuels due to the lack of fire will result in these stands burning in wildfire conditions and that the fire will be so intense that the ground will burn, thus killing the entire stand. Some wildfires can be beneficial, acting as a renewing force, releasing nutrients that stimulate seed germination and quick regrowth from root sprouts, regenerating plant communities. Intense fire is a natural part of pocosin systems, but extensive peat consumption, especially in ditched peatlands, is a significant impact.

C. Conservation actions necessary to conserve the species and habitat and priorities for implementation

The most important action necessary to manage this habitat type is the application of prescribed fire. It can be used to increase the heterogeneity in these pocosin habitats related to vegetative dominance, stature and diversity. Growing season fires should be encouraged, although seasonality is not as important as frequency (Robbins and Myers 1992). Fire will increase vegetative structure and should promote the establishment of herbaceous groundcover in some community types. Rare species associated with peatland pocosins are dependent on the combination of wet conditions and frequent fire.

Burning on other game lands has often been accomplished on uplands without the use of fire breaks in the ecotones between the upland sites and pocosin habitats, especially in winter when moisture serves to prevent fires from burning out of control in the pocosin. Efforts should

continue to be made to burn in this manner and ecotone management should be prioritized based on feasibility of burning without fire breaks on Whitehall Plantation. Whenever possible, fire breaks on Whitehall Plantation should be made up of existing roads and trails that require very little to no manipulation before burns are conducted. Bare, mineral soil is upturned on these roads and trails with a tractor and disk harrow and eliminates the need for breaks to be installed with a fire plow. This activity greatly minimizes disturbance to ecotones, reduces erosion and changes to hydrology, and eliminates the need for fire break rehabilitation.

The placement of fire breaks should be examined on a case-by-case basis for each burn unit containing pocosin ecotones that may be used for fire breaks and a determination should be made on-site. Establishing new fire breaks in pocosin ecotones should be weighed against the ability to safely, effectively, and frequently apply fire to this landscape. Where feasible, modification of fire breaks in these transition zones should be strongly considered. Additionally, any needed rehabilitation of fire breaks should occur immediately following the completion of a prescribed burn. The highest priority should be given to lines that may affect the hydrology or water quality of a given site.

Because pocosin habitats are particularly important for wintering birds due to the high amount of soft mast available, protection and proper management is necessary to provide for these species. These pocosin habitats also provide for a greater number of wildlife species including black bears. In a study done by Jones and Pelton (2003), black bears preferred pocosins and clearcuts over managed pine habitats presumably because of the superior cover and food provided by these cover types. This has also been reported for pocosin habitats by Landers et al. (1979), Hellgren and Vaughan (1988), Hellgren et al. (1991), and Lombardo (1993). Pocosins also provide for black bears a sanctuary from human activity by providing areas of impenetrable escape and hiding cover.

Though extensive amounts of pocosin lands are already protected, some specialized types require more protection, such as the Carolina bays. Acquisition partnerships through conservation partners will be important. Opportunities may be presented to take advantage of initiatives and programs that promote pocosin restoration such as Forest Landbird Legacy Program, Partners for Wildlife, and the North American Wetland Conservation Act. Identified funding sources for potential land acquisition include the North Carolina Clean Water Management Trust Fund, Coastal Wetland Grants, Forest Legacy, and Recovery Land Acquisition Grants.

D. Desired future condition

Our desired future condition for this cover type is to maintain our pocosin habitats with prescribed fire when it can be done safely and effectively. Where possible and fuel and weather conditions allow, we will burn these areas.

As stated earlier, the location of pocosin habitat on Whitehall Plantation pose challenges to using prescribed fire in many cases. The characteristics of these pocosins (*i.e.*, large size, proximity to

other properties or smoke sensitive areas, high fuel loads, inaccessible) make it challenging to control fires set under prescription. Smoke management guidelines also present their own unique challenges when burning these areas containing such high fuel loads.

Additional management actions we may use to manage this cover type include increasing the size of burn compartments, conducting aerial ignition burns, and/or contract burning some of these areas. Other options will be entertained as they arise.

There are currently very few fire breaks on this property that will require the use of a bulldozer and traditional fire plow. Nearly all fire breaks will be created and maintained with a tractor and disk harrow or grinded with a forestry mulcher. In the event that a bulldozer and traditional plow are used to establish burn compartments or to gain control of an out of control fire, we will attempt to rehabilitate 100% of these plow lines within 6 months of creation. Finally, every attempt will be made not to establish new fire lines in the pocosin ecotones.

E. Future forest management

Due to frequently saturated soils and the high risk of rutting and ground damage due to logging operations, no active forest management will take place in these areas on Whitehall Plantation, except in the case of restoration after natural catastrophic events. Where a pocosin occurs within or adjacent to a burn compartment, prescribed fire will be allowed to run into the stand. If invasive plant species become a problem and prescribed fire does not prove to be an effective method of control, mechanical and/or chemical controls may be employed to remove the invasive species.

INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE

Assessments of existing infrastructure throughout Whitehall Plantation were conducted by Division of Engineering & Lands Management staff in April 2014. The infrastructure maps included in the appendices to this document show the locations of existing public roads, administrative access roads, camping area, and gates within the Whitehall Plantation Game Land. The results of the assessments along with recommendations for maintenance and improvements are discussed by category below.

Subsequent to the April 2014 infrastructure assessment, an additional tract known as the McFayden tract, was purchased by NCWRC. No assessment or planning meetings have been taken place concerning this new tract and it is not addressed in any recommendations. This tract is not contiguous to the primary parcel. This Management Plan may need to be revised in the future to include the new acquisition.

ROAD ASSESSMENT

Whitehall Plantation has a modest network of about 7 miles of roads. These roads were inspected by Engineering staff in April 2014. At the time of road inspection, Coastal Region field staff and Engineering staff met to discuss the current infrastructure conditions and future needs.

Good access is provided to the game land. There are two main types of roads located on the game land: Public access roads (roads open to public vehicle travel) and WRC access roads (roads that are for public foot traffic and staff vehicles only). WRC staff use the WRC access roads for maintenance and conservation work. The public uses the WRC access roads for hunting, wildlife viewing, geo-caching, and other outdoor recreational purposes.

Existing Road Conditions

Whitehall Plantation Game Land has 3 main roads that enter the game land off of NC Highway 53. This game land property was acquired by the Commission in 2009 and following the acquisition all 3 of the main roads were improved by WRC staff. As a result of this recent work, all 3 of the main roads are in good condition. The main roads include the following:

Whitehall Road

This road is the central road through the game land. It is a public access road. It provides access from NC Highway 53 straight through to the Cape Fear River. This road is 1.4 miles long and has a gravel surface, varying from 10’ to 15’ in width. Of the 3 main roads, Whitehall Road has

the most connections to additional roads for both public vehicle travel and foot traffic. This road crosses the swampy area of the game land and is its narrowest in the crossing location. A low point at the crossing serves as a built-in spill way in the event of overtopping. Whitehall Road is in good condition.

Camp Road

This road is the southern of the 3 main roads. It is a public access road. It provides access off of NC Highway 53 and dead ends at the swampy area within the game land. This road is 0.6 miles long and has a gravel surface, varying 12' to 15' in width. Camp Road is in good condition.

Lucas Road

This road is the northern of the 3 main roads. It is a public access road. It provides access off of NC Highway 53 and dead ends at the swampy area within the game land. This road is 0.5 miles long and has varying widths of 12'-15' wide. The first segment, from NC Highway 53 to the sharp turn, is a gravel surface and in good condition. The second segment, from the sharp turn to the dead end, is sand surface and in fair condition.

Minor roads within the game land include both public access roads and WRC access roads. Minor roads include the following:

Beaver Road

This road extends off of Whitehall Road to the south and dead ends at the swampy area. This road is 0.4 miles long and is a sand surface. It is presently a gated WRC access road. Beaver Road is in poor condition.

Sandhill Road

This road extends off of Whitehall Road to the south and dead ends at the swampy area. The first 0.5 miles off of Whitehall Road is a public access road. Public access ends at a gate and Sandhill Road (plus some unnamed spurs) continues another 0.7 miles as a WRC access road. This road has a sand surface, varying 10'-15' in width. Sandhill Road is in poor condition

The remaining roads within the game land are public foot traffic roads that are sand surface and generally in fair condition.

Some of the roads just need minor grading and the addition of gravel, while others require more extensive grading, including the potential addition of culverts. The future road improvements

have been broken down into high, medium, and low priorities. It should be a goal to perform the high priority projects over the next ten years, which the medium priority projects done next as resources allow. At the end of this ten year period, a new assessment will be performed and new priorities set.

Future Road Improvements

The western portion of Whitehall Plantation Game Land, which is primarily swampy area in the floodplain, is a Dedicated Natural Preserve Area in the NC General Statues by the NC Natural Heritage Program. Within the Natural Preserve Area, no new development can take place so roads and infrastructure are limited to their existing footprints. Recommended future road improvements adhere to that parameter.

Due to the small size of the road network and the improvements made a relatively short time ago to the main roads after the property acquisition, the list of maintenance needs and future improvements is short and limited to public access roads. The recommended road improvements discussed in this section are grouped by priority as follows:

HIGH PRIORITY

Over the next ten years, the highest priority roads for upgrade are the following:

- Beaver Road
- Sandhill Road—public access segment

Beaver Road

Beaver Road is a narrow sand/dirt surface road in poor condition. It extends off of Whitehall Road to the south and dead ends at the swampy area. Presently it is a gated WRC access road. It has been identified as a road project for Fiscal Year 2014-2015 and a design is in progress by a WRC engineer. The completed project will add gravel surface to the entire 0.4 mile road and have a widened area at the end to allow turn around and parking. Beaver Road is located in the Dedicated Nature Preserve Area so no widening will be included in the project design. After this road project, Beaver Road will have its gate removed and be a Public Access Road. This project will have an estimated cost of $60,000.

Sandhill Road—public access segment

Sandhill Road is a sand surface road in poor condition and the first 0.5 miles between Whitehall Road and the gate is recommended for improvement to a gravel surface. This road is outside of the Dedicated Nature Preserve Area so areas could be widened where it would be advantageous

to provide passing areas. No improvements are recommended beyond the gate to the portion that is a WRC access road. This improvement project will have an estimated cost of $75,000.

MEDIUM PRIORITY

The above mentioned roads have been rated as having the highest priority for repair over the next ten years. However, one other needed road upgrade was identified. The following road is considered medium priority and should be repaired after the high priority projects are completed.

- Lucas Road—existing sand surface segment

Lucas Road—existing sand surface segment

The 0.2-miles segment of Lucas Road from the sharp turn to the dead end is sand surface. This segment of the road is in fair condition. As Lucas Road is one of the 3 main public access roads into the game lane, it is recommended to be upgraded to gravel surface. This road is outside of the Dedicated Nature Preserve Area so areas could be widened where it would be advantageous to provide passing areas. This improvement project will have an estimated cost of $30,000.

LOW PRIORITY

No low priority projects are identified.

New Road Construction

As previously mentioned, existing roads provide access to the game land. In addition, approximately half of the game land is in the Dedicated Nature Preserve Area where no new development is allowed. Due to these two factors, no new road construction projects are identified.

Road Abandonment

Off of Whitehall Road there are 2 unnamed spur roads about 1500’ from NC Highway 53. These roads are in locations that have been logged and now lead nowhere. It is recommended that these roads be abandoned and reforested with the surrounded areas.

Road Maintenance

All roads require inspection and maintenance to function well and avoid damage and deterioration. Maintenance should be performed regularly, as the longer the delay in needed maintenance, the more damage will occur and the more costly the repairs will be.

Typical Road Maintenance Practices

- Inspect roads regularly, especially before the winter season and following heavy rains.
- Keep ditches and culverts free from debris (see also Culvert Maintenance Section of this Plan).
- Remove sediment from the road or ditches where it blocks normal drainage.
- Regrade and shape the road surface periodically to maintain proper surface drainage.
- Typical road should be crowned at approximately 4%, or ½" per foot.
    - Some roads may not require a crown, but should have a constant cross slope (super-elevation).
    - Gravel should be distributed at an even depth across the road.
    - Gravel should have an even distribution of fine and course materials.
    - Keep downhill side of the road free of berms, unless intentionally placed to control drainage.
    - Proper maintenance and grading of the road will require a motorgrader and a roller.
- Avoid disturbing soil and vegetation in ditches, shoulders, and cut/fill slopes to minimize erosion.
- Maintain shoulders on both sides of the road to ensure oncoming vehicles have enough room to pass. Shoulders should be relatively flat, with a mowed grass surface.
- Maintain erosion-resistant surfacing such as grass or rip rap in ditches.
- If it is determined that a road needs major repairs or upgrades, contact Regional Supervisor and Design Services to schedule an assessment.

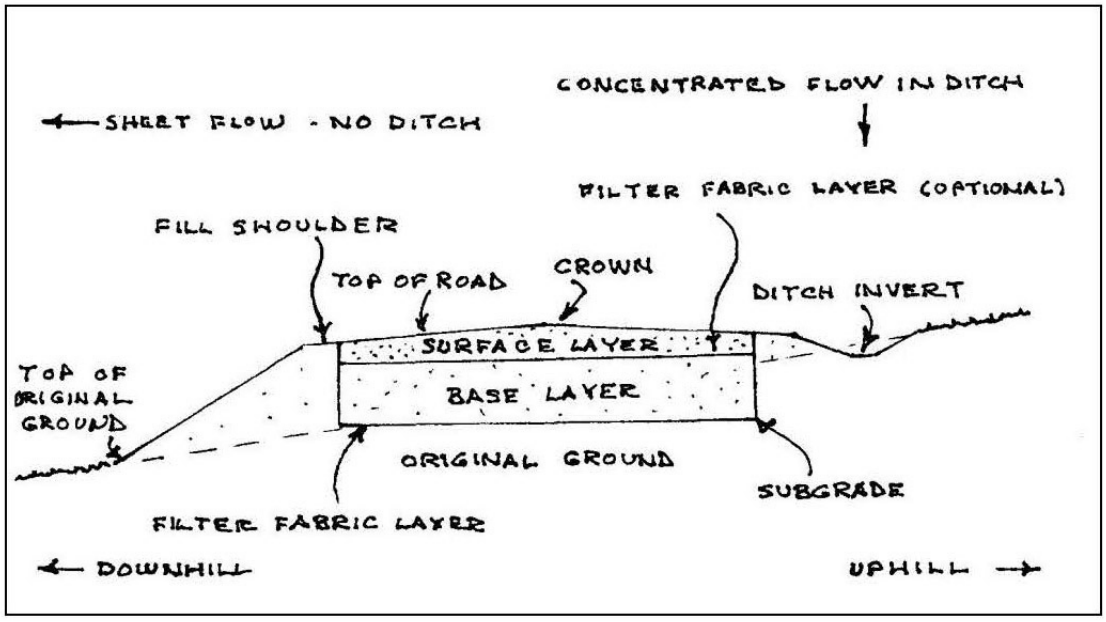


Figure 1 - Typical Road Cross-Section – Canaan, NH Highway Department

Road Safety Features

- Remove trees and other vegetation as necessary to provide adequate sight distance and clear travel way.
- Install and maintain road signage. This includes:
    - Stop signs –Should be installed at every intersection, with the signs on the minor roads.
    - Warning signs – Should be installed to warn the public of any road closures or problems in the game land.
    - Road/Route signs – Should be installed at every road intersection on a game land.
    - Information kiosks with game land road map – Entry signs should be installed at every entrance to a game land off of a DOT road. Information kiosks should be located near the entrances and in parking areas.

Gates

Gates should be used on game lands for maintenance and habitat conservation. For maintenance purposes, gates should be used to limit access to roads that are unsafe or are in disrepair, or to limit use on roads to certain times a year in order to minimize the wear and deterioration of the road. If a road is considered unsafe or in disrepair, field staff should contact an engineer. The engineer will perform an inspection to determine the best course of action to repair or upgrade the road.

All gates installed on game lands should the standard swing gate and painted orange for maximum visibility. No cable gates should be installed, and any existing cables should be replaced.

TROUBLESHOOTING

Road Surface Problems

Problem: Longitudinal erosion of the road surface
Possible Causes:

- Flat or U-Shaped road. A crown or super-elevation of the road is needed to shed water laterally off the outer edges of the road surface
- Small ridge of soil or grass growth along the outer edge of the road is preventing water from draining off the road surface. Edge needs to be graded to remove this ridge.
- Water is traveling in a wheel rut. Road needs to be regarded. This problem often results from soft roads.
- Road ditch is not large enough and overflows onto road surface. Install more frequent turnouts to get water away from the road or increase the size of the ditch.

Problem: Lateral erosion cutting across the road surface

Possible Causes:

- Most often occurs at a low spot in the road or where a ditch filled in and no longer functions. Water builds up and overtops and erodes the road surface. A culvert should be installed in this location.

Problem: Potholes
Possible Causes:

- Potholes are typically caused by insufficient crown or road cross slope. The road should be re-graded to remove the potholes, then re-crown or super-elevate the road as necessary.

Ditch Problems

Problem: Bottom of ditch is eroding
Possible Causes:

- Slope of ditch is too steep to handle the flow without additional protective measures, which include addition vegetation, erosion control mats, rip rap, check dams, etc.
- Ditch is too small to handle the volume of water flowing through it. May need to install periodic turnouts to reduce flow through the ditch.
- Bottom of ditch is too narrow and needs to be widened to a parabolic shape.

Problem: Sides of ditches are slumping or eroding
Possible Causes:

- Side slopes are too steep and need to be lessened by digging the back.
- Side slopes need to be stabilized with additional vegetation, erosion control mat, or rip rap.

Parking Areas

Whitehall Plantation provides an adequate network of roads for the public to access the game land, but no designated parking areas. Currently, users of the game land park on the shoulder of NC Highway 53, shoulders of internal game land roads, and in front of WRC access gates. These existing parking patterns can present several problems, including blocking access, safety, and impacts to protected habitats.

The game land road network has been reviewed with field staff and seven locations have been identified for the addition of parking areas (see *Appendix III*). These parking areas are generally located at road dead ends and at intersections of public access roads with WRC access roads where users would continue on foot. The campground area should also include parking.

This game land does not presently have disabled hunter facilities but WRC regional staff have the goal of the addition of an ADA (Americans with Disabilities Act) hunting blind. The location of any future ADA hunting blind should be planned around parking locations.

Any new parking area should provide a gravel surface (approximately 6" layer of compacted ABC stone) and provide enough parking for three to five vehicles. Depending on the amount of clearing and grading required, it is estimated that each parking area will cost between $5,000 and $15,000.

Gates

There are several gates located throughout the game land, which limit access to certain roads and portions of the game land. The majority of the gates on the game land are swing gates and appear to be in good condition. The game land is typically closed outside of hunting season, with all gates closed and locked. Some of the gates on the game land are closed year round to keep the public off of some of the roads which are in poor condition. Other gates on the game land are opened/closed during specific times of the year, typically for deer and turkey hunting seasons. A Controlled Access Map has been included in this report, which identifies the times of the year when each gate/road is open to the public.

DRAINAGE STRUCTURE ASSESSMENT

Dams

Whitehall Plantation has no lakes/ponds or associated dam that needed to be inspected for this Management Plan

Waterfowl Impoundments

Whitehall Plantation has no impoundments that needed to be inspected for this Management Plan.

CULVERT ASSESSMENT

Due to the relatively small size of the game land, staff were able to locate and inspect the 5 known culverts on the game land. Existing culverts include the following:

Whitehall Road swamp crossing

There are a series of 3 24” CMP culverts running under Whitehall Road in the road is its narrowest crossing the swamp. These culverts appear adequately sized and function properly when clear. However, due to heavy beaver activity in the vicinity these culvert inlets are frequently blocked. A low spot in the road acts as a spill way when the culverts are blocked. Regular beaver trapping is recommended. Regular inspection by staff and clearing of beaver debris is also recommended as trapping will not permanently eliminate beaver populations in the area.

Whitehall Road near Otter Road

Further down Whitehall Road near the intersection with Otter Road is a 60” metal culvert running under Whitehall Road. The culvert is clear and appears adequately sized. However it was found during the April 2014 inspection that the culvert is collapsed down in the center so it is not functioning at full capacity. This culvert is visibly aged and worn and should be considered for replacement.

River Road at intersection with Whitehall Road

There is a 36” culvert running under River Road at its intersection with Whitehall Road. While this culvert appears to be adequately sized, placement of rip rap at the inlet and outlet is recommended to extend the life of the culvert due to minor erosion.

Culvert Maintenance

Culvert maintenance is performed to extend the life and ensure proper function of the installed drainage structure. The accumulation of sediment and/or debris at the inlet or outlet of a culvert or damage such as crimping of the pipe effectively reduces the diameter and flow capacity of the pipe.

Culvert maintenance includes removal of accumulated sediment and/or debris that prevents passage of water (and organisms) through culvert inlets, outlets and connected drainage ways. It may also include reinforcement of eroding inlets and outlets by installing riprap or other erosion control measures. Damaged culverts and culverts requiring frequent repeat maintenance should be considered for future remediation via redesign and reinstallation.

The following items should be checked for and addressed as part of routine maintenance inspections:

- partial or complete blockage of the inlet or outlet of the pipe with sediment, stone, leaves, woody debris, refuse or any other items that could affect flow through the culvert
- evidence of scour, bank or channel bed erosion near the inlet or outlet of the culvert
- evidence of flow overtopping the road at the culvert location
- damage to the pipe including crimping of the inlet or outlet, crushing or piercing of the pipe
- severe corrosion of the pipe
- damage to headwalls

Staff should inspect ditches and culverts as part of their regular road maintenance activities. This inspection is especially important during leaf fall and following periods of heavy rain. Staff should consider the location of the culvert before performing maintenance using heavy equipment. Culverts located in active stream channels, dedicated or critical habitat areas may require special permission or installation of erosion control measures before maintenance can commence.

Leaves and woody debris that have accumulated in or around the inlet of the culvert should be removed immediately using hand tools if possible. Removal of accumulated silt and/or gravel from ditches approaching the culvert inlet should be performed using a small excavator, backhoe or a tractor equipped with a scrape blade. Sediment in or around the immediate vicinity of the pipe inlet or outlet should be removed using hand tools to prevent damaging the culvert. Cleaned out material is to be pulled away from the culvert then hauled and spread at a site where it cannot be washed back to the culvert area.

Repeat problems with sediment collecting around the inlet may indicate the existence of an erosion problem originating from the slopes, streams or ditch lines in the vicinity of the culvert. Identification and stabilization of these problem areas through practices such as seeding or matting could improve performance of the culvert and reduce maintenance requirements.

Flow overtopping the road at the culvert location generally indicates that the pipe is undersized and could warrant resizing and replacement. Any damage to the culvert, as described above, may also necessitate replacement of the pipe. If maintenance staff identifies any culverts that may need replacement, they should contact engineering staff to calculate the peak flow capacity and diameter of the new pipe.

RECREATIONAL FACILITIES

Whitehall Plantation Game Land offers recreational activities in addition to hunting. Since it is a newer and smaller game land, recreational uses are fewer in number than at some of WRC's larger and longer-established game lands.

Whitehall Plantation recreational activities include camping, hiking, wildlife viewing, and geocaching.

Boating Access Areas

No Boating Access Area exists on this game land and one is not proposed. Although the Cape Fear River serves as the game land's western boundary, there are existing boating access areas on the river in the area and the Dedicated Nature Preserve Area designation would prevent this type of new development.

Public Fishing Areas

No designated Public Fishing Areas exist on this game land and one is not proposed. There is known cat fishing in an area at the end of Whitehall Road, however providing designated Public Fishing Area facilities would not be possible due to the Dedicated Nature Preserve Area designation and would not be desired because this shoreline area is in the hunting area where additional encouraged activity would negatively impact hunting.

Shooting Ranges

No shooting range exists on Whitehall Plantation Game Land and at this time one is not proposed. As WRC continues to expand its public shooting range program in the future, this game land should be evaluated to see if that type of facility would be feasible and of benefit given the size and other current uses of the area.

The game land currently has no rules limiting target practice or recreational shooting, and the public can shoot anywhere they like. This is not an ideal situation and presents safety concerns. If in the future a shooting range is provided, the public will be required to use this facility and halt the unregulated recreational shooting on the game land. This would eliminate safety concerns and also help Enforcement Officers in policing the game land. A shooting range would also reduce the amount of trash related to recreational shooting on the game land, which includes spent ammunition and paper targets.

Non-Traditional Uses

Geocaching

Geocaching is a recreational activity, in which participants use a GPS receiver or mobile device to hide and locate hidden containers, or caches, located somewhere outdoors. As of spring 2014, one cache is mapped within Whitehall Plantation. There are no major infrastructure elements required for this non-traditional use, but recommended parking areas mentioned above would benefit these users as geocaching's popularity continues to grow.

Hiking/Camping

Whitehall Plantation currently has one designated camping area. This existing camping area is on Whitehall Road in the northeast quadrant with the intersection of Sandhill Road. This area has recently been logged and the camping area is fully exposed and should be relocated. Regional staff have identified an area on the other side of Whitehall Road and to the south of its intersection with Sandhill Road as the desired location to construct the new camping area. This new camping area should also include a parking area. Camp sites within game lands are primitive camp sites and are typically used by hunters. However, as non-traditional uses of game lands are becoming more popular, it is recommended that locations for additional recreational campsites be investigated and designated in the future.

The WRC access roads within the game land have typically been for hunter access by foot. As with camping, hiking and wildlife viewing are becoming more popular activities and will continue to be demands on the game land. The existing network of WRC access roads within the game land provide access to most areas of the game land and provide adequate hiking oppurtunities for users. Additional hiking trails are not recommended.

RECREATIONAL FACILITY MAINTENANCE

Maintenance of recreational facilities is critical to the overall operation of the game land program. Typical use of the game lands is dispersed, however, recreational facilities concentrates users on a specific area or feature. This concentration of users, whether it is a boating access, fishing access, shooting range, or other use, results in a need to ensure the facility is safe and functional. Routine site visits for inspection and maintenance will accomplish this goal. Site visits should consist of two actions: (1) Inspection for safety issues and functionality; (2) Actual maintenance activities.

1. Inspections should examine the following items

    a. Safety inspection items:

        Overhead
        - Dead trees or limbs
        - Overhead utilities

    b. Functionality Inspection Items

        Parking
        - Surface condition (ruts, potholes, gravel)
        - Delineation (wheel stops, paint)

        Signage
        - Kiosk (entrance, regulation and information)
            - ADA (Americans with Disabilities Act)
            - No Parking

2. Maintenance activities should include routine and corrective activities

    a. Routine Activities include:

        - Litter and debris removal
        - Grass mowing
        - Woody vegetative growth control

    b. Corrective activities can include but not be limited to:

        - Sign replacement
        - Minor grading
        - Tree or limb removal

Over time recreational facilities degrade to the point that routine maintenance activities cannot provide corrective action. Examples of this level of degradWhitehall Plantationation include but are not limited to: structural problems, persistent and/or severe erosion issues, and broken/or severely degraded concrete. Once this level of degradation is reached, supervisory personnel should inspect the facility and determine the scope of the needed repairs. If major repairs are required supervisor personnel should contact an engineer for assistance.

PUBLIC USES

As stated previously in the Game Lands Program Mission Statement, primary public uses of North Carolina game lands are hunting, fishing, trapping, and wildlife viewing. However, the NCWRC recognizes the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses.

As the human population of North Carolina has rapidly grown, state-owned game lands have received increasing pressure to provide public outdoor recreation opportunities. These uses include traditional activities such as hunting, fishing, trapping, and wildlife viewing, as well as other outdoor recreation pursuits. While hunting, fishing, trapping and wildlife viewing are the primary public uses of state-owned Game Lands, the NCWRC has always allowed and supported other dispersed and non-developed recreational activities. The funding sources of the NCWRC, however, are focused on natural resources management rather than recreational development. Because of this, the NCWRC must exercise care in providing for recreational activities that may not be compatible with the natural resources for which the lands are valued and the primary management objectives of these lands.

As a response to these increasing pressures, the NCWRC developed a Game Lands Use Evaluation Procedure to provide a statewide framework for determining appropriate uses for NCWRC-owned or controlled game land properties (see *Appendix XI*).

DIFFERENT USER GROUPS OF WHITEHALL PLANTATION GAME LAND

Based off of anecdotal information and input received from the public input processes that occurred from 1 April to 15 May 2014, we have made our best determination of different user groups that occur on Whitehall Plantation. A copy of the public input meeting announcement can be seen in the Appendices Section, *Appendix IX*. They are listed below and are discussed in greater detail following their listing.

Traditional game land users:

- Hunters
- Trappers
- Anglers
- Wildlife viewers

DISCUSSION OF TRADITIONAL GAME LAND USERS

Hunters, anglers, trappers, and wildlife viewers make up the vast majority of groups that use Whitehall Plantation. Hunters make up largest number of traditional users with anglers, wildlife viewers, and trappers consisting of the remainder, in order of numbers, respectively.

As discussed earlier in the Plan, Whitehall Plantation is enrolled in the Permit Hunt Opportunities Program, which allows for managed participation and provides for unique hunting opportunities for special areas or species. During the public comment period, no comments were received that expressed dissatisfaction with permitted hunting on Whitehall Plantation. Overall, we believe that traditional users are satisfied with permit hunting opportunities provided on this game land.

Waterfowl hunters

This game land is probably best known for its waterfowl hunting opportunities. It has approximately 1,025 acres of floodplain forest habitat, most of which is suitable for waterfowl and waterfowl hunters. It provides opportunity to harvest a variety of waterfowl species including but not limited to; wood duck, hooded merganser, green and blue-winged teal, ring-necked duck, mallard, redhead, lesser scaup, and gadwall.

Access to waterfowl hunting areas is believed to be satisfactory with the exception of access to areas from Beaver Road. No comments were received during the public input session expressing dissatisfaction with access to waterfowl hunting areas. Beaver road, which provides administrative access to these areas, has been closed to public vehicular traffic due to the fact that it cannot sustain a high volume of traffic and maintenance would prove costly and very time consuming. The soil structure and hydrology of this site is unconducive to this use without substantial upgrades. However, this road has been designated to receive substantial upgrades in order to improve access for game land users, pending approval from Natural Heritage Program and wetland regulations (see Infrastructure Development and Maintenance Section and *Appendix III*).

During the public input session, 33.3% (*4 of 12*) of the comments received made a specific reference to waterfowl. Of that, 2 comments stated that they used this game land to hunt waterfowl and only 1 comment requested improvements to waterfowl habitat in the form of plantings.

Currently, we believe that adequate infrastructure exists to satisfy waterfowl hunters and did not receive any comments that indicated additional needs for this user group. Additionally, we believe that our current level of habitat and species management for waterfowl is appropriate. As stated earlier, the large portion of this property provides suitable waterfowl habitat and management of waterfowl areas is based on the best available science, expertise of veteran land managers, and recommendations made by natural resources conservation groups, *i.e.*, Ducks Unlimited, North American Waterfowl Management Plan, and Atlantic Coast Joint Venture.

To better manage and improve the quality of permitted waterfowl hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix VII*). From the information gathered from this survey, we will be able to determine the number of different species harvested, the

level of effort that was put forth during the hunts, and the level of satisfaction of each hunter based on several criteria.

Deer hunters

Deer hunting opportunities on this property are thought to be good. Based off of game land hunter harvest data collected when big game animals are registered, an average of 10.25 deer have been killed over the past four years (2010-2013); 15, 8, 9, and 9 respectively. Realistically, these numbers are open to interpretation because we don't know the amount of effort that was put forth to harvest these numbers of deer. Anecdotal information based on the fact that access and use is allowed through permits and the fact that nearly half of the habitat on this game land consists of flooded semi-permanent impoundments, leads us to conclude that deer hunters do well.

41.6% (5 *out of 12*) of the comments received during the public input session made references specific to deer on Whitehall Plantation. Two of those comments expressed dissatisfaction with dog deer hunters and requested that deer hunting with dogs be prohibited. One comment expressed a concern that the deer population was low and the remaining comments were in reference to questions in the questionnaire that asked how people used the game land and what species and habitats were the most important to protect and/or enhance. Two comments made a general reference to their satisfaction with access on this game land.

Overall, we currently believe that deer hunting opportunities, which include hunter access, supplemental plantings, habitat management, and the numbers of deer are adequate to satisfy this user group. However, we recognize the desire of some deer hunters that would like to see plantings of annual and perennial crops and believe that this would improve the opportunity to harvest deer. It should be noted that plans to establish wildlife plantings in designated areas have been made and implementation is pending based off of funding availability.

To better manage and improve the quality of permitted deer hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix VI*). From the information gathered from this survey, we will be able to determine how many deer were observed, harvested, and the level of effort that was put forth during the hunts. This survey also gives the hunter an opportunity to express their level of satisfaction and the causes that determined it.

Turkey hunters

Turkey hunting opportunities on Whitehall Plantation are thought to be good. Based off of game land hunter harvest data collected when big game animals are registered, an average of 1.4 turkeys have been killed over the past five years (2010-2014); 0, 1, 0, 2, and 4 respectively. Realistically, these numbers are open to interpretation because we don't know the amount of effort that was put forth to harvest these numbers of turkeys. Anecdotal information based on the fact that access and use is allowed through permits and the fact that nearly half of the habitat

on this game land consists of flooded semi-permanent impoundments, leads us to conclude that turkey hunters do well. Harvest records show an increase in turkeys harvest over the past five years.

25% (3 *out of 12*) of the comments received during the public input session were specific to wild turkeys. Tw of those comments stated that turkeys and/or their habitat were the most important to enhance or protect. The other comment simply stated that they used this game land to turkey hunt.

We currently believe that turkey hunting opportunities on Whitehall Plantation are sufficient. We believe that infrastructure, habitat management, and the numbers of turkeys available to harvest are at levels to satisfy this user group. As stated earlier, we recognize the desire of some turkey hunters that would like to see plantings of annual and perennial crops and believe that this would improve the opportunity to harvest turkeys. It should be noted that plans to establish wildlife plantings in designated areas have been made and implementation is pending based off of funding availability.

To better manage and improve the quality of permitted turkey hunts, a survey is in the processes of being adopted by the NCWRC (see *Appendix V*). From the information gathered from this survey, we will be able to determine how many gobbling turkeys were heard, harvested, and the level of effort that was put forth during the hunts. This survey also gives the hunter an opportunity to express their level of satisfaction and the causes that determined it.

Small game hunters

Small game hunting opportunities are thought to be good on this property. This determination is made off of anecdotal information alone because hunters are not required to report the harvest of small game. Currently, small game hunters are allowed the opportunity to harvest quail, rabbits, gray and fox squirrels, opossums, bobcat, coyote, raccoon, fox, and beaver.

33.3% (*4 out of 12*) of the comments received during the public input session were specific to small game species. Two of those comments stated that small game species and habitat were the most important to enhance and protect. The other two comments stated that they currently use this game land to hunt small game or suggested that we conduct management activities specific to small game.

We currently believe that there exists ample infrastructure on Whitehall Plantation to satisfy this user group. However, we also believe that management activities that are either in the process of being conducted or planned will provide better habitat for small game and, in return, will provide better opportunities for the pursuit of small game.

Webless migratory game bird hunters

Webless migratory game bird hunting opportunities on this property are thought to be fair. The lack of annual grains that usually attract mourning doves for hunters is non-existent. Anecdotal information gathered from observations and conversations with hunters leads us to determine that very little, if any, hunting of mourning doves occurs on Whitehall Plantation.

Hunting of other webless migratory game birds on Whitehall Plantation is thought to occur at very low levels. These species include woodcock, snipe, rails, gallinules, and moorhens. Rails, gallinules, and moorhens rarely occur in this part of North Carolina. Strategies to increase the use of this game land by this user group may include a newsletter that identifies game lands that offer this opportunity or an article in the North Carolina Wildlife magazine that promotes opportunities for hunters to harvest these species.

We believe that there is no additional infrastructure needed to satisfy the needs of this user group. Additionally, we believe that our current level of species and habitat management is sufficient for webless migratory game birds.

Trappers

Trapping of furbearers currently occurs at low levels and any management strategies that promote trapping should be implemented. No public comment was received that indicated satisfaction, or the lack of, with trapping opportunities on Whitehall Plantation. State-wide trapping regulations apply to this property.

We are currently unaware of any specific infrastructure needs that would provide better opportunities for trappers. Additionally, we believed that ample opportunity is provided to trappers and there are no additional strategies we could implement to increase the use of Whitehall Plantation by trappers.

Anglers

Fishing opportunities on Whitehall Plantation exist within the semi-permanent impoundments found in the floodplain forest habitats and from the river bank of the Cape Fear River. No knowledge currently exists of the fishery within the semi-permanent impoundments. Current management for game fish on Whitehall Plantation includes the statewide regulations with no unique regulations imposed. These include a largemouth bass minimum size limit of 14 inches except two which may be less than 14 inches and a creel limit of five fish per day. For sunfish, there is no minimum size limit and the daily creel limit is 30 in combination with no more than 12 redbreast sunfish. Refer to the most recent NCWRC's Inland Fishing, Hunting, and Trapping Regulations Digest to identify these rules.

Due to the habitat restrictions (*i.e.*, shallow, acidic water with low productivity) utilizing management tools (e.g., stocking or herbicide treatment) to enhance the fishery are likely cost

prohibitive. Managing these waters for what they are and what they're used for, which are small semi-permanent impoundments with a local fishery, may be the best long-term management plan.

From the banks of the Cape Fear River, opportunities exist to fish within the river. Common species caught from this water body are catfish, largemouth bass, sunfish, striped bass, American shad, and crappie. Refer to the most recent NCWRC's Inland Fishing, Hunting, and Trapping Regulations Digest to identify the most current rules on seasons, size and creel limits, and manner of take.

Since some of the game fish species that are currently targeted on Whitehall Plantation have some level of consumption advisory associated with them, a sign or kiosk placed at the entrances providing this information would be beneficial.

Installation of a pubic fishing area may be a strategy that would increase the use of these resources by the public. However, providing a designated public fishing area would not be possible due to the Dedicated Nature Preserve Area designation and would not be desired because this shoreline area is in the hunting area where additional encouraged activity would negatively impact hunting.

Non-traditional game land users:

- Paddlers
- Hikers and runners
- Horseback riders
- Researchers, universities, and museums
- Photographers and artists
- Sight seers
- ATV riders and off-road vehicles
- Campers
- Stargazers
- Target shooters
- Bicyclists
- Geocachers

DISCUSSION OF NON-TRADITIONAL GAME LAND USERS

We have attempted to determine all game land users of Whitehall Plantation and have made determinations of appropriateness and compatibility for each use based on the fact that hunting, fishing, trapping, and wildlife viewing are the primary uses. As long as non-traditional uses do not negatively influence the wildlife resources that the NCWRC manages or negatively impact traditional uses, they may be determined as appropriate and compatible.

Currently on Whitehall Plantation, during scheduled permit hunts, only hunters and trappers with valid permits may enter the game land.

Of all the known non-traditional uses that currently occur on Whitehall Plantation, only one activity is considered to be inappropriate and incompatible. However, some other non-traditional uses require special consideration and are only considered to be appropriate and compatible under certain circumstances. These conditions are outlined in the following sections of the Plan.

Non-traditional users are strongly encouraged to refer to the NCWRC's Inland Fishing, Hunting, and Trapping Regulations Digest to identify hunting and trapping seasons as well as specific days and times that hunting and trapping occurs on the game land. Out of safety concerns, all game land users are also strongly encouraged to wear blaze orange while using game lands. This will ensure that they are easily seen by other game land users.

In reference to the previous statement about designated hunting and trapping days, waterfowl are hunted on Tuesdays, Saturdays, opening and closing days of seasons, and major holidays. Deer and turkey hunting occurs on Thursdays, Fridays, and Saturdays. Small game hunting occurs during their designated seasons on Mondays, Tuesdays, and Wednesday from the beginning to the end of deer season and Monday through Saturday starting the day after the end of deer season. No hunting is allowed on Sundays.

Paddlers

Based off of anecdotal information, the use of this property by paddlers is low. Very little open water areas exist and they are isolated by natural barriers such as beaver dams, berms, and vegetation.

The use of these area by paddlers is considered compatible because it does not interfere with or detract from the Game Lands Program objectives, and as long as it doesn't interfere with or displace traditional uses during the times that they are taking place, should not be problematic. Impacts to hunters, anglers, trappers and wildlife viewers are considered minimal and avoidable.

However, the occurrence of these two uses at the same time poses threats to the safety of paddlers. Waterfowl are harvested on these areas with shotguns and lethal ranges of shotgun pellets can exceed 65 yards (195 feet). Secondly, paddlers using these areas during waterfowl hunts would have dramatic impacts to the quality of the hunts experienced by waterfowl hunters. The disturbance created would potentially scare off waterfowl and decrease the opportunity for hunters to harvest birds.

The implementation of a rule that restricts the use of these lakes to only waterfowl hunters from November 1st to March 1st would avoid problems between hunters and paddlers. This rule would also greatly minimize the disturbance to wintering and migrating waterfowl that use these areas for feeding, resting, roosting, and pair bonding. Alternatively, the implementation of a rule that

allows only waterfowl hunters to use these areas on permitted waterfowl hunt days until 1:00 PM. Under current law, waterfowl hunters must be out of waterfowl impoundments and off of lakes by 1:00 PM. This rule would simply restrict the use of these lakes to waterfowl hunters up until that time, and restrict the use of these lakes to paddlers after that time.

Hikers and runners

The use of Whitehall Plantation by hikers and runners is considered compatible because it creates minimal disturbance to the natural resources and is consistent with the NCWRC's policies and objectives. Hikers and runners traditionally stick to established roads and trails and their impact to the road systems is essentially non-existent.

No public comment was received in regards to the satisfaction of this user group. We believe that the existing 7 miles of roads and trails provide adequate areas for hikers and runners. These areas are not currently designated specifically for pedestrians but can be used by both traditional and non-traditional game land users. These areas can be used by non-traditional users outside of designated hunting seasons and the designated hunt days during those seasons.

Out of safety concerns and respect for traditional game land users, hikers and runners should realize and be considerate of all hunting activities on Whitehall Plantation and the times that they are likely to occur.

Horseback riders

Horseback riding on Whitehall Plantation is considered compatible as long as riders stay on trails that are deemed compatible and designated for this use. Riders are encouraged to not venture outside of these areas because of potential negative impacts to wildlife habitat.

It is our recommendation that this activity be regulated through our permit system in order to manage use. Concerns about the use of this game land by horseback riders stems from the potential negative impacts to the natural resources of game lands. Newsome et. al (2002) conducted a study on the effects of horse riding on national parks and other natural ecosystems in Australia and determined that environmental impacts include but are not limited to soil degradation and compaction, erosion, loss of vegetation height and cover, change in plant species composition, degradation of existing roads and trails, the introduction of invasive grass and weed species, accidental transport of fungal pathogens, and the loss of vegetation, which are all common problems associated with horse use.

Researchers, universities, and museums

The use of Whitehall Plantation by researchers, universities, and museums is considered compatible and does not impact management objectives of the Game Lands Program. These entities' uses of game lands usually involve the collection of data for research and educational purposes. It poses very minimal threats to traditional game land users and does not interfere with

or disturb the natural resources of this property. These activities are usually handled through NCWRC's permitting process.

Photographers and artists

The use of Whitehall Plantatioin by photographers and artists is considered compatible. Photographers and artists create very little impact to the natural resources of the game land and their impacts to roads and trails is minimal.

Sight seers

Joy riding and sightseeing on Whitehall Plantation is considered a compatible use as long as they stay on designated roads and trails open to vehicular traffic. These include open gated and ungated roads and trails. Impacts to natural resources are essentially non-existent and impacts to roads and trails are minimal as long as drivers adhere to ethical and practical driving behaviors.

ATV riders and other off-road vehicles

The use ATV's and other off-road vehicles on Whitehall Plantation is considered an inappropriate use. More times than not, these vehicles create disturbance and cause destruction to valuable resources on game lands. They greatly degrade roads and trails and create erosion and water quality concerns when driven in and around streams. Because these vehicles are very agile and maneuverable, riders tend to stray away from developed roads and trails and into areas that land managers desire to be undisturbed. These actions can be detrimental to various plant and animal communities and offset previous efforts made to conserve and manage these areas.

It should be noted that ATV use is currently allowed only by disabled sportsman that have been deemed eligible for this use. This activity is handled through NCWRC's permitting process.

Because ATV's and other off-road vehicles have such a great potential to cause harm and create disturbance to natural resources and other game land users, their use on Whitehall Plantation is prohibited, except as excluded by regulations designated for permitted hunts.

Campers

Camping on Whitehall Plantation is considered a compatible use. There is one existing camping area on the property on Whitehall Road. Because camping is restricted to September 1 through February 28 and March 31 through May 14, and access is restricted to hunters and trappers with valid permits during these designated times, camping causes no conflicts with the interests and management objective of the NCWRC.

Additionally, camping opportunities are offered year-round on nearby State Parks.

Stargazers

Stargazing is considered a compatible use on Whitehall Plantation. Because the window of opportunity for this activity is restricted to nighttime hours, it has very little potential to create conflict with traditional users. Its impacts to natural resources are non-existent and impacts to infrastructure are minimal. These activities are usually handled through special use permits.

Target shooters

There are currently no restrictions to target shooting on Whitehall Plantation. It is considered a compatible activity as long as it does not create safety concerns for the shooter or other game land users and staff, does not cause destruction to NCWRC property, and shell casings are retrieved after being discharged.

The NCWRC is currently involved in the design and implementation of shooting ranges on game lands. Upon implementation of a designated shooting range within close proximity to Whitehall Plantation, all target and recreational shooting activities will be limited to that area.

Bicyclists

Bicycling on Whitehall Plantation is considered compatible as long as bicyclists stay on designated roads and trails. Impacts to natural resources can be minimized by regulating use through numbers, timing, and conditions of trails.

We strongly believe that if this activity becomes problematic through overuse, it should be managed through NCWRC's permitting process in order to regulate use. Our concerns of overuse stem from potential negative impacts of biking. Cessford (1995) reviewed the off-road impacts of mountain bikes and found that environmental impacts included but were not limited to injury and destruction of ground-level vegetation, change in plant species composition along biking trails, compaction and reduced water infiltration-capacity of well drained soils, increased occurrence of runoff, excessive erosion from enhanced water flows, development of multiple parallel tracks, and the development of informal tracks including shortcuts and switchbacks.

The use of Whitehall Plantation by bicyclists is currently very low but it continues to grow in popularity and should therefore be monitored and periodically evaluated.

Geocachers

We are currently unaware of any geocaching activities that take place on this game land. However, geocaching is considered a compatible activity as long as the NCWRC's geocaching policy is adhered to (see *Appendix VIII*).

INFORMATION NEEDS

Our current state of knowledge about wildlife occurrences on Whitehall Plantation is somewhat limited. Our best knowledge is of big game species. Successful big game hunters are required to identify the game land from which they harvest big game during the registration process. However, distributions and occurrences of cryptic species such as songbirds, reptiles, amphibians, and small mammals (including bats) are under-surveyed and their relative distribution and abundance are unknown and misunderstood. It would seem appropriate to work closely with the Natural Heritage Program to develop a biological inventory similar to the Bladen County Natural Area Inventory conducted by LeBlond and Grant in 2005.

Our current knowledge of game animals is limited, even though we know the number of harvested big game on Whitehall Plantation for the past 5 years. Currently, there are no surveys in place to track changes in population trends of even the most sought after big game animals (deer, bear, and turkey). At present we must make assumptions based on hunter harvest data and county-wide deer density estimates. Management practices and regulations should not be based on assumptions, but on best available science.

The following is our current knowledge of our priority species. These priority species were identified because they are game animals that are hunted or trapped on Whitehall Plantation or they have a state or federal status. They are either known or thought to occur on this game land. Included in this information are inventory and management needs, and research recommendations for the future. The appropriateness of tracking population trends for some wildlife species will be evaluated and appropriate techniques will be identified when it is determined such actions are warranted and only when appropriate levels of staff and finances are available.

The identification of game land hunters (or other users) would allow the NCWRC to generate a general observation survey in which data on the observations of multiple species could be collected by hunters or any game land user interested in recording the requested information. This cooperation of game land users would supplement our survey efforts and potentially reduce workloads required by NCWRC staff to collect this information. The use of other surveys is proposed to target hunters in order to determine hunter effort. Information derived from these surveys coupled with other information collected by field staff will give NCWRC biologists the ability to better estimate and track population trends. This valuable information will help staff determine the best management techniques to implement in order to achieve our desired future conditions.

Reports of diseased animals (regardless of species) should be investigated and, when possible, attempts will be made to diagnose the cause of infection. Also, as specific disease surveillances are conducted (Chronic Wasting Disease, Lymphoproliferative Disease Virus, etc.), the game land will be incorporated into the effort when appropriate.

NON-GAME WILDLIFE SPECIES

- *BIRDS:*

BACHMAN'S SPARROW

Current knowledge

Bachman's sparrows are not known to occur on the game land. They are year-round residents and prefer areas managed with fire that have sufficient ground, particularly in longleaf pine stands. Populations have seen a declining trend since the early to mid-1900s. The loss and degradation of longleaf pine ecosystems seems to be the primary cause for their decline. This species is of special concern in North Carolina.

Inventory and monitoring needs

Once management techniques occur to promote habitat used by Bachman's sparrows, surveys should be conducted annually. Playback surveys during the non-breeding season may help determine numbers but, as of now, not enough data exist to estimate density. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Generally, management of open longleaf pine stands through the use of prescribed fire provides adequate habitats for Bachman's sparrows. Plentovich et al. (1995) found that more frequent fire earlier in the growing season provided the herbaceous layer favored by Bachman's sparrows while reducing the hardwood midstory.

Research needs

There are currently no known research needs.

ANHINGA

Current knowledge

Whitehall Plantation lies near the extreme northern edge of the anhinga's summer breeding range. The anhinga lives in shallow, slow-moving, sheltered waters (swamps) and uses nearby perches and banks for drying and sunning. It feeds primarily on fish and is rarely found away from freshwater, except during severe droughts. It is generally not found in extensive areas of open water, though it may nest on edges of open bays and lakes. The anhinga breeds near freshwater, often in association with other waterbirds such as herons, egrets, ibises, storks, and cormorants. This species is considered significantly rare in North Carolina.

Inventory and monitoring needs

There is a need to inventory the floodplain forest habitats of Whitehall Plantation for potential presence of anhinga. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Continued management of the semi-permanent impoundments found within the floodplain forest community on Whitehall will meet the nesting and feeding needs of the anhinga.

Research needs

There are currently no known research needs.

MISSISSIPPI KITE

Current knowledge

Mississippi kites are likely to occur around blackwater areas on Whitehall Plantation such as the semi-permanent impoundments and along the Cape Fear River. However, occurrences are thought to be rare. This species is migratory and primarily eat insects, with a preference for grasshoppers, cicadas, and dragonflies. They prefer to nest in tall trees in open woodlands near water. This species is considered significantly rare in North Carolina.

Inventory and monitoring needs

Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

The protection and management of open pine woodlands should continue, especially sites near open water. Not enough data currently exist to make detailed management recommendations at this time.

Research needs

There are currently no known research needs.

COOPER'S HAWK

Current knowledge

Cooper's hawks are known to occur on Whitehall Plantation. They are known to breed in a variety of forest types found on the Coastal Plain of North Carolina and favor a mix of forests or

woodlots interspersed with fields. This species is not normally found inside deep forests. Cooper's hawks are of special concern in North Carolina.

Inventory and monitoring needs

Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Management needs

Cooper's hawks occupy a variety of habitats and are predatory birds, feeding mainly on medium-sized birds. This game land consists of 4 different habitat types. Current and continued management of habitat beneficial to small game will provide benefit for this species. However, not enough data currently exists to make detailed management recommendations at this time.

Research needs

There are currently no known research needs.

- *MAMMALS:*

RAFINESQUE'S BIG-EARED BAT

Current knowledge

Rafinesque's big-eared bats are not known to occur on Whitehall Plantation. This species is however, predicted to occur in this area of the State according to the North Carolina Gap Analysis Project. Unlike many other bat species that are crepuscular, this bat species is nocturnal. It nests in tree cavities and man-made structures that provide refuge such as abandoned building and bridges. They are insectivores and are moth-specialists. The best available evidence indicates that this species has declined drastically. They are considered a threatened species in North Carolina.

Management needs

Protection and management of the floodplain forests should continue. Coastal Plain habitats of this species for roosting and foraging include many of the floodplain forest communities on Whitehall Plantation but foraging has also been documented in young pine plantations. They roost in hollow trees, under loose bark, old buildings, and beneath bridges, at least in the warmer months. Foraging habitat may be critical to species survival and should therefore be protected.

Inventory and monitoring needs

If manpower is available, a series of mist-netting surveys should be implemented in an attempt to collect information to close gaps in the distribution data of this bat species. A cooperative

biological inventory could potentially be conducted with the assistance of the Natural Heritage Program to explore and update the small mammal communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

STAR-NOSED MOLE

Current knowledge

The star-nosed mole is not known to occur on Whitehall Plantation. This species is however, predicted to occur in this area of the State according to the North Carolina Gap Analysis Project. The coastal and Sandhills habitats for star-nosed moles include pocosins, wetlands, saturated bottomlands, and longleaf pine habitat. Neither forest age nor successional stage has been reported as a critical factor determining habitat suitability for this species (Laerm et al. 2007). This species is of special concern in North Carolina.

Management needs

Not enough data currently exist to make detailed management recommendations at this time. However, we believe that protection and management of the previously mentioned habitats are suitable actions for management of star-nosed moles.

Inventory and monitoring needs

A cooperative biological inventory could be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

- *AMPHIBIANS:*

MABEE'S SALAMANDER

Current knowledge

According to the range map provided by North Carolina Gap Analysis Project, the mabee's salamander is known to occur in the vicinity of Whitehall Plantation and is likely to occur on the property. In North Carolina, Mabee's salamanders occupy the savanna pine woods in the eastern

Coastal Plain. They typically spend their adult life in soil near bogs, ponds, and swamps. Some individuals disperse away from breeding sites to meadows or nearby forests while others remain near their larval habitat even after it has dried up, living in the cover of leaves and pine needles on the dried mud. This species is considered significantly rare in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be established, especially during the early spring when breeding occurs to determine the relative abundance of the mabee's salamander on this game land. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

DWARF SALAMANDER

Current knowledge

According to the range map provided by North Carolina Gap Analysis Project, the dwarf salamander is known to occur in the vicinity of Whitehall Plantation and is likely to occur on the property. Dwarf salamanders are commonly found along the margins of ponds in pine forests or savannas. They may also be found around swamps and bottomland hardwood forests. This species is of special concern in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be established, especially during the early spring when breeding occurs to determine the relative abundance of the dwarf salamander on this game land. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Whitehall

Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research Needs

There are currently no known research needs.

FOUR-TOED SALAMANDER

Current knowledge

Four-toed salamanders are not currently known to occur on Whitehall Plantation but are known to occupy habitats found on this property. They generally occur in forests surrounding swamps, bogs, marshes, and ephemeral ponds that are free of fish. Their distribution throughout North Carolina is patchy. Four-toed salamanders are of special concern in North Carolina.

Management needs

This species of salamander requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be reestablished, especially during the early spring when breeding occurs to determine the presence or absence and the relative abundance of the dwarf salamander on this game land. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

OAK TOAD

Current knowledge

The oak toad is not currently known to occur on Whitehall Plantation but according to the range map provided by North Carolina Gap Analysis Project, the oak toad is likely to occur on this game land. Oak toads are found only in the Coastal Plain of North Carolina and inhabit pine flatwoods, savannas, sandhills, and some pocosins. Once abundant in many parts of the Coastal Plain, oak toads have undergone a dramatic decline in recent years. Habitat destruction is one obvious reason but does not account for their disappearance from areas where good habitat is

still present. Other factors contributing to their decline may include disease, acidification of breeding sites due to fire suppression, and predation from the imported red fire ant. This species is considered significantly rare in North Carolina.

Management Needs

This species of frog requires shallow, still, and fishless ephemeral ponds for reproduction. Therefore, management techniques to maintain or enhance these ponds should be practiced. Maintenance of pine habitats with prescribed fire will also benefit the oak toad.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be reestablished, especially during the early spring when breeding occurs to determine the relative abundance of the oak toad. Call counts conducted by individuals or with the use of frog-loggers should be conducted to determine the presence or absence of the oak toad. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage Program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

o *REPTILES:*

PIGMY RATTLESNAKE

Current knowledge

Pigmy rattlesnakes are not known to occur on Whitehall Plantation. They inhabit several habitats including, pine flatwoods, dry pine savannas, forested wetlands, and dry coniferous forests. These snakes are so small and well camouflaged that they are rarely seen. Pigmy rattlesnakes eat a variety of prey including lizards, frogs, and small mammals. This species is of special concern in North Carolina.

Management needs

Protection and management of upland forest communities will benefit pygmy rattlesnakes. Techniques include maintaining open canopies of forested areas and the use of prescribed fire. Management of early successional habitat for small game will also prove beneficial for this species.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be established, especially during the early spring when breeding occurs to possibly help determine their distribution and abundance on this property. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

TIMBER (CANEBRAKE) RATTLESNAKE

Current knowledge

Timber rattlesnakes are not known to occur on Whitehall Plantation. In the Coastal Plain, their use of habitat varies from pocosins to pine woodlands. They primarily feed on small rodents but adults are capable of consuming small rabbits and squirrels. They are a long lived species with recorded lifespans of up to 28 years in captivity. Declining trends in populations can be attributed to loss of habitat, wanton killing, road kills, and poaching. This species is of special concern in North Carolina.

Management needs

Protection and management of upland forest communities will benefit timber rattlesnakes. Techniques include maintaining open canopies of forested areas and the use of prescribed fire. Management of early successional habitat for small game will also prove beneficial for this species.

Inventory and monitoring needs

The use of cover boards on Whitehall Plantation should be established, especially during the early spring when breeding occurs to possibly help determine their distribution and abundance on this property. A cooperative biological inventory could be conducted with the assistance of the Natural Heritage program to explore and update the vertebrate communities on Whitehall Plantation. Observations should be reported to staff or recorded on the NCWRC's online Wildlife Observation Application to document occurrences and/or range expansion for this species.

Research needs

There are currently no known research needs.

GAME ANIMALS

EASTERN WILD TURKEY

Current knowledge

With the increase in habitat enhancements mentioned earlier, available turkey habitat has increased in size and quality, including nesting and brooding habitat. In response, the use of this game land by wild turkeys has increased during that time. However, the lack of baseline data has left gaps in our knowledge of turkey populations on this property. Age and sex data can be derived from harvest reports, and although useful, this minimal information is inadequate for managing turkey on the area.

Over the past 5 seasons (2010-2014), turkey harvests on Whitehall Plantation have averaged 0.54 gobbler/mile^2. Turkey hunting is currently allowed 3 days per week; Thursday through Saturday. Beginning in 2014, the first 6 hunt days of the spring turkey season were designated for youth-only hunting, which has previously been limited to opening day of the season. Participation is managed though NCWRC's Permit Hunting Opportunities Program. Statewide daily and seasonal bag limits apply; 1 turkey per day and 2 turkeys per season.

Inventory and monitoring needs

Currently, baseline data for turkey abundance on game lands is minimal. However, several options are available to gather these data. Wild Turkey Summer Observation Surveys could better be utilized by increasing participants, a turkey hunter observation survey, and/or a deer hunter survey that allows deer hunters to report turkey observations in the fall and winter of the year. A survey has currently been proposed that would obtain valuable information from game land turkey hunters (see *Appendix V*). This information would potentially help determine hunter effort and the number of gobbling turkeys heard. Another could be gobbling bird point counts conducted by NCWRC staff. These surveys could provide information used to estimate densities and/or population trends of turkeys.

Management needs

Current levels of hunter harvest should be maintained until better data exists. Primary methods for habitat maintenance and enhancement should be the use of prescribed fire, long timber rotations, and open land management. The maintenance and/or improvement of field borders in agricultural areas will provide nesting and escape cover and areas for bugging.

Research needs

There are currently no known research needs.

NORTHERN BOBWHITE QUAIL

Current knowledge

Northern bobwhite quail inhabit early successional habitat found in non-forested areas and in forest communities with open canopies and an herbaceous understory. Transitional areas found between community types are critical for quail, especially areas between upland sites and pocosin communities in this region of the state. Pocosins provide excellent escape cover when quail flee from predators of other disturbances. Hunting opportunities on this property for quail are provided from mid-October through the end of February during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

No breeding call or fall covey surveys have been conducted since acquisition in 2009. No data currently exists on bobwhite quail on this property.

Inventory and monitoring needs

A survey should be established and implemented in order to baseline data comparative to management practices.

Management needs

Current hunting opportunities should be maintained. Existing land management practices should continue to provide suitable habitat with an emphasis on improving the quality and acreage of early successional habitat. Wide road shoulders, linear openings, and power line right-of-ways should only be treated with herbicide and/or mowing if hardwood or pine encroachment threatens the ecological benefit of these areas. If mowing is the only viable option, it should be done in late winter to minimize the amount of time between the treatments and spring green-up. This specific timing will also minimize negative impacts to quail and other low level nesting birds. Spot treatments with herbicide are recommended over broadcast treatments. Selective herbicides that target woody vegetation should be used as opposed to non-selective herbicides. Where feasible, prescribed burning and/or disking should be given initial consideration as techniques to control plant succession in these areas. If disking is the most appropriate technique, it should be conducted in fall and winter.

Eradication of non-native, invasive grasses in early successional habitats should be given high priority. Efforts should be made to minimize the encroachment of trees into non-forested openings. Some special consideration should be given to the transitional areas between upland habitats and pososins. When appropriate, these areas should be burned and construction of firebreaks in these areas should be avoided.

Research needs

There are currently no known research needs.

WEBLESS MIGRATORY BIRDS

Current knowledge

Mourning doves and snipe are known to occur on Whitehall Plantation. However, woodcocks, moorhens, gallinules, and the 4 rail species (clapper, sora, king, and Virginia) are not known to occur on this property. Dove hunting opportunities only exist in open-canopy. Opportunities for hunting the other webless migratory birds exist in wetland habitats that are preferred by these species such as the semi-permanent impoundments. Seasons and frameworks are determined by the United States Fish and Wildlife Service (USFWS), but generally run from September through February.

Inventory and monitoring needs

Efforts should be made to continue to trap and band an extensive number of doves on and off the game land. In previous years, the number of doves banded in this area has been low.

Management needs

Current hunting opportunities should be maintained following the framework set by the USFWS. Current land management practices should provide suitable habitat for webless migratory birds. These practices include management of wildlife openings, waterfowl impoundments and other wetland habitats, and upland pine woodlands.

Research needs

There are currently no known research needs.

WATERFOWL

Current knowledge

Waterfowl are common on Whitehall Plantation, especially during their winter and spring migrations. The majority of wood ducks in the Atlantic Flyway are year-round residents but a small percentage is migratory. Waterfowl are probably the most sought after game species on this property. The most common species that occur on Whitehall Plantation are wood ducks, gadwall, green-winged teal, and mallards. Other species are known to occur on this game land but their numbers are low.

Hunting is allowed on Tuesdays, Saturdays, opening and closing days of seasons, and holidays. Participation is managed through the Permit Hunting Opportunities Program.

Management needs

Providing quality moist-soil vegetation, abundant open water, and flooded timber should continue to be the primary goals of wetland management.

Inventory and monitoring needs

Waterfowl hunter harvest surveys should continue at their current intensity. Additionally, surveys that monitor the use of these areas by waterfowl, wading birds, and shorebirds should be conducted in early spring to during their spring migrations.

The annual mid-winter waterfowl survey conducted by the NCWRC with the assistance of the USFWS should continue to survey waterfowl in major concentration areas, including the Bladen Lakes Region.

There is also potential to gather valuable information from game land waterfowl hunters. A mail survey has been proposed that would identify hunter effort, number and species of waterfowl harvested, and gain input on hunter satisfaction (see *Appendix VII*). This information will help guide future management on the area.

Research needs

There are currently no known research needs.

WHITE-TAILED DEER

Current knowledge

White-tailed deer are the most abundant big game species on Whitehall Plantation with densities ranging from 15-29 deer/mi^2 (see *Appendix IV*). Deer hunting on Whitehall Plantation follows the Eastern Deer Season and hunting currently occurs three days per week; Thursday through Saturday. Participation is managed though NCWRC's Permit Hunting Opportunities Program. Maximum harvest (either sex the entire season) is allowed.

From anecdotal information, hunter success is considered low at Whitehall Plantation, although deer densities are thought to be adequate for the habitat provided on the game land. Due to the extensive floodplain forest habitat on this game land (1,025 acres or 61.6%), the challenges of hunting the areas that are flooded, and the potential of these areas acting as a refuge for deer, especially during the season when hounds are present, one would suspect that harvest be relatively low.

With the increase in direct habitat enhancement through the creation of planted openings, extensive timber thinning and prescribed burning, available deer habitat in size and quality should increase and the herd should respond accordingly. With better habitat, hunter success should increase over time as well.

Derived from Whitehall Plantation harvest data collected during the big game registration process over the last four seasons (2010-2013)

- An average of 1.73 antlered bucks per square mile has been harvested.

- Doe harvests make up 43.9% of the total harvest on Whitehall Plantation. This falls short of our statewide objective of at least 50% of the total deer harvest consisting of does.

- Doe harvests make up 33.3% of the total deer harvest on Whitehall Plantation prior to peak breeding season (October 31). This is falls short of our statewide objective of at least 50% does in the total harvest prior to peak breeding.

- Antlered buck harvests make up 40.0% of the total deer harvest on Whitehall Plantation prior to peak breading season (October 31). Our statewide objective is for no more than 20% of antlered bucks to be harvested prior to peak breeding.

Inventory and monitoring needs

To better understand the dynamics of the deer herd on Whitehall Plantation, there is a great need to collect basic biological data on harvested animals. Sex and age structure are of primary importance. We can identify the individuals that are permitted to hunt deer on this game land, and we have the ability to contact them prior to or after a hunt. At the minimum, we could conduct mail surveys of hunters to determine success rates, hunter effort, and perhaps other pertinent information relative to deer hunting on this property.

The collection of biological data and general harvest information of deer have been poor on Whitehall Plantation since its inception as a game land. Over the last 4 years, no biological data has been collected from any of the 41 deer harvested on Whitehall Plantation. With the advent of the electronic big game reporting system that identifies selected game lands, we are currently able to collect basic harvest information (sex, adult-fawn, date) on the deer harvested on this property. Although useful, this minimum information is inadequate in managing deer on the area.

If a survey was developed to target our game land deer hunters, the NCWRC could implement a jawbone/biological data mail survey. We believe other mail surveys that help to determine hunter effort would also be beneficial to increasing our knowledge of deer populations on game lands. We could improve our response rate by offering incentives for hunters to participate in these surveys. Rewards similar to the hats that cooperators of the Bear Cooperator Program receive would suffice. These rewards could be hats, tee shirts, or even decals. The collection of these biological data would allow us to make the science-based regulation changes, and/or

changes to management techniques needed to meet the state deer management goals and objectives mentioned earlier.

Other methods to collect baseline information for deer densities and/or population trends on should be implemented. These data could be collected with the use of a Forward Looking Infrared (FLIR) monocular, spotlights, camera trap surveys, or track count surveys.

FLIR is a new tool for the NCWRC. This is a thermal imaging monocular that detects infrared radiation, including body heat. Similar to a spotlight survey, the FLIR camera will allow us to collect deer density and trend data with direct observations. It is our desire to collect density and population trend estimates using this method. A trial run should be conducted to ensure that this application is viable across all habitat types. There is a concern that the FLIR camera will not be effective in very dense plant communities like pocosins because of impenetrability. However, this is yet to be determined.

Track counts could be a substitute for the FLIR survey. Whitehall Plantation has an extensive road network with soils that are suitable for this type of survey. Although not a direct observation, this is a survey method that has long standing history.

Staff will continue investigating whether new methods may better assist us in monitoring and managing the deer population trends on Whitehall Plantation.

Management needs

It is our desire to manage deer on Whitehall Plantation in accordance to with the statewide deer management goals and objectives outlined in the Ad Hoc Deer Evaluation Procedure. This document is available upon request. As a habitat generalist, the white-tailed deer will benefit from the continuation of current land management practices.

The potential exists for improved open land management. This would have limited benefit for the deer population, but would provide better opportunities for hunter harvest. Three requests were made during the public input session to improve wildlife openings on Whitehall Plantation. These improvements could include the establishment of perennial clover and increased acreages of annual grains such as oats, rye grass, and wheat during the deer hunting seasons.

Other management needs could be derived from the previously mentioned data that is currently lacking, once it is obtained.

Research needs

There are currently no known research needs.

AMERICAN BLACK BEAR

Current knowledge

Current knowledge of black bear populations on Whitehall Plantation is insufficient. Within the Bladen Lakes Region, bears typically concentrate in and around large pocosin and bay complexes but this property merely has 7 acres of pocosin habitat. Bear numbers on Whitehall Plantation are thought to be very low, with the occasional presence of these animals and hunting opportunities currently don't exist.

Inventory and monitoring needs

Currently, baseline density or relative abundance of black bears does not exist for Whitehall Plantation. Track counts could be established using the existing road networks. Photo points could also be utilized to collect baseline data. Efforts should be made to collect sex, weight, and age data from hunter harvested bears near Whitehall Plantation.

Management needs

Bears on Whitehall Plantation should be managed following the guidelines outlined in the North Carolina Black Bear Management Plan (NCBBMP). The entire NCBBMP can be viewed by visiting www.ncwildlife.org.

Many studies have concluded that black bear habitat preferences are simply a function of food. Therefore, any land management practices to improve or sustain food availability (soft and hard mast) will benefit black bears. Continued long rotation timber harvest, open land management, and prescribed fire will enhance and maintain habitats for black bears on Whitehall Plantation. Black bears move extensive distances during certain times of the year. It is important for movement to occur between the various subpopulations of bears across the state to help maintain bear numbers and genetic connectivity. Corridors can also assist in reducing human-bear interactions by decreasing the proximity of traveling bears to human development. As such, corridors for movement are important. Continued acquisition of adjacent lands would support efforts to meet the NCBBMP objective 4 (strategies 3, 4, 5, and 6).

As the availability of huntable areas decrease, acquisition of land would also assist in NCBBMP objective 1 and objective 2, strategy 6. NCWRC game lands will become increasingly important in providing bear hunting opportunities and population management via harvest.

During the public input session, one comment was received specific to black bears which requested the ability to hunt black bears on this game land through the Permit Hunting Opportunities Program.

At this time, we believe that this property does not support a huntable number of bears that would justify the incorporation of bear hunting into the Permit Hunting Opportunities Program.

Research needs

There are currently no known research needs.

FURBEARERS

Current knowledge

Whitehall Plantation provides hunting opportunities for bobcat, fox, raccoon, and coyote. Trapping opportunities exist for beaver, bobcat, coyote, raccoon, river otter, mink, and long-tailed weasel. Although these resources exist on the game land, they are somewhat under-utilized. Trapping is currently allowed 6 days per week from February 1-28. Bobcat and coyote hunting is currently allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

Inventory and monitoring should be considered on an as needed basis. Scent stations and track counts could be used for some species.

Management needs

Current trapping seasons should be maintained to allow for trapping opportunities and the harvest of surplus furbearers. Current land management techniques should continue and desired future conditions should be met to benefit furbearers in each habitat type.

Research needs

There are currently no known research needs.

GRAY AND FOX SQUIRRELS

Current knowledge

Gray and fox squirrels are common small game species found on Whitehall Plantation. Gray squirrels inhabit numerous forest types, although they are most abundant in hardwood forests containing a variety of mast-producing trees. On this game land, they commonly occur in the floodplain forests and occasionally in the pine woodlands.

Because fox squirrels are solitary animals, their population densities are generally low, even in areas where they are considered common. Large areas of habitat are needed to support viable populations. They inhabit mostly open, mature pine-oak forests but also occur in pine-dominated habitats as well.

Tree cavities are very important for both squirrel species for rearing young and protection from winter weather.

Squirrel hunting is currently allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

There are currently no inventory and monitoring needs but they should be considered on an as-needed basis.

Management needs

Current hunting opportunities should be maintained. Protection and maintenance of all forest types on Whitehall Plantation will provide habitat needs for both squirrel species. Burning of pine woodlands and increased acreage of longleaf pine communities will be most beneficial to fox squirrels. Hard mast producing trees and cavity trees should be protected and maintained.

Research needs

There are currently no known research needs.

EASTERN COTTONTAIL AND MARSH RABBITS

Current knowledge

Eastern cottontail rabbits commonly occur on Whitehall Plantation in open land where shrubs, grasses, and forbs dominate. Briar patches, brush piles, and other dense vegetation are needed for escape cover. Interspersion of different cover types is ideal for rabbits.

Marsh rabbits, being semiaquatic animals, require dense habitat adjacent to a permanent supply of water, such as the borders of lakes, streams, canals, ditches and marshes.

Rabbit hunting currently occurs at low levels on this property and is allowed Monday through Wednesday, October 15 - December 31 during open seasons, and Monday through Saturday, January 1- February 28 during open seasons. Participation is managed through the Permit Hunting Opportunities Program.

Inventory and monitoring needs

There are currently no inventory and monitoring needs but they should be considered on an as-needed basis.

Management needs

Current hunting opportunities should be maintained. Land management techniques that provide brushy cover will be beneficial for rabbits. These include thinning and burning of pine communities, early successional habitat management, and the creation and/or protection of brush piles and briar thickets.

FINANCIAL ASSESTS AND FUTURE NEEDS

The financial assets of Whitehall Plantation include a variety of assets in the form of infrastructure, personnel, vehicles, and heavy equipment. It should be noted that the large majority of these assets are also used to manage other game lands in the Southern Coastal Ecoregion and some assets, including personnel, are periodically used in other areas of North Carolina where they may be needed by the NCWRC to achieve management objectives in those areas.

Equipment and other asset needs are evaluated annually and operating budgets are allocated annually based on these equipment needs, upcoming projects, the costs of normal operating procedures, and the availability of these funds.

Staffing

The current game land management staff that manages Whitehall Plantation includes 3 permanent, full-time technicians and a full-time temporary technician that works 11 months out of the annual cycle. One of these technicians is the Team Leader and assumes the most responsibility for implementing work duties. Additional staff that assist with management of Whitehall Plantation includes the Southern Coastal Ecoregion Management Biologist, Southern Coastal Ecoregion Wildlife Forester, and Southern Coastal Ecoregion Technician Supervisor. Overseeing all previously mentioned staff is the Coastal Ecoregion Supervisor that supervises personnel throughout the entire Coastal Region. See Map 11 showing the Southern Coastal Ecoregion work area.

There are currently no needs for additional personnel. However, because the previously mentioned staff also conducts management activities on other game lands and boating access areas within the work area, additional staffing needs will be evaluated if demands for more intensive management increases or additional lands are acquired.

Infrastructure

Whitehall Plantation currently has very little infrastructure. The existing infrastructure includes numerous culverts for drainage, gates that are used to control access, and seven miles of roads and trails.

As described in the Infrastructure Section of this Plan, there are major infrastructure upgrades planned over the ten year planning horizon for Whitehall Plantation.

Heavy equipment and vehicles

There is currently an adequate supply of heavy equipment and vehicles to conduct management activities on Whitehall Plantation. Heavy equipment includes 3 farm tractors with various implements, 1 backhoe, and 1 bulldozer. Tractor implements include but are not limited to disk

harrows, rotary mowers, a no-till grain drill, a 4-row planter, a cultipacker, and box blade. Other equipment includes 2 ATV's, 1, UTV, 2 boats, and a canoe.

Personnel that manage Whitehall Plantation are currently outfitted with an adequate supply of vehicles. These include 4 pickup trucks, one of which is used for prescribed burning operations and the application of herbicide on roadsides. Additional vehicles include a road tractor and trailer (18-wheeler) and a dump truck.

As previously stated, the replacement or addition of these assets is evaluated annually based off of existing and predicted needs and are acquired if funding is available.

Whitehall Plantation Game Land

Financial Summary of Activities

Habitat Activities

Project	Description	Activity	Quantity	Unit	Unit Cost	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	Total
H	Firebreaks	Maintain firebreaks	1.5	mi	$525	788	807	827	848	869	890	912	935	958	982	$8,815
H	Vegetation Control	Prescribe burning	250	ac	$30	7,500	7,686	7,877	8,072	8,272	8,477	8,688	8,903	9,124	9,350	$83,948
H	Wildlife Opening Establishment	Create Opening	5.25	ac	$1,800	9,450										$9,450
H	Herbaceous Seeding	Seed or maintain	5.25	ac	$175		919	942	965	989	1,013	1,038	1,064	1,091	1,118	9,138
															Subtotal	$111,351

Operation and Maintenance Activities

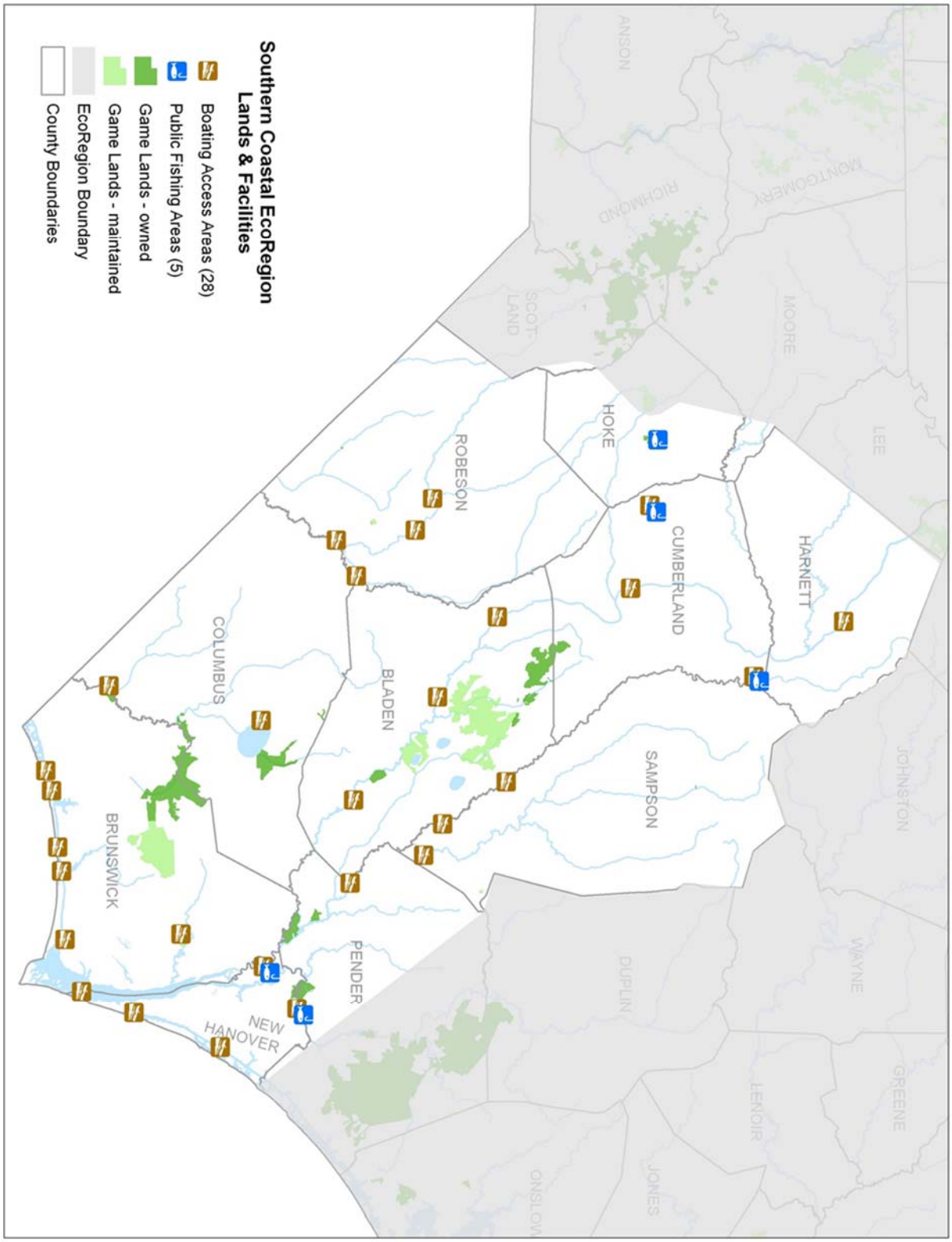
Project	Description	Activity	Quantity	Unit	Unit Cost	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	Total
O & M	Public Use Facilities	Maintain campground	1	camp	$225	225	231	236	242	248	254	261	267	274	281	$2,518
O & M	Road and Trails	Maintain gates	13	gate	$100	1,300	1,332	1,365	1,399	1,434	1,469	1,506	1,543	1,581	1,621	$14,551
O & M	Road and Trails	Maintain road	2	mi	$2,500	5,000	5,124	5,251	5,381	5,515	5,652	5,792	5,935	6,083	6,233	$55,966
O & M	Road and Trails	Maintain trail	7	mi	$2,500	17,500	17,934	18,379	18,835	19,302	19,780	20,271	20,774	21,289	21,817	$195,879
O & M	Signs and Boundaries	Maintain boundary	2	mi	$135	270	277	284	291	298	305	313	321	328	337	$3,022
															Subtotal	$271,936

Development Activities

Project	Description	Activity	Quantity	Unit	Unit Cost	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	Total
D	Road Upgrade	Beaver Road	0.4	mi	150,000	60,000										$ 60,000
D	Road Upgrade	Sandhill Road	0.5	mi	150,000		76,860									$ 76,860
D	Road Upgrade	Lucas Road	0.2	mi	150,000			31,488								$ 31,488
D	Parking Areas	Parking Area Construction	4	ea	10,000	40,000										$ 40,000
															Subtotal	$ 208,348
															Grand Total	**$591,635.64**

Inflation rate is calculated from the Consumer Price Index (CPI-U) which is compiled by the U.S. Bureau of Labor Statistics

2013	2.07%
2012	3.16%
2010	1.64%
2009	-0.34%
2008	3.85%
2007	2.85%
2006	3.24%
2005	3.39%
2004	2.68%
2003	2.27%
10 yr Av	2.48%



Map 11 – Southern Coastal Ecoregion work area.

ACQUISITION PLAN

The NCWRC's plans for future acquisition will include inholdings, adjacent lands, and critical habitats. Critical habitats that have rare and/or endangered species, provide outstanding ecological benefits, or provide outstanding opportunities for game land users will be high priority. Special considerations will be given to; lands that provide corridors for the connectivity of key parcels or are critical to enhance the NCWRC's ability to protect rare habitats, the land management needs of a property, and the public access and public uses that a property provides.

Prior to any acquisition, initial land investigations will be conducted by NCWRC staff and evaluations will be submitted by Phase I and II acquisitions forms (see *Appendix X*). Land will only be acquired from willing sellers and/or through donations, and all purchases will be based off of available funding. Furthermore, all potential acquisitions will be evaluated on a case-by-case basis by NCWRC staff.

ENFORCEMENT AND REGULATIONS

Currently there are two Wildlife Enforcement Officers that patrol Whitehall Plantation Game Land, which is part of their work area. Both are stationed in Bladen County. In addition, there are also two more Wildlife Enforcement Officers and three supervisory staff including a Captain, Lieutenant, and Sergeant which routinely assist with enforcement and enforcement issues pertaining to the game land. Primary enforcement activities on the game land include: aircraft patrols for bait, check points for license and game compliance, foot and boat patrols, remote camera setups on bait and littering sites, nighttime poaching setups and surveillance, and routine road patrols. These activities occur throughout the year across the game land, with the highest frequency of enforcement activities occurring during hunting seasons. Critical times for the Enforcement Division on the game land occur during the first two weeks of dove season, and the deer, waterfowl, and turkey seasons.

As with most game lands, the major enforcement problems on Whitehall Plantation pertain to littering, regulations violations, dogs running unleashed, license/permit issues, ATV riding, and adjoining landowner issues and conflicts.

The following is a list of regulations specifically related to Whitehall Plantation:

- Whitehall Plantation is designated as a permit-only game land
- Gun either-sex deer season falls under maximum season regulations
- ATV riding is prohibited except by disabled sportsman with valid permits
- Camping is restricted to September 1 – February 28 and March 31 – May 14

PARTNERSHIPS AND COLLABORATIONS

Partnerships and collaborations among various conservation groups, universities, state and federal agencies, non-governmental agencies, non-profit groups, national organizations, clubs, and private citizens have been pivotal to the successful management of Whitehall Plantation. Newly created and continued partnerships between the NCWRC and these groups will be essential for meeting the goals and needs outlined in this Plan. Below is a list of partners that have assisted with conservation efforts on Whitehall Plantation.

Ducks Unlimited

Mission Statement: "*DU conserves, restores and manages wetlands and associated habitats for North America's waterfowl. These habitats also benefit other wildlife and people."*

North Carolina Natural Heritage Trust Fund

Mission Statement: *"to receive and administer gifts, grants, devises and bequests of real and personal property to further conservation, outdoor recreation, historic preservation and waterfront and community revitalization."*

North Carolina Natural Heritage Program

Mission Statement: "*To provide science and incentives to inform conservation decisions and support conservation of significant natural areas in our state."*

The Nature Conservancy

Mission Statement: "*To conserve the lands and waters upon which all life depends.*"

National Wild Turkey Federation

Mission Statement: "*Dedicated to the conservation of the wild turkey and the preservation of our hunting heritage."*

North Carolina Forest Service

Mission Statement: "*To protect, manage and promote forest resources for the citizens of North Carolina."*

National Fish and Wildlife Federation

Mission Statement: "*to protect and restore the nation's wildlife and habitats."*

United States Fish and Wildlife Service

Mission Statement: *"Working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people."*

North Carolina State University

Mission Statement: "As a research-extensive land-grant university, North Carolina State University is dedicated to excellent teaching, the creation and application of knowledge, and engagement with public and private partners. By uniting our strength in science and technology with a commitment to excellence in a comprehensive range of disciplines, NC State promotes an integrated approach to problem solving that transforms lives and provides leadership for social, economic, and technological development across North Carolina and around the world."

APPENDIX I - REFERENCES

Allen, A. W., Y. K. Bernal, and R. J. Moulton. 1996. *Pine plantations and wildlife in the southeastern United States, an assessment of impacts and opportunities*. Information and Technology Report 3. US Department of Interior, Washington, DC.

Bailey, M. A., J. N. Holmes, and K. A. Buhlmann. 2004. *Habitat management guidelines for amphibians and reptiles of the southeastern United States (DRAFT)*. Partners in Amphibian and Reptile Conservation.

Brockway, D. G., Outcalt, K. W., Forest Ecology and Management. 106, 125 (1998).

Cessford, G. R., 1995. *Off-road impacts of mountain biking: a review and discussion*. Wellington, New Zealand. Department of Conservation. Science & Research Series, 0113-3713; no. 92.

Childs, S. W., S. P. Shade, D. W. R. Miles, E. Shepard, and H. A. Froehlich. 1989. Pages 53-66 in *Maintaining the Long-Term Productivity of Pacific Northwest Forest Ecosystems*. D. A. Perry et al., editors. Timber Press, Portland, OR.

Duerr, E. J., 2007. *The Role of Fire in the Ecotone Between Upland Pine and Bottomland Hardwoods*. Thesis, Clemson University. Clemson, South Carolina.

Frost, C. C. 1993. *Four centuries of changing landscape patterns in the longleaf pine ecosystem*. Pages 17-43 in Proceedings of the Tall Timbers fire ecology conference, No. 18. S. H. Hermann, editor. Tall Timbers Research Station, Tallahassee, FL.

Hellgren, E. C., and M. R. Vaughan. 1988. *Seasonal food habits of black bears in Great Dismal Swamp, Virginia- North Carolina*. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies. 42:295-305.

Hellgren, E. C., M.R. Vaughan, and D .F. Stauffer. 1991. *Macrohabitat use by black bears in a southeastern wetland*. Journal of Wildlife Management. 55:442-448

Jennings, S. B., N. D. Brown, and D. Sheil. 1999. *Assessing forest canopies and understory illumination: canopy closure, canopy cover and other measures*. Forestry. 72(1): 59-74.

Jones, M. D. and M. R. Pelton. 2003. *Female American black bear use of managed forest and agricultural lands in coastal North Carolina*. University of Tennessee. Knoxville, Tennessee

Laerm, J., B.R. Chapman and W.M. Ford. 2007. In: *The land manager's guide to mammals of the south, Star-nosed Mole*. Pages 49-52. M. K. Trani and B. R. Chapman, editors. The Nature Conservancy.

Landers, J. L., R.J. Hamilton, A. S. Johnson, and R.L. Marchinton. 1979. *Foods and habitat of black bears in southeastern North Carolina*. Journal of Wildlife Management 43:143-153.

LeBlond, R. J. and Grant G. S. 2005. *Natural Area Inventory of Bladen County, North Carolina*. NC Department of Environmental and Natural Resources, NC Natural Heritage Program. Raleigh, NC.

Lombardo, C. A. 1993. *The population ecology of black bears on Camp Lejeune, North Carolina*. Thesis, University of Tennessee, Knoxville, Tennessee, USA.

Measells, M. K., S. C. Grado and L. M. Capella. 2002. *Forestry and forest industry: a fish and wildlife agency's current perspective*. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies 56:148-158.

Moellenbrock, B. A. 1998. *Site Conservation Plan for the Bladen Lakes Region*. The North Carolina Chapter of The Nature Conservancy.

Newsome, D., A. Milewski, N. Phillips, and R. Annear. 2002. *Effects of horse riding on national parks and other natural ecosystems in Australia: implications for management*. Journal of Ecotourism 1(1), 52-74.

N.C. Division of Water Quality (NCDWQ) 2000a. *North Carolina's 2000 303(d) List*. N.C. Department of Environment and Natural Resources, Division of Water Quality – Planning Branch. Raleigh, N.C.

N.C. Division of Water Quality (NCDWQ). 2000b. *Cape Fear River Basinwide Water Quality Plan*. N.C. Department of Environment and Natural Resources, Division of Water Quality. Raleigh, NC.

N.C. Division of Water Resources (NCDWR). 2002. *Bladen County Preliminary Capacity Use Assessment*. N.C. Department of Environment and Natural Resources, Division of Water Resources. Raleigh, NC.

N.C. Wildlife Resources Commission (NCWRC). 2005. *North Carolina Wildlife Action Plan*. Raleigh, NC.

Powers, R. F., N. H. Alban, R. E. Miller, A. E. Tiarks, C. G. Wells, P. E. Avers, R. G. Cline, R. D Fitzgerald, and prospects. 1990. *Sustained Productivity of Forest Soils*. Proceedings of the 7th North American Forest Soils Conference, University of British Columbia, Faculty of Forestry Publication, Vancouver, B.C. p. 49-79.

Ricketts, T. H., E. Dinerstein, D. M. Olson, C. J. Loucks, W. Eichbaum, D. DellaSala, K. Kavanagh, P. Hedao, P. T. Hurley, K. M. Carney, R. Abell, and S. Walters. 1999. *Terrestrial ecoregions of North America: a conservation assessment*. Island Press, Washington, DC.

Robbins, L. & Myers, R. (1992). *Seasonal effects of prescribed burning in Florida: A review*. Tall Timbers Re-search Station Miscellaneous Publication 8. Tallahassee, FL: Tall Timbers Research Station & Land Conservancy.

Schafale, M. P., and A. S. Weakley. 1990. *Classification of the natural communities of North Carolina, third approximation*. N.C. Department of Environment and Natural Resources, Natural Heritage Program, Raleigh, N.C.

SCONC. *Overview*. State Climate Office of North Carolina. North Carolina State University. Web. 14 March 2013.

SERCC. *Period of Record Monthly Climate Summary, Elizabethtown Lock 2, NC*. Southeast Regional Climate Center. Web. 14 March 2013.

Stauffer, D. F., G. A. Cline, and M. J. Tonkovich. 1990. *Evaluating potential effects of CRP on bobwhite quail in Piedmont Virginia*. Transactions of the North American Wildlife and Natural Resources Conference 55:57-67.

Van Lear, D. H., W.D. Carroll, P.R. Kapeluck, and R. Johnson. 2005. *History and restoration of the longleaf pine-grassland ecosystem; Implications for species at risk*. Forest Ecology and Management 211: 150-165.

Weller, M. W. and J. L. Stegman. 1977. *Evaluating and maintaining habitats for fish and wildlife*. Transaction of the 42nd North American Wildlife and Natural Resources Conference. Wildlife Management Institute, Washington, D. C. Pages 31-41.

APPENDIX II – GLOSSARY OF TERMS

Burn compartment – a designated area that can be safely and effectively managed with the application of prescribed fire.

Basal area – a term that defines the total area of a given section of land that is occupied by the cross-section of all trees at a height of 4 ½ feet.

Chronic Wasting Disease – a fatal neurological disease of deer and elk characterized by microscopic empty spaces in the brain matter.

Clearcutting – a forestry practice in which most or all of the trees in an area are uniformly cut down.

Crepuscular – occurring or active during twilight hours.

Cryptic – used in science, groups of species that are very difficult to distinguish from one another.

Juxtaposed – the placement and location of objects side by side.

Lymphoproliferative Disease Virus – a cancer of turkey and chickens caused by a retrovirus.

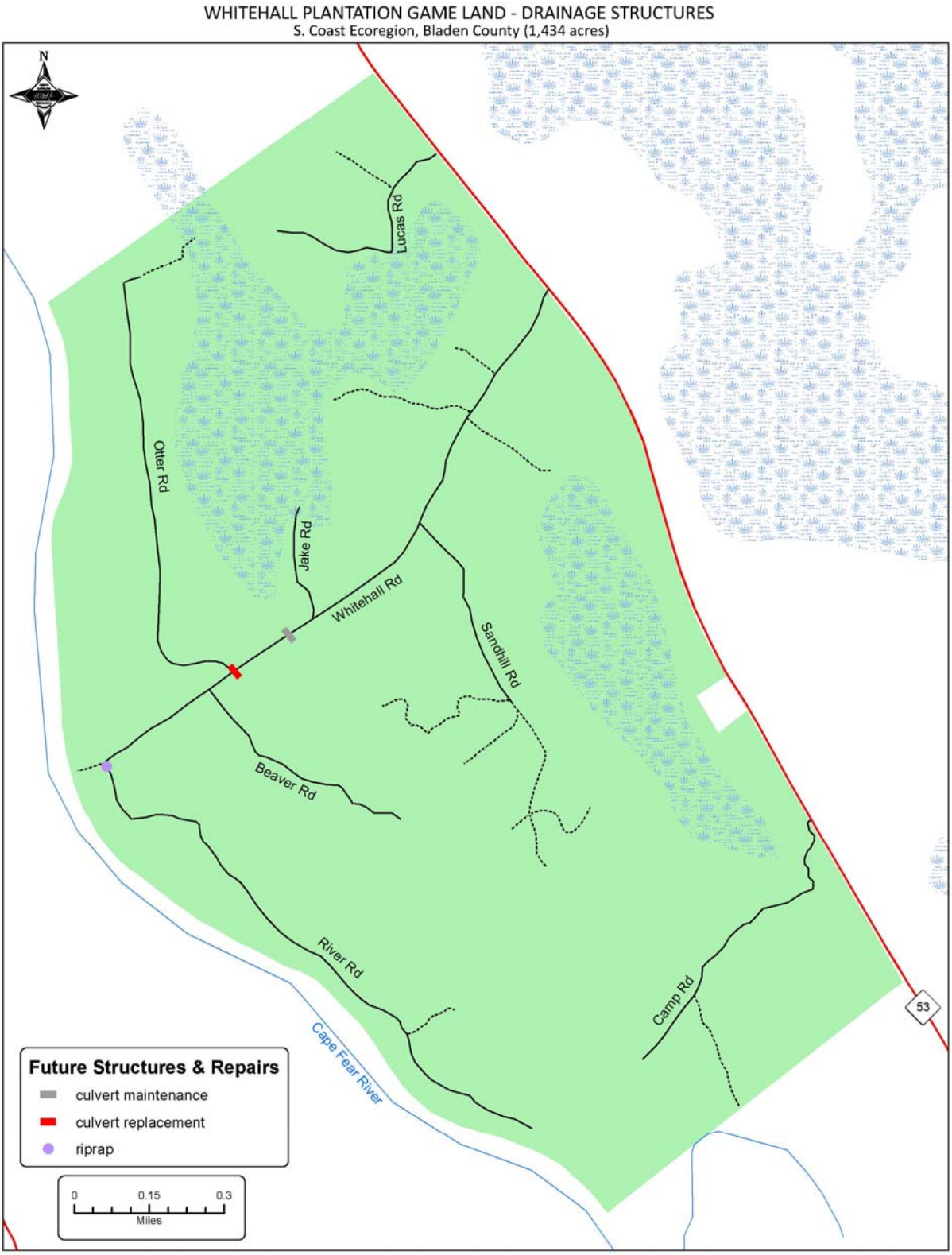
Moist Soil - a technique used in waterfowl habitat management that simulates seasonal wetland hydrology by adding and removing water, most often artificially, in a systematic way to maximize food production for waterfowl and shorebirds.

Selection Harvest – in forestry, the technique of harvesting trees in a way that moves a forest stand towards and uneven-aged or even-aged condition. This technique manages the establishment, continued growth, and final harvest of multiple age classes of trees.

Stocking – a quantitative measure of the area within a forested stand that is occupied by trees.

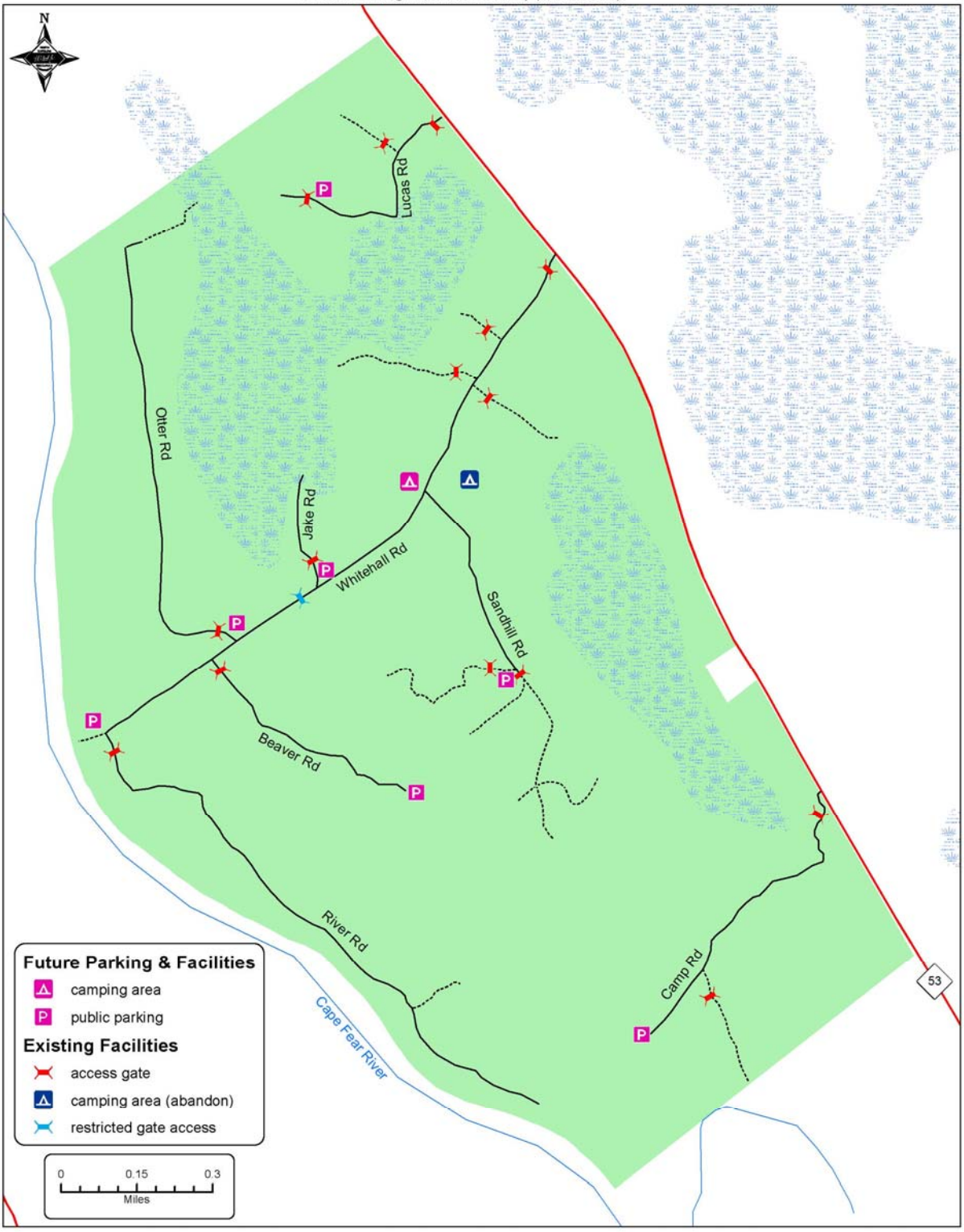
Thinning – a forestry practice in which only a portion of trees in an areas are cut down and removed. This practice is conducted to provide more growing space for the remaining trees and to allow sunlight to reach the forest floor.

APPENDIX III – INFRASTRUCTURE MAPS



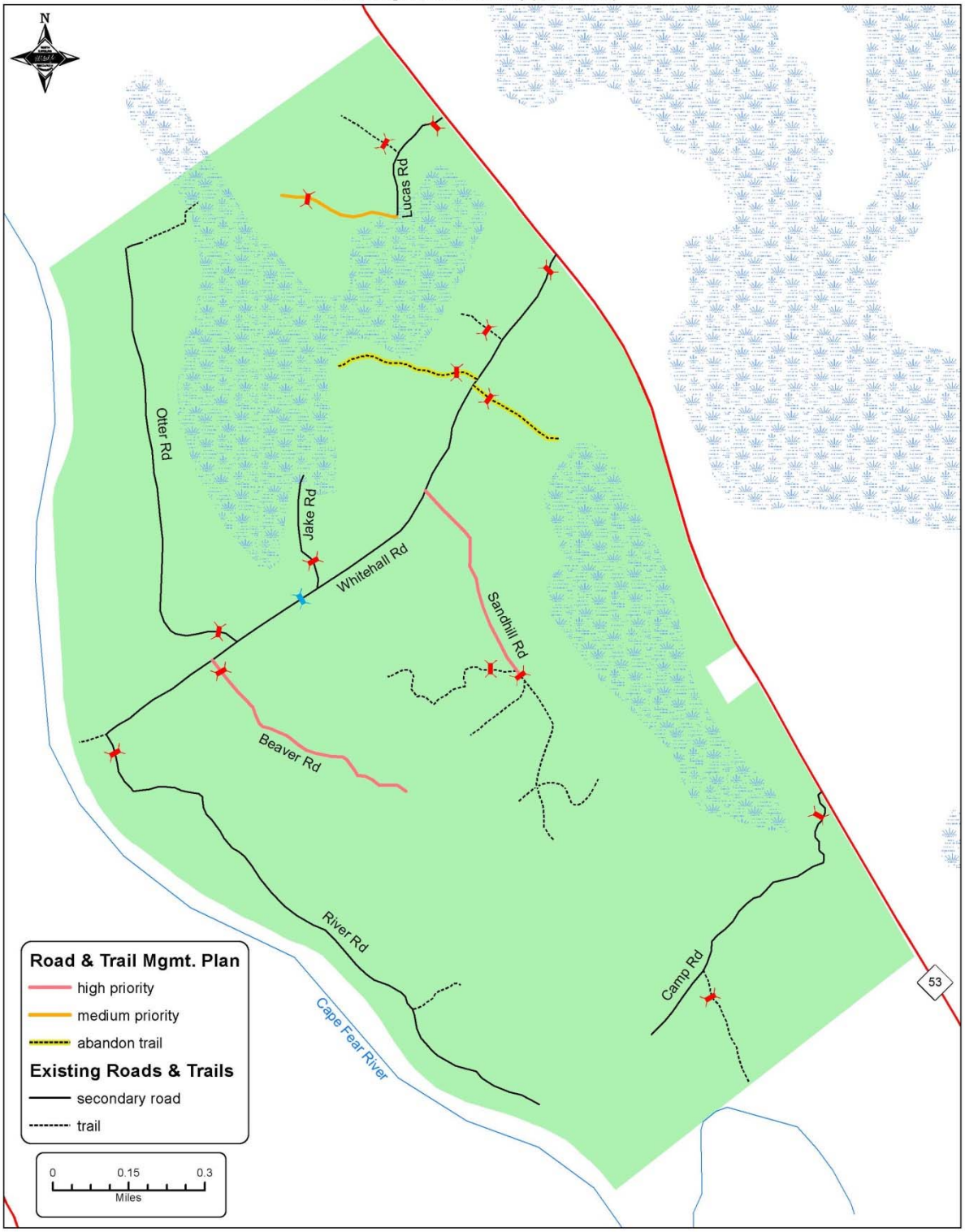
WHITEHALL PLANTATION GAME LAND - RECREATIONAL FACILITIES

S. Coast Ecoregion, Bladen County (1,434 acres)

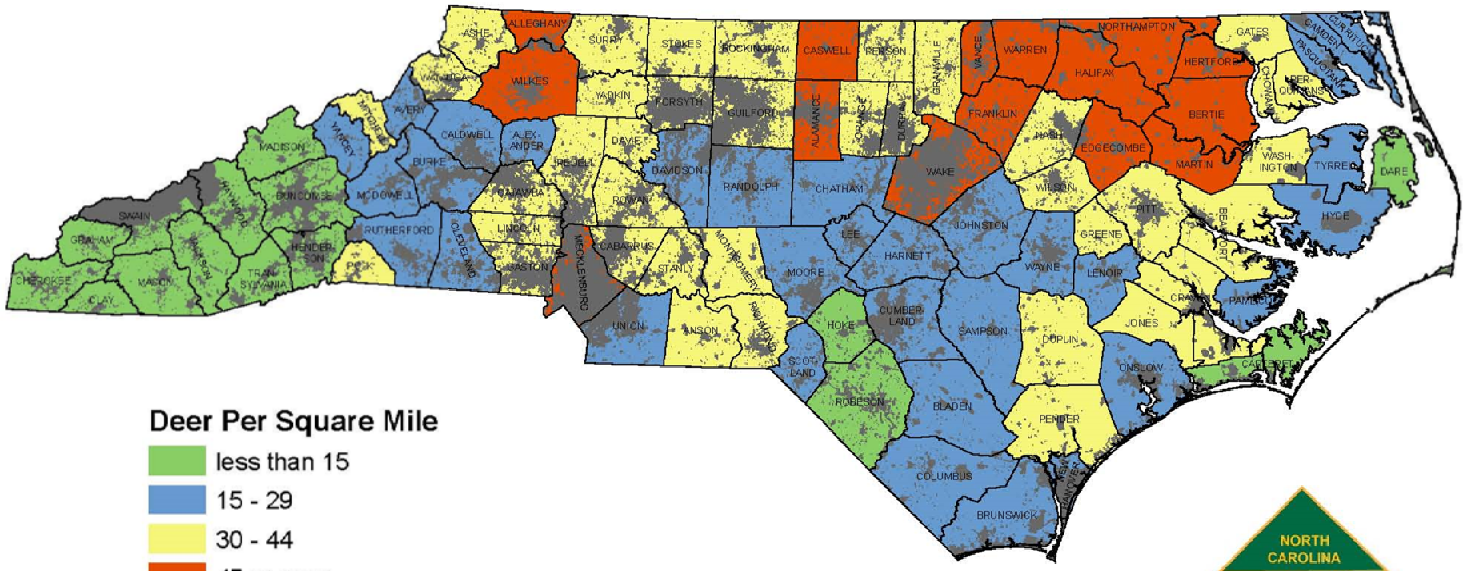


WHITEHALL PLANTATION GAME LAND - ROAD NETWORK AND MANAGEMENT PLAN

S. Coast Ecoregion, Bladen County (1,434 acres)



2010 North Carolina White-tailed Deer Density Map



Deer Per Square Mile

- less than 15
- 15 - 29
- 30 - 44
- 45 or more

No Density Estimate

Where harvest data are not available to produce density estimates because hunting is limited or prohibited: includes federal and state parks, municipal boundaries, water bodies, and human density greater than 1 person per 2 acres.

NORTH CAROLINA Wildlife RESOURCES COMMISSION

Division of Wildlife Management

APPENDIX V – WILD TURKEY HUNTER SURVEY

2011-12 «Item_Name» (Item # «Item_Number») Survey

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«Address_2»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

1. Did you hunt during at least one day using the «Item_Name» permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

- ☐ Not enough turkeys or turkey sign
- ☐ Weather was poor for turkey hunting
- ☐ My hunting partner(s) could not go
- ☐ I had no more turkey tags left or was saving my last turkey tag
- ☐ I hunted somewhere else during the day(s) I had a permit for
- ☐ I could not afford to make the trip(s)
- ☐ Work or family obligations or health problems
- ☐ Other (please specify):_____

2. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐
«HuntChoice_2»			☐

3. Please indicate the number of turkeys you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any turkeys during a particular hunt choice date**)

Hunt Choice and Date	Number of Turkeys Harvested		Did Not Harvest any Turkeys
	Beard less than 7 inches	Beard 7 inches or greater	
«HuntChoice_1»			☐
«HuntChoice_2»			☐

CONTINUE ON REVERSE SIDE →

Permit Number: «PermitID»

4. Please indicate the number of gobblers you heard using the permit during the hunt(s) listed below. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Gobblers Heard	Did Not Hunt
«HuntChoice_1»		☐
«HuntChoice_2»		☐

5. Overall, how dissatisfied or satisfied were you with your hunt(s) using this permit? (☑ **one**)

Very Dissatisfied ← → **Very Satisfied**

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

6. Which of the following were important in determining how dissatisfied or satisfied you were with your hunts using this permit? (☑ **all that apply**)

- ☐ Accessibility of hunting area
- ☐ Quality of turkey habitat
- ☐ Number of turkeys seen or heard
- ☐ Whether or not I harvested a turkey(s)
- ☐ Weather
- ☐ Behavior or courtesy of other hunters
- ☐ Other (please specify):_____

7. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	**Number of Other Hunters**			
	Too Few	**Just Enough**	**Too Many**	**Did Not Hunt**
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐

8. How far did you travel (one way) for a hunt using the permit? (☑ **one**)

   ☐ 0 to 60 miles

   ☐ 61 to 120 miles

   ☐ 121 to 180 miles

   ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VI – DEER HUNTER SURVEY

2011-12 «Item_Name» Survey - Respond Immediately

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«Address_2»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

9. Did you hunt during at least one day using the «Item_Name» (Item # «Item_Number») permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

- ☐ Not enough deer or deer sign
- ☐ Weather was poor for deer hunting
- ☐ My hunting partner(s) could not go
- ☐ I had no more deer tags left or was saving my last deer tag
- ☐ I hunted somewhere else during the day(s) I had a permit for
- ☐ I could not afford to make the trip(s)
- ☐ Work or family obligations or health problems
- ☐ Other (please specify):_____

10. What hunting method did you *primarily* use during your hunt(s) using the permit?

☐ Still

☐ Dog

11. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐
«HuntChoice_2»			☐

«HuntChoice_3»			☐
«HuntChoice_4»			☐
«HuntChoice_5»			☐

12. Please indicate the number of antlered bucks, does, and button bucks you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any deer during a particular hunt choice date**)

Hunt Choice and Date	Number of Deer Harvested			Did Not Harvest Any Deer
	Antlered Bucks	Does	Button Bucks	
«HuntChoice_1»				☐
«HuntChoice_2»				☐
«HuntChoice_3»				☐
«HuntChoice_4»				☐
«HuntChoice_5»				☐

CONTINUE ON REVERSE SIDE →

Permit Number: «PermitID»

13. Please indicate the number of deer you saw using the permit during the hunt(s) listed below. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Deer Seen	Did Not Hunt
«HuntChoice_1»		☐
«HuntChoice_2»		☐
«HuntChoice_3»		☐
«HuntChoice_4»		☐
«HuntChoice_5»		☐

14. Overall, how dissatisfied or satisfied were you with your hunt(s) using this permit? (☑ **one**)

Very Dissatisfied ⟷ **Very Satisfied**

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

15. Which of the following were important in determining how dissatisfied or satisfied you were with your hunts using this permit? (☑ **all that apply**)

- ☐ Accessibility of hunting area
- ☐ Quality of deer seen
- ☐ Number of deer seen
- ☐ Whether or not I harvested deer
- ☐ Weather
- ☐ Behavior or courtesy of other hunters
- ☐ Other (please specify):_____

8. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	Number of Other Hunters			
	Too Few	Just Enough	Too Many	Did Not Hunt
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐
«HuntChoice_3»	☐	☐	☐	☐
«HuntChoice_4»	☐	☐	☐	☐
«HuntChoice_5»	☐	☐	☐	☐

9. How far did you travel (one way) for a hunt using the permit? (☑ **one)**

- ☐ 0 to 60 miles
- ☐ 61 to 120 miles
- ☐ 121 to 180 miles
- ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VII – WATERFOWL HUNTER SURVEY

2011-12 «Item_Name» (Item # «Item_Number») Survey

The North Carolina Wildlife Resources Commission requests that you complete this 2-page survey (front/back) and return it using the enclosed postage-paid envelope or submit your response online at www.ncwildlife.org. This survey provides an opportunity for you to let us know about hunting experiences you may or may not have had using the «Item_Name» permit. Your responses are used by the Commission to better manage and improve the quality of permit hunts. **We ask that you respond even if you did not hunt using this permit.**

«CustomerID»
«First_Name» «Middle_Name» «Last_Name» «Suffix»
«Address_1»
«City», «State» «Zip» «Zip4»

Permit Number: «PermitID»

Submit your response online at www.ncwildlife.org

16. Did you hunt during at least one day using the «Item_Name» permit?

☐ Yes

☐ No **Indicate the reason(s) you did not hunt and return the survey in the postage-paid envelope:**

☑ **all that apply**

- ☐ Not enough waterfowl
- ☐ Weather was poor for waterfowl hunting
- ☐ Not enough water in impoundment
- ☐ My hunting partner(s) could not go
- ☐ I hunted somewhere else during the day(s) I had a permit for
- ☐ I could not afford to make the trip(s)
- ☐ Work or family obligations or health problems
- ☐ Other (please specify):_____

17. Please indicate which hunt(s) listed below you hunted using the permit. List the number of days and total number of hours hunted. (**Check the box if you did not hunt during a particular hunt choice date**)

Hunt Choice and Date	Number of Days Hunted	Total Number of Hours Hunted	Did Not Hunt
«HuntChoice_1»			☐
«HuntChoice_2»			☐
«HuntChoice_3»			☐
«HuntChoice_4»			☐
«HuntChoice_5»			☐

18. Please indicate the number of each waterfowl species you *personally* harvested using the permit during the hunt(s) listed below. (**Check the box if you did not harvest any waterfowl during a particular hunt choice date**)

Hunt Choice and Date	Number Harvested						Did Not Harvest Any Waterfowl
	Tundra Swan	Ducks	Mergansers	Coots	Canada Geese	Snow Geese	
«HuntChoice_1»							☐
«HuntChoice_2»							☐
«HuntChoice_3»							☐
«HuntChoice_4»							☐
«HuntChoice_5»							☐

CONTINUE ON REVERSE SIDE →

Permit Number: «PermitID»

19. Did you scout any hunt area(s) listed on the permit prior to the hunt date(s)?

☐ Yes

☐ No

5. Using the rating scale shown below, enter one rating in every box for each hunt listed.

Rating Scale: Very Dissatisfied ← 1 2 3 4 5 → Very Satisfied Hunt Choice and Date	Rating						
	Accessibility of hunting area	Satisfaction with number of waterfowl seen	Satisfaction with number of waterfowl harvested	Quality of waterfowl habitat	Weather	Behavior or courtesy of other hunters	Overall hunting experience
Rating Example	***1***	***4***	***2***	***4***	***2***	***3***	***2***
«HuntChoice_1»							
«HuntChoice_2»							
«HuntChoice_3»							
«HuntChoice_4»							
«HuntChoice_5»							

6. Do you think the number of other hunters during your hunt(s) using the permit was…. (☑ **one for each hunt choice date listed**)

Hunt Choice and Date	Number of Other Hunters			
	Too Few	Just Enough	Too Many	Did Not Hunt
«HuntChoice_1»	☐	☐	☐	☐
«HuntChoice_2»	☐	☐	☐	☐
«HuntChoice_3»	☐	☐	☐	☐
«HuntChoice_4»	☐	☐	☐	☐
«HuntChoice_5»	☐	☐	☐	☐

7. How far did you travel (one way) for a hunt using the permit? (☑ **one**)

- ☐ 0 to 60 miles
- ☐ 61 to 120 miles
- ☐ 121 to 180 miles
- ☐ More than 180 miles

If you have any questions regarding this survey, please call us at (888) 248-6834. Thank you for your time and support of our wildlife programs.

STAY INFORMED….

Start receiving e-mails regarding permit hunting opportunities, application and survey reminders, draw status information, and N.C. Wildlife Update.

Sign up at www.ncwildlife.org/enews or give us your e-mail address (print neatly): _____

APPENDIX VIII – NCWRC GEOCACHING POLICY

GEOCACHING POLICY

November 20, 2013

CONTENTS

INTRODUCTION

Geocaching is a real-world, outdoor treasure hunting game using GPS-enabled devices. Participants navigate to a specific set of GPS coordinates and then attempt to find the geocache (container) hidden at that location (http://www.geocaching.com/guide). Individuals who participate are known as geocachers.

OBJECTIVES

- Minimize potential impacts of geocaching on WRC-allocated lands.
- Where appropriate and compatible, support geocaching as a means of providing for additional recreational use of WRC-allocated lands and to increase awareness of WRC and its mission.

APPLICATION

This policy applies to all WRC-allocated lands and those WRC-managed properties where the landowner has ceded authority for the management of recreational uses to WRC. On those lands which WRC manages under cooperative agreements which do not cede authority for management of recreational uses in general, permission to engage in geocaching must be obtained from the landowner of the property in question.

CONSENT

On WRC-allocated lands, and those WRC-managed properties where the landowner has ceded authority for the management of recreational uses to WRC, blanket permission is granted for the placement of geocaches which comply with the provisions of this policy. No special license, permit or fee is required.

DEFINITIONS

Archive - Archiving a cache removes the listing from public view on Geocaching.com.

Cache (Geocache) – A hidden container that includes, at minimum, a logbook for geocachers to sign.

EarthCache - An EarthCache is a special place that people can visit to learn about a unique geoscience feature of our Earth. EarthCache pages include a set of educational notes along with cache coordinates. Visitors to EarthCaches can see how our planet has been shaped by geological processes, how we manage its resources and how scientists gather evidence to learn about the Earth.

Geocachers – Individuals who participate in placing and/or seeking geocaches.

GPS - GPS stands for Global Positioning System. It is a system of satellites that work with a GPS receiver to determine your location on the planet.

Multi-Cache (Offset Cache) - A Multi-Cache ("multiple") involves two or more locations. The final location is a physical container. There are many variations, but most Multi-Caches have a hint to find the second cache, and the second cache has a hint to the third, and so on. An offset cache (where you go to a location and get hints to the actual cache) is considered a Multi-Cache.

Physical Cache – Cache consisting of a sealed container and containing at least a logbook and pen or pencil.

Stash Note - In geocaching, a stash note is a note left in a cache container to explain geocaching to any non-cachers who might stumble across the cache.

Virtual Cache – Cache that exists in the form of a location where no physical object is left.

WRC – Wildlife Resources Commission

GENERAL GUIDELINES

1. WRC will seek to foster a cooperative partnership with the geocaching community to promote the objectives of this policy

2. Geocachers are encouraged to practice principles of Leave no Trace outdoor ethics.

3. The cache owner must assume all responsibility for the accuracy of online content.

4. WRC accepts no responsibility for the security or maintenance of physical caches.

5. Geocachers are encouraged to wear blaze orange in areas where hunting is allowed.

6. All caches must be registered and comply with www.geocaching.com guidelines.

7. Caches may not be used for purposes of advertising, commercial gain, or promotion of political or other social agendas.

8. Acceptable caches include physical caches, virtual caches, multi-caches, and EarthCaches.

CACHE PLACEMENT

8. Caches may not be placed in areas of known archaeological, historical, or ecological significance.

9. Caches may not be placed in locations that present a safety risk to those subsequently attempting to locate the cache. Examples include, but are not limited to caves, rock outcrops, top

of ledges, base of overhanging cliffs, elevated positions that require climbing above ground level, blind curves adjacent to roadways, etc.

10 Caches may not be placed within 100 feet of any lake, pond, or waterway.

11. Caches may not be placed in locations where public access is prohibited.

12. Cache placement may not involve alternation of the nature environment, such as digging, cutting, or removal of vegetation from its present location except that dead and down vegetation may be used to help with concealment.

13. Caches may not be placed within or attached to any man-made amenity such as buildings, piers, docks, kiosks, signs, sign posts, or wildlife nest box structures and may not be attached to any other feature by use of nails, screws, bolts, or wire.

14. Caches may not be placed within cavities of any tree.

15 Marks may not be placed on any natural or man-made feature to aid in locating a cache.

16. Caches may not be placed in maintained landscaped areas, wildlife openings, or areas containing agricultural crops, and areas containing blackened tree trucks which indicate frequent application of prescribed fire should be avoided.

CACHE CONTAINERS

17. Containers must be clearly labeled on the exterior as a "geocache", along with the name of the cache as it appears at: http://www.geocaching.com/

18. Containers must include contact information of the cache owner, to include at a minimum a daytime phone number or email address.

19. All cache containers should contain a standard geocache "stash note" explaining the activity to an unintentional finder (see ATTACHMENT).

20. Containers should be waterproof or sealable.

21. Containers may not exceed a volume greater than 1 cubic foot.

22. Clear (see through) containers are preferred.

23. Containers may not consist of PCV or metal pipe.

CACHE CONTENTS

24. Contents must be family friendly and appropriate for all ages.

25. Caches may not contain items that are inappropriate, offensive, dangerous, or illegal. Examples of such items include, but are not limited to firearms, weapons, ammo, alcohol, drugs, explosives, items of an adult nature, etc.

26. Caches may not contain food items.

27. The cache should contain a log book and pen or pencil for finders of the cache to log their visit.

28. Trade items are acceptable, provided such items are in compliance with this policy.

ENFORCEMENT

WRC supports responsible non-traditional use of WRC lands and recognizes the enjoyment and recreational value associated with Geocaching. However, we reserve the right to remove, without prior notice, any cache:

- deemed to be in an inappropriate or potentially unsafe location,
- found to be causing or having the potential to cause undue impact to archaeological, historical, or ecological resources,
- containing inappropriate, offensive, dangerous, or illegal items, or
- determined for any other reason to be in non-compliance with the provisions of this policy.

An immediate attempt will be made to contact the owner of any cache that is removed to provide the owner with an opportunity to retrieve the cache and to alert the owner of the need to archive the cache as quickly as possible.

ATTACHMENT – GEOECACHE STASH NOTE

GEOCACHE SITE – PLEASE READ

Congratulations, you've found it! Intentionally or not!

What is this hidden container sitting here for? What is this thing doing here with all these things in it?

It is part of a worldwide game dedicated to GPS (Global Positioning System) users, called Geocaching. The game basically involves a GPS user hiding "treasure" (this container and its contents) and publishing the exact coordinates so other GPS users can come on a "treasure hunt" to find it. The only rules are: if you take something from the cache, you must leave something for the cache, and you must write about your visit in the logbook. Hopefully, the person that hid this container found a good spot that is not easily found by uninterested parties. Sometimes, a good spot turns out to be a bad spot, though.

IF YOU FOUND THIS CONTAINER BY ACCIDENT:

Great! You are welcome to join us! We ask only that you:

- Please do not move or vandalize the container. The real treasure is just finding the container and sharing your thoughts with everyone else who finds it.
- If you wish, go ahead and take something. But please also leave something of your own for others to find, and write it in the logbook.
- If possible, let us know that you found it, by visiting the web site listed below.

Geocaching is open to everyone with a GPS and a sense of adventure. There are similar sites all over the world. The organization has its home on the Internet. Visit our website if you want to learn more, or have any comments

http://www.geocaching.com

If this container needs to be removed for any reason, please let us know. We apologize, and will be happy to move it.

APPENDIX IX – PUBLIC INPUT MEETING ANNOUNCEMENT

Media Contact: Jodie B. Owen
919-707-0187
jodie.owen@ncwildlife.org

FOR IMMEDIATE RELEASE

Wildlife Commission Seeks Public Input for Whitehall Plantation Game Land Planning

DUBLIN, N.C. (April 8, 2014) — The N.C. Wildlife Resources Commission is holding a public meeting on April 8 in Dublin to seek input in developing a management plan for the Whitehall Plantation Game Land in Bladen County.

The meeting will begin at 7:00 p.m. in the auditorium of Bladen Community College, located at 7418 NC Hwy 41W.

Wildlife Commission staff will use public input from the meeting to help guide management and user activities on the Whitehall Plantation Game Land for the next 10 years. This game land, which totals 1,430 acres, includes Cape Fear River floodplain and offers excellent examples of semi-permanent wetlands that provide critical habitat for many wildlife species. Some of the most popular game species include deer, turkey, waterfowl, and small game. Whitehall Plantation Game Land is part of the Permit Hunting Opportunities Program which allows for managed participation and unique opportunities for special areas or species.

"We are seeking input from all users of the Whitehall Plantation Game Land and others who are interested in how the property is managed," said Lands Program Manager Isaac Harrold. "This meeting is not just for hunters and anglers. It is for wildlife watchers and photographers, birding groups, hikers, and others who have interest in the Whitehall Plantation Game Land. Everyone is encouraged to provide input."

The Wildlife Commission is also accepting comments and suggestions from people who do not attend the meeting. Beginning April 1, comments regarding the Whitehall Plantation Game Land may be submitted online at www.ncwildlife.org. Click on "Comment on Game Land Plans" from the scrolling icons at the bottom of the page. Comments also can be e-mailed to gamelandplan@ncwildlife.org. Type "Whitehall" on the subject line to comment specifically on the Whitehall Plantation Game Land. Comments for the Whitehall Plantation Game Land will be accepted until May 15.

The Wildlife Commission will provide updates on development of the new management plan for the Whitehall Plantation Game Land on Facebook and Twitter.

About the N.C. Wildlife Resources Commission

Since 1947, the N.C. Wildlife Resources Commission has been dedicated to the conservation and sustainability of the state's fish and wildlife resources through research, scientific management, wise use, and public input. The Commission is the state regulatory agency responsible for the enforcement of fishing, hunting, trapping and boating laws and provides programs and opportunities for wildlife-related educational, recreational and sporting activities. To learn more, visit www.ncwildlife.org.

Get **N.C. Wildlife Update** — news including season dates, bag limits, legislative updates and more — delivered free to your Inbox from the N.C. Wildlife Resources Commission. Go to www.ncwildlife.org/enews.

-30-

APPENDIX X – PHASE I & II LAND INVESTIGATION FORMS

North Carolina Wildlife Resources Commission
Land Acquisition Investigation Form

- INITIAL INVESTIGATION-

WRC Staff Contact:

Date First Presented to WRC:

Tract Name:

Acreage:

County:

Estimated Value:

Property Owner or Representative:

Phone:

Address:

Status: ☐ High Interest ☐ Moderate Interest ☐ Low Interest ☐ No Interest

Grant Potential: ☐ NHTF ☐ CWMTF
☐ OTHER (explain):

Resources Assessment and Biological Benefits (brief):

Additional Comments:

Program Potential: ☐ Game Land
☐ Waterfowl Blind Area ☐ Wildlife Conservation Area ☐ Fishing Access Area
☐ None

Potential Source(s) of Stewardship Funds (indicate federal:state match rates):

Relative Priority Evaluation Score (attach worksheet): ☐

Recommendation: ☐ Pursue Acquisition ☐ Defer ☐ Do not Pursue Acquisition

Map Attached: ☐ Yes ☐ No

WORKSHEET
Relative Priority Evaluation for Conservation Lands

Tract Name _____ Location _____

Criterion	Score (1-5) 5=Excellent 1=Poor
1. Augments existing protected lands by addressing an inholding or adjacent tract, provides key access, buffers or connects existing WRC-managed lands.	_____
2. Represents good hunting, fishing, wildlife viewing, and other resource-based recreational opportunities.	_____
3. No conflicting surrounding land uses.	_____
4. Serves as a wildlife corridor between areas already protected for conservation purposes and provides connectivity to priority Wildlife Action Plan habitats.	_____
5. Augments land conservation efforts on a landscape scale by providing nuclei ("anchors") for regional conservation efforts, corridors, key linkages between conservation areas, or keystone tracts.	_____
6. Fills a need identified by the Wildlife Action Plan, such as critical, rare or unique habitats; natural heritage elements; or significant aquatic/terrestrial resources.	_____
7. Is this an area in which we would like to establish a new game land, wildlife conservation area, or fishing access?	_____
8. Is it large enough to be a new game land, and if not, are there possibilities for expansion (goal 3,000-5,000 minimum)?	_____
9. Is area adequate for fishing access development with suitable parking, and if not, are there possibilities for expansion?	_____

TOTAL SCORE

North Carolina Wildlife Resources Commission
Land Acquisition Investigation Form

-PHASE II: FINAL ACQUISITION DETAILS-

WRC Action/Approval to Pursue (Date):

Acquisition Plan (specify total project cost, each source, and amount of OBLIGATED funds):

Based on Appraisal: ☐ Yes ☐ No

If Yes, Name of Appraiser:

Date of Appraisal:

Appraisal Handled by State Property Office: ☐ Yes ☐ No

Acquisition Plan Includes Bargain Sale: ☐ Yes ☐ No

If Yes, Explain Details:

Source(s) of Stewardship Funds (indicate federal:state match rates):

Five Year Stewardship Costs & Revenue Projection Evaluation (attach worksheet)

Five Year Estimate of Total Stewardship Expenditures:	$:	
Five Year Estimate of Total Projected Revenue:	$:	

Additional Comments:

APPENDIX XI – GAME LANDS USE EVALUATION PROCEDURE

North Carolina Wildlife Resources Commission
Game Lands Use Evaluation Procedure

I. PURPOSE

The North Carolina Wildlife Resources Commission (NCWRC) is the principal advocate for and steward of the wildlife resources of North Carolina and is the primary custodian of numerous tracts of state-owned lands in the Game Lands Program. As the human population of North Carolina continues to grow at a rapid rate, state-owned Game Lands will be subject to increasing pressure to provide public outdoor recreation opportunities. These uses will include traditional activities such as hunting, fishing, trapping, and wildlife viewing, as well as other outdoor recreation pursuits. While hunting, fishing, trapping and wildlife viewing are the primary public uses of state-owned Game Lands, the NCWRC has always allowed and supported other dispersed and non-developed recreational activities. The funding sources of the NCWRC, however, are focused on natural resources management rather than recreational development and there is no on-site staff stationed at each Game Land. Because of this, the NCWRC must exercise care in providing for recreational activities that may not be compatible with the natural resources for which the lands are valued and the primary management objectives of those lands. This document will establish a process to evaluate such activities as they are considered by NCWRC staff, or are requested by the public, on state-owned Game Lands where NCWRC is the primary custodian. These activities will first be evaluated to determine if they are "appropriate" and second to determine whether they are "compatible" with respect to the following management objectives of the Game Lands program:

1. To provide, protect, and actively manage habitats and habitat conditions to benefit aquatic and terrestrial wildlife resources,
2. To provide public opportunities for hunting, fishing, trapping, and wildlife viewing,
3. To provide for other resource-based game land uses to the extent that such uses are compatible with the conservation of natural resources and can be employed without displacing primary users,
4. To provide an optimally sustainable yield of forest products where feasible and appropriate and as directed by wildlife management objectives.

This document provides a statewide framework for determining appropriate uses of NCWRC-owned or controlled Game Land properties (NCWRC Game Lands). In addition, it provides the procedure for determining if appropriate uses are compatible on a particular property.

II. ENABLING LEGISLATION

Statement of Purpose NCGS § 143-239. The purpose of this article is to create a separate State agency to be known as the North Carolina Wildlife Resources Commission, the function, purpose, and duty of which shall be to manage, restore, develop, cultivate, conserve, protect, and regulate the wildlife resources of the State of North Carolina, and to administer the laws relating to game, game and freshwater fishes, and other wildlife enacted by the General Assembly to the end that there may be provided a sound, constructive,

comprehensive, continuing, and economical game, game fish, and wildlife program directed by qualified, competent, and representative citizens, who shall have knowledge of or training in the protection, restoration, proper use and management of wildlife resources. (1947, c. 263, s. 3; 1965, c. 957, s. 13)

III. APPLICATION OF PROCEDURE

This procedure must be considered within the context of the Game Lands Program Mission Statement (GLPMS):

> "Consistent with the original establishment legislation for the WRC, the mission of the game lands program is to enhance, facilitate, and augment delivery of comprehensive and sound wildlife conservation programs. Inherent in delivery of a lands program consistent with this mission is the feasibility and desirability of multiple uses on lands owned by the state within the system. In addition to hunting, fishing, trapping, and wildlife viewing as primary uses, we recognize the desirability of providing opportunities for other activities on state-owned game lands that are feasible and consistent with the agency's mission, and compatible with these traditional uses." (*From motion made December 5, 2007 by Doug Parsons, Chairman, WRC Use and Lands Committee and unanimously approved).*

This procedure applies to all proposed and existing recreational uses of NCWRC Game Lands. It does not apply to the following circumstances:

A. **Situations where reserved rights or legal mandates provide that certain uses must, or must not, be allowed**. For example, there may be prescriptive purposes or other uses that are specifically required or not allowed in the deed or grant that conveyed the property to the state.

B. **Property management activities**. Property management activities are specified in Federal Assistance Work Plans for lands NCWRC purchases or manages with federal assistance, and are updated every five years. These plans specify wildlife, fish, and forest management activities that are not subject to this procedure when conducted by NCWRC staff or an approved cooperator.

C. **Emergencies**. The Director (or a designee) may temporarily suspend, allow or initiate any use of a property if it is determined necessary to immediately act in order to protect the health and safety of the public or any plant, fish or wildlife population.

D. **Specialized uses**. There are many uses (most of them non-recreational) that require specific authorization from NCWRC in the form of a special use permit, letter of authorization or other permit document. Some of the specialized uses that may be considered include scientific research or collections, educational pursuits, field trial use, use of buildings or other facilities, rights-of-way and other encroachments, telecommunications facilities, military, national defense uses, and public safety training. Requests for specialized uses are covered by other NCWRC policies, procedures, or rule, and are subject to separate review procedures. (*See NC Administrative Code, Title 15A, Chapter 10, Subchapter 10D - Game Land Regulations, Rule .0102; General Statutes 113-264*).

E. **Other NCWRC properties.** The NCWRC owns and/or manages lands outside of the Game Land program (e.g., boat ramps and Wildlife Conservation Areas). The use and

management of those properties are covered by other NCWRC policies, procedures, or rule and are subject to separate review procedures. (*See NC Administrative Code, Title 15A Chapter 10, Subchapter 10E - Fishing and Boating Access Areas, Rule .0104; NC Administrative Code, Title 15A Chapter 10, Subchapter 10J - Wildlife Conservation Area Regulations, Rule .0102; General Statues 113-264*).

If a proposed use falls under one of the above five circumstances, it is exempt from review under this procedure. Any other Game Land use requests, whether originating from the public or from NCWRC staff, must be reviewed under this procedure and with consideration of the following guidance:

- **Natural resources-dependent recreational uses** (see definitions below), when compatible with each other, should be considered the priority general public uses of Game Land properties.
- **Other general public uses** that are not natural resources-dependent recreational uses as described herein, and do not contribute to the fulfillment of property purposes or goals or objectives, as described in the GLPMS, are lower priorities for consideration. These uses may conflict with priority general public uses, and may divert property management resources away from priority general public uses or from the responsibility of the NCWRC to protect and manage fish, wildlife, plants and their habitats. Therefore, procedure and practice have a general presumption against allowing such uses on Game Land properties. Regardless of how often they occur or how long they last, appropriateness and compatibility determinations for each use request must be made, as defined in Section V and VI of this procedure.

IV. DEFINITIONS

A. **Natural resources-dependent recreational use** is a use of a property involving: (1) hunting; (2) fishing; (3) trapping; (4) wildlife or other natural resource observation/ education.

B. **Property managers** are the officials employed by NCWRC who direct the management of a property, or the authorized representatives of such officials.

C. **Professional judgment** is a finding, determination or decision that is consistent with the principles of fish and wildlife management and administration, and that makes use of all available science and resources.

V. DETERMINING APPROPRIATE USE

A property use is appropriate if it meets Criterion A ***or*** if it meets all of Criteria B – F (and G, when applicable).

A. It is a natural resources-dependent recreational use of a property. These are: (1) hunting; (2) fishing; (3) trapping; (4) wildlife or other natural resource observation/education.

B. The NCWRC has jurisdiction over the use and, therefore, authority to allow or not allow the use.

C. The use complies with all laws and regulations (federal, state and local).
D. The use is consistent with NCWRC policies and objectives.

E. The use is consistent with public safety. *If the use creates an unreasonable level of risk to visitors or NCWRC staff, or if the use requires NCWRC staff to take unusual safety precautions to assure the safety of the public or other NCWRC staff, the use is not appropriate*.

F. Proceeds of revenue generating uses, by for-profit entities, will be provided to the NCWRC.

G. The use was evaluated under previous administrative review, was deemed inappropriate, and conditions have changed that would now make the use appropriate.

Property managers and other NCWRC staff shall consider the above criteria and complete Exhibit 1 (appended to this document) for each use subjected to the appropriateness test. The findings shall be forwarded to Regional Supervisors and through the chain of supervision to the Director (or a designee) for concurrence. This will serve to promote consistency in determining appropriate uses of NCWRC Game Lands.

VI. DETERMINING COMPATIBILITY

Uses that are determined to be appropriate for Game Land properties will then be evaluated for compatibility to determine if the use will be allowed, and under what conditions the use will be allowed on a specified property. Property managers are required to exercise professional judgment in making these determinations. Compatibility determinations are inherently complex and require the property manager to use field experience and knowledge of land management and of the property's resources, particularly its biological resources. When a property manager is exercising professional judgment, the property manager will use available information that may include consulting with others inside and/or outside the NCWRC. At a minimum, the property manager should consider the following questions.

A. Can the use be accommodated without substantially interfering with or detracting from the fulfillment of Game Lands program management objectives (see page 1, section I)?

B. Is the use compatible with the physical and natural resource characteristics of the property (e.g., topography, soils, plant communities, endangered species concerns)? *The use is generally incompatible if it has a high probability of causing erosion, or sedimentation, or disturbance of plant or animal resources.*

C. Is the use compatible with Natural Heritage Articles of Dedication, Clean Water Management Trust Fund (CWMTF) designations, and/or any deed restrictions or other legal limitations placed upon the property, including those specified for land purchased with Pittman-Robertson Wildlife Restoration Act funds?

D. Is there infrastructure present on the property to support the requested use (e.g., graveled

roads, parking areas, facilities)?

E. Is the requested activity not adequately provided for on other nearby public lands? *If a proposed use is available on other nearby lands, the NCWRC may not feel as strong an obligation to consider that use on Game Lands. Even if a use is not adequately provided for on other nearby public lands, the NCWRC still may not feel such an obligation, but should consider the unique nature of the request.*

F. Will the use necessitate facility, infrastructure development or maintenance and is this use manageable within available budget and staff? *If a proposed use diverts management efforts away from the proper and reasonable management of a property or natural resources-dependent recreational use, the use is generally incompatible.*

G. Will the use be manageable in the future within existing resources? *If the use would lead to recurring requests for the same or similar activities that will be difficult to manage in the future, then the use is generally incompatible. If the use can be managed so that impacts to natural and cultural resources are minimal or inconsequential, or if clearly defined limits can be established, then the use may be compatible.*

H. Is the requesting entity capable of providing any funding, labor, or materials for the development of, and maintenance support for, the activity, if applicable (e.g., trail or road maintenance, rehabilitation to areas that may be damaged by the activity)?

I. If a use is not compatible as initially proposed, can it be made compatible by implementing stipulations that avoid or minimize potential adverse impacts?

Property managers shall consider the above questions, and any other information or issues deemed necessary to make a determination based on professional judgment, and complete Exhibit 2 (appended to this document) for each property use subjected to a compatibility determination. The findings shall be forwarded to the Regional Supervisor and through the chain of supervision to the Director (or a designee) for concurrence. This will serve to promote consistency in determining compatible uses of NCWRC Game Lands.

VII. EVALUATION

The Director (or a designee) shall consider each request and the derived appropriateness and compatibility, and then make a determination as to whether the request will be approved or denied. The Director will forward use requests deemed significant in scope to the Commission's Use and Lands Committee, such as those involving: a) rule change, b) revenue generation, c) expenditure of NCWRC funds, or d) substantial alteration to infrastructure or natural resources.

All approved uses will be evaluated periodically by NCWRC field staff to determine whether such activities remain appropriate and compatible. All efforts will be made by field staff to inform participants of approved uses that issues of incompatibility will be grounds for immediate termination of the approved activity.

This is a living document that may be modified and updated as needed.

EXHIBIT 1
APPROPRIATE USE DETERMINATION

Property Name: _____

Requested or Considered Use: _____ _____ DECISION CRITERIA *(refer to section V)*	YES	NO
A. Is the use a natural resource-dependent recreational use of a property?		
If 'NO' above, then consider the following criteria.		
B. Does the NCWRC have jurisdiction over the use?		
C. Does the use comply with laws and regulations (federal, state or local)?		
D. Is the use consistent with NCWRC policies and objectives?		
E. Is the use consistent with public safety?		
(i). Is the requesting entity a non-profit? (ii). If NO to F(i), will any proceeds of the use be provided to the NCWRC? (*Describe for-profit entity and supply information on proceeds to be provided to the NCWRC in the Comments section below*)		
. If the use was evaluated under previous administrative review and deemed inappropriate, have circumstances changed that would now make the use appropriate? (*leave blank if not applicable*)		

APPENDIX XII – ARCHEOLOGICAL RESOURCES PROTECTION ACT

Archaeological Resources Protection Act North Carolina General Statutes Chapter 70, Article 2

This statute applies to all state-owned, occupied or controlled property except for highway rights-of-way.

The purpose of the statute is to provide for the protection of archaeological resources on state lands. Major provisions of the law are as follows:

1. Archaeological resources are defined as any material remains of past human life or activities which are at least 50 years old and which are of archaeological interest, including pieces of pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, rock paintings, rock carvings, intaglios, graves or human skeletal materials.
2. Permits are required in order to conduct archaeological investigations on state lands.
3. (The 1991 amendment to ARPA, effective July 1, 1991, transferred to the Department of Cultural Resources--from Department of Administration--the authority to issue permits under G.S. 70, Article 2.)
4. Information on archaeological site locations is exempted from unrestricted public access may result in damage to or destruction of the archaeological resources
5. All archaeological resources, equipment and vehicles utilized in conjunction with violation of the law are subject to forfeiture.

Prohibitions and penalties under the law are as follows:

1. No person may excavate, remove, damage or otherwise alter or deface any archaeological resource located on state lands without a permit.
2. No person may sell, purchase, exchange, transport, receive or offer to sell, purchase, exchange, transport or receive any archaeological resource excavated or removed from state lands in violation of the law.
3. Any person who knowingly and willfully violates or employs any other person to violate any prohibition of the law, shall upon conviction, be fined not more than $2,000 or imprisoned not more than six months, or both.
4. Each day on which a violation occurs shall be a separate and distinct offense.
5. Civil penalties may also be assessed against any person who violates the provisions of the act.

APPENDIX XIII – ARTICLES OF DEDICATION

North Carolina
Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

November 7, 2012

Secretary Dee Freeman
Department of Environment and Natural Resources
1615 Mail Service Center
Raleigh, North Carolina 27699-1615

Mr. Gordon S. Myers, Executive Director
N.C. Wildlife Resources Commission
1701 Mail Service Center
Raleigh, North Carolina 27699-1701

Re: Dedication of Portions of the **Whitehall Plantation Game Land**, Bladen County

Dear Secretary Freeman and Mr. Myers:

Pursuant to Article 9A, Chapter 113A of the North Carolina General Statutes, this letter of allocation is executed for the purpose of dedicating the State-owned lands hereinafter described as a North Carolina Nature Preserve

This real property is currently administered by the North Carolina Wildlife Resources Commission as a portion of the Whitehall Plantation Game Land and consists of approximately 1,438 acres located in Bladen County, composed of:

1)	Whitehall Plantation Game Land (Primary Area)	659 acres
2)	Whitehall Plantation Game Land (Buffer Area)	779 acres

all of which are specifically described in Exhibit A, attached hereto and by reference made a part hereof. The dedicated land shall be known collectively as the Whitehall Plantation Game Land Dedicated Nature Preserve.

Mailing Address:
1301 Mail Service Center
Raleigh, N.C. 27699-1301

Telephone (919) 807-2425
Fax (919) 733-9571
State Courier #51-01-00
e-mail: moses.carey@doa.nc.gov
An Equal Opportunity/Affirmative Action Employer

Location:
116 West Jones Street
Raleigh, North Carolina

Dedication of the qualified portions of the tract fulfills the terms of any prior grant agreements, including those of the Natural Heritage Trust Fund.

The Governor and Council of State have approved the dedication of the State-owned lands hereinabove described as the Whitehall Plantation Game Land Dedicated Nature Preserve to be held in trust by the Custodian for the uses and purposes expressed in the Nature Preserves Act at a meeting held in the City of Raleigh, North Carolina, on the 7th of August, 2012.

Sincerely,

Moses Carey, Jr.

MC

CONSENTED AND AGREED TO:

Secretary Dee Freeman
Department of Environment and Natural Resources

Gordon S. Myers, Executive Director
Wildlife Resources Commission

WHITEHALL PLANTATION GAME LAND
DEDICATED NATURE PRESERVE

DESCRIPTION

COUNTY: Bladen PHYSIOGRAPHIC PROVINCE: Coastal Plain

TOPOGRAPHIC MAP: Singletary Lake

SIZE OF AREA: ca. 1,438 acres (primary area 659 acres, buffer area 779 acres)

OWNER/ADMINISTRATION: State of NC, Wildlife Resources Commission

LOCATION: Southeastern portion of Bladen County, located on the northeastern side of the Cape Fear River, about 5 miles southeast of Singletary Lake. NC 53 bounds the tract on the northeast for about 2.1 miles, and the river bounds the tract on the southwest for roughly 2.5 miles (of river frontage).

DESCRIPTION: The western 45-50% of the tract lies within the Cape Fear River floodplain, whereas the remainder to the east lies essentially above the floodplain. This eastern portion has been converted to loblolly pine and slash pine plantations, with the latter being on the slightly drier and sandier soils. There are a number of logging tracks that crisscross the tract, and one of them extends to the river at Whitehall Landing. A track near the landing roughly parallels the river for about 1.2 miles.

The floodplain consists of several distinctive habitat types. Along the river and on several narrow ridges back from the river is the locally uncommon Coastal Plain Levee Forest community. This community contains bitternut hickory (*Carya cordiformis*), shagbark hickory (*C. ovata*), American elm (*Ulmus americana*), sweetgum (*Liquidambar styraciflua*), hackberry (*Celtis laevigata*), and some green ash (*Fraxinus pensylvanica*) in the canopy and subcanopy. Some box-elder (*Acer negundo*) is also in the subcanopy, and tall pawpaw (*Asimina triloba*) is a common small tree. The shrub zone is dominated by buckeye (*Aesculus* sp.), either red buckeye (*A. pavia*) or painted buckeye (*A. sylvatica*), but the plants were not seen in bloom on the site visits. The herb layer is quite distinct from that of the surrounding bottomland, as grasses and sedges are scarce. Instead, a low zone of poison-ivy (*Toxicodendron radicans*), cleavers (*Galium aparine*), violets (*Viola* spp.), and common chickweed (*Stellaria media*) is present, with some baby blue-eyes (*Nemophila microcalyx*) also present.

Perhaps the most common community is Coastal Plain Bottomland Hardwoods. Sweetgum, green ash, American elm, sycamore (*Platanus occidentalis*), and red maple (*Acer rubrum*) are common; sadly, Chinaberry (*Melia azederach*) is reasonably common also. Some swamp cottonwood (*Populus heterophylla*) is present. The understory is rather sparse, with box-elder, American hornbeam (*Carpinus caroliniana*), and a few other species present; tall pawpaw is quite numerous as a small tree. The shrub layer is depauperate, and one can easily see long distances through the forest. Shrubs include deciduous holly (*Ilex decidua*) and giant cane (*Arundinaria gigantea*), which is locally abundant. Away from the roads, grasses dominate the herb layer, and large numbers of butterweed (*Packera glabella*) are present. The scarcity of oaks in this community, coupled with the logging tracks, suggest that trees of this group were selectively harvested several decades ago.

The main "wet" community is Cypress-Gum Swamp, which lie in northwest-southeast bands between the Bottomland Hardwoods stands. In the wetter spots, solid stands of water tupelo (*Nyssa aquatica*) are present; otherwise, green ash and red maple are common, and there is some swamp cottonwood. Cypress (*Taxodium* sp.) is scarce. The understory contains some Carolina ash (*Fraxinus caroliniana*). Shrubs are scarce, and the herb layer contains much lizard's-tail (*Saururus cernuus*) and various sedges.

The fourth natural community in the floodplain is Coastal Plain Semipermanent Impoundment, with examples present at the southern end of the tract and the northwestern corner, and perhaps elsewhere. These open water areas, created by both man and beavers, have scattered trees that include Coastal Plain willow (*Salix caroliniana*) and cypress. Common greenbrier (*Smilax rotundifolia*) dominates the margins, and various sedges (*Carex* spp.) are present.

The tract is quite important for wildlife, especially birds. At the impounded areas, anhingas, great egrets, and great blue herons are present and are likely nesting, at least at the southeastern end of the tract. Good numbers of Swainson's warblers and worm-eating warblers, both Watch List species, are present and undoubtedly nesting. A total of 13 species of warblers were recorded on the site visits and are presumed to be breeding, with American redstarts and black-and-white warblers also being notable. The Significantly Rare eastern fox squirrel is present in the uplands. There are historical records, based on road-kills, of the State Special Concern pigmy rattlesnake and Significantly Rare coachwhip from the vicinity of NC 53; these snakes may still occur in the sandy pinelands.

Several Watch List plant species are present. Large numbers of hog plum (*Prunus umbellata*) occur in the pine plantations, and the sandhills milkweed (*Asclepias tomentosa*) is present in sandy soil near NC 53. Though the sandy areas have been altered by the pine plantations, a good variety of "sandhills" plants are present in the eastern half of the tract.

BOUNDARY JUSTIFICATIONS: The portion of the tract dedicated as a primary area includes the entire floodplain, and one or two tributaries extending eastward from the floodplain into the upland half of the tract. The remainder of the tract is dedicated as a buffer area. Nearly all of this buffer area exists at present as various ages of loblolly pine or slash pine plantations. A few small streams are included in the buffer area, as they are well to the east of the obvious division of the floodplain from the uplands.

MANAGEMENT AND USE: The tract will be managed to benefit wildlife and wildlife habitat, protect water quality and unique natural communities, and provide research opportunities and public recreation through hunting, fishing, trapping, wildlife observation, bird watching, and nature study. The N.C. Wildlife Resources Commission is expected to conduct restoration activities on altered sites. The primary altered sites are the pine plantations. Those on sandy soil (more than half of the stands) should be restored back to longleaf pine forest, which are presumed to be the original natural communities (Pine/Scrub Oak Sandhill and Xeric Sandhill Scrub) on these uplands. Portions of the pine stands are on somewhat damp soils, where pocosin shrubs/trees are growing beneath the pines. Such stands could either be converted to longleaf pine or simply left alone to be overtaken by hardwoods. At any rate, it is important to restore prescribed burning back to the upland stands, either before or after loblolly and slash pine removal, in order to provide a more lush and diverse herb layer for plant diversity and wildlife habitat.

Some consideration needs to be given to removal of Chinaberry trees in the floodplain. This exotic tree is quite numerous on the site, and failure to remove mature trees might allow seedlings to become common along the tracks and continue to spread. On the other hand, man-made ground disturbances in floodplains run the risk of allowing other exotics, especially Microstegium, Japanese honeysuckle, and privet, to spread. Alligator-weed is quite abundant at several of the impounded areas; this exotic should be monitored, and control may be needed if it crowds out open water in these ponds.

MAP: attached

THIS DEDICATION OF THE NATURE PRESERVE IS MADE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

1. As used in this Letter, the terms "natural area" and "nature preserve" shall have the same meaning as contained in North Carolina General Statutes, section 113A-164.3.

2. Pursuant to North Carolina General Statutes 113-164.8, all State-owned lands lying within the above designated area(s) are hereby dedicated as a nature preserve to be known collectively as the Nature Preserve (hereinafter "preserve") for the purposes provided in the North Carolina Nature Preserves Act, as amended, and other applicable law, and said State-owned land, shall be held, maintained, and used exclusively for said purposes.

3. **Primary Custodian**: The primary custodian of the preserve will be the North Carolina Wildlife Resources Commission, which will be responsible for managing the preserve in accordance with State Administrative Code 15A NCAC 12H.0300 and .0400.

4. **Primary Classification**: The primary classifications and purposes of the preserve will be conservation, nature education, wildlife management, hunting, fishing, trapping, and other recreational uses authorized by the Primary Custodian. The ecological significance of the preserve is described in Exhibit A.

5. **Management Areas:** For the purposes of management, the preserve shall be considered to consist of a Primary Area (approximately 659 acres) and a Buffer Area (approximately 779 acres), as more particularly described in Exhibit A, attached thereto and by this reference made a part hereof. The Primary Area consists essentially of the Coastal Plain Levee Forest, Coastal Plain Bottomland Hardwoods, Cypress-Gum Swamp, and Coastal Plain Semipermanent Impoundment natural communities and their associated rare animal and uncommon plant species.

   The Primary Area is deemed by the Secretary of the North Carolina Department of Environment and Natural Resources to qualify as an outstanding natural area under statutory criteria for nature preserve dedication (G.S. 113A-164.6) and further serves all of the public purposes for a dedicated preserve as stated in Administrative Rules 15A NCAC 12H.0301(b).

   The Buffer Area, which contributes to the management and protection of the Primary Area, consists of managed pine plantations.

6. **Rules for Management of the Primary Area(s)**:

   A. Character of Visitor Activity: The principal visitor activities in the preserve shall be hunting, fishing, trapping, walking, research, and observation. These activities shall be regulated by the Custodian to prevent significant disturbance of the preserve. These activities may specifically be regulated by the Custodian to protect and conserve the natural values of the preserve.

      Activities and uses unrelated to those listed above are prohibited except as otherwise provided in these Articles or unless necessary to carry out the purposes of the preserve. Prohibited activities include, but are not limited to: construction; commercial activities and development; commercial silviculture; agriculture and grazing; gathering of native species of plants or plant products; the removal, disturbance, molestation, or defacement of miner-

als, archaeological and natural resources, except for research purposes as approved by the Custodian; and those activities specifically restricted in these Articles.

There shall be no fires, except as necessary for ecological management of the preserve or in conjunction with supervised educational activities of the Custodian, or further excepted as herein provided or otherwise expressly permitted.

B. Consumptive Wildlife Uses: Hunting, fishing, and trapping shall be permitted on the preserve subject to regulations and management by the North Carolina Wildlife Resources Commission.

C. Orientation and Guidance of Visitors: The Custodian reserves the right to orient and guide visitors for educational programs, hunting and fishing uses, scientific research, and for preserve management. Exhibits, programs, and printed materials may be provided by the Custodian in service areas. The Custodian may restrict access to visitors in those instances or in such areas that restrictions may be determined necessary to safeguard sensitive environmental resources in the preserve.

D. Disturbance of Natural Resources: The cutting or removal of trees, dead or alive, or the disturbance of other natural resources is prohibited except as necessary for removal of hazards to visitors, control of disease or insect infestations that would damage or reduce the significance of the preserve, restoration after severe storm damage, trail clearance and maintenance, or for purposes of maintenance or restoration of natural communities or rare species populations as stipulated in the preserve management plan and that which is consistent with the purposes of these Articles. Salvage timber cuts which may be necessary due to natural catastrophe will be allowed in both Primary and Buffer Areas, but in a manner that will contribute to the recovery of the prevailing natural conditions of the forest and in consultation with the North Carolina Natural Heritage Program.

E. Wild Fire Control/Prescribed Burning: Wild fires may mimic natural processes historically occurring in an ecosystem on a landscape level. When the extent of a wild fire does not threaten human life or structures, it may be allowed to burn with minimal control. If wild fire control is necessary, firebreaks may need to be established. When possible, existing roads and firebreaks will be utilized for wild fire control. When new firebreaks need to be established, environmentally sensitive areas will be avoided when possible. Old firebreaks which affect the natural hydrology of wetlands will be filled and allowed to revegetate. Planning of firebreak restoration should occur in consultation with the North Carolina Natural Heritage Program.

F. Water Control: The purpose of water control shall be to maintain the preserve's natural water regime. Water levels that have been altered by man may be changed if necessary to restore the preserve to its natural condition. In a preserve with a long history of managed hydrology, water levels may be managed to perpetuate the ecosystems that have evolved around the hydrology or may be restored to natural condition. This decision should be made in consultation with the Natural Heritage Program. Millponds are an example of situations in which water levels have been historically managed.

G. Pollution and Dumping: There will be no storage or dumping of ashes, trash, garbage, hazardous substances, toxic waste, other unsightly or offensive material, or fill material, including dredge spoil in, on, or under the preserve. No underground storage tanks may

be placed within the preserve. No surface or ground waters of the preserve may have pollutants added within the preserve.

H. Control of Vegetational Succession: Control of vegetational succession may be undertaken if necessary to maintain or restore a particular natural ecosystem type or to preserve endangered, threatened, rare, or other unusual species. Controls will be done in the manner that best imitates the natural forces believed responsible for maintaining the natural ecosystem type, or that minimizes unnatural effects on non-target portions of the ecosystem. Prescribed burning is particularly essential to ecosystems where natural wild fire historically suppressed woody vegetation and promoted herbaceous diversity.

I. Control of Populations: Any control of animal or plant populations on the preserve shall be for the purpose of correcting those situations where those populations are significantly affecting natural conditions on the preserve, and in accordance with the Custodian's established regulations for hunting, trapping, or fishing of designated game animals. The Custodian may, in consultation with the North Carolina Natural Heritage Program, apply biological controls, herbicides and pesticides, and other means deemed necessary or appropriate to control or eradicate exotic or native species of plant or animal that are degrading the natural character of the preserve. Because of potential impacts on native species, no exotic flora or fauna shall be introduced into the preserve.

J. Research and Collecting Permits: Any person wishing to engage in scientific research requiring collecting or otherwise affecting anything within the preserve shall first secure written permission from the Custodian.

K. Roads and Trails: New roads shall not be constructed in the Primary Area. When necessary, the Custodian may construct and maintain access limited to staff use for management purposes, such as service paths (single lane vegetated paths) for patrol, right-of-way maintenance, and other management activities, within the Primary Area. Number and width of new paths will be minimized, and sensitive areas avoided when possible. Existing roads that occur within or form a boundary of the Primary Area may be maintained by grading of the roadbed, replacing culverts, or adding stone as needed in order to maintain the integrity of the road for vehicular use. Daylighting of roads within the Primary Area should be minimized, but may be used if necessary to maintain the condition of the road. Access management and construction will be part of the overall management planning process and will include consultation with the North Carolina Natural Heritage Program.

L. Other Structures and Improvements: Structures or facilities shall not be erected by the Custodian within a preserve, except as may be consistent with the purposes of the preserve as stated in this dedication. Site selection shall be consistent with this dedication.

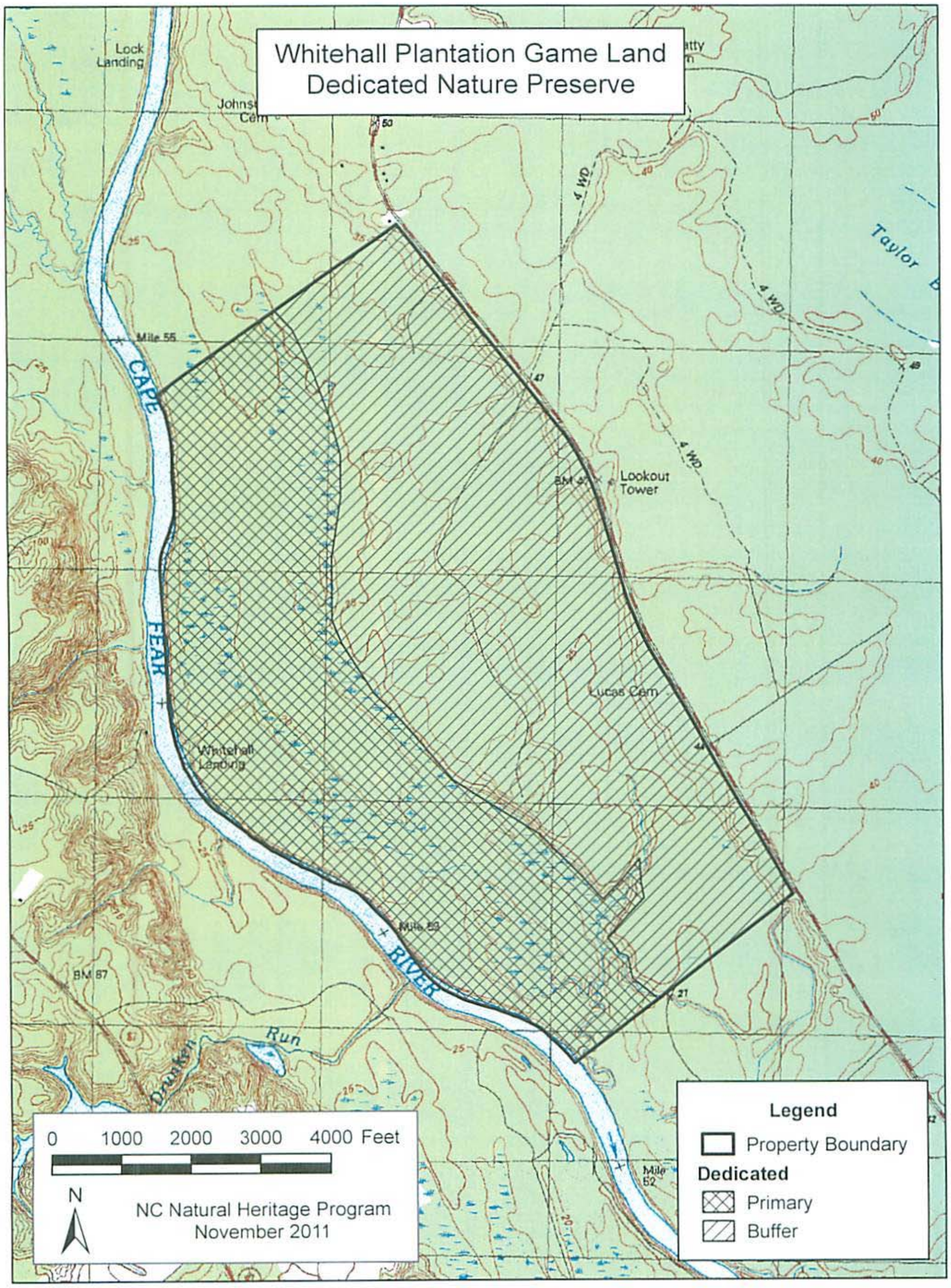
M. Management Plan: The **Wildlife Resources Commission,** as Primary Custodian of the preserve, shall develop a management plan for the broader managed area, including the preserve. This management plan should be subject to all the provisions of this dedication and with the management principles set forth in the North Carolina Administrative Code 15 NCAC 12H.0300 and .0400. In any case where contradictions may arise between this instrument of dedication and other management regulations, the terms of this dedication shall take precedence.

7. **Rules for Management of the Buffer Area(s)**: Primary area rules also apply except that additional forestry and wildlife management activities may be planned and carried out as needed. Construction and maintenance of roads, trails, and other access structures within buffer area(s) of the preserve will be limited to the level necessary to appropriately manage the preserve. These activities will be conducted in accordance with policy of the N.C. Wildlife Resources Commission and general management philosophy as outlined in Commission planning documents, in addition to providing for the buffer functions in relation to the primary area(s). WRC rules and guidelines require the protection and enhancement of wildlife populations and habitat so that hunting, fishing, trapping and other wildlife recreational opportunities are available to citizens of this State. Forest management is primarily conducted to enhance wildlife habitat.

   Buffer functions within the dedicated area may include protecting the primary area(s) from indirect detrimental ecological effects, providing additional area for species and ecological processes that require larger areas, and providing important successional stages and disturbance regimes and other habitat diversity for wildlife. Based on these general objectives, the following buffer functions will be addressed in the management plan.

   1) Landscape level function of community type and structure. (Buffer area management may involve timber harvest and other forms of stand manipulation, but will not involve forest canopy type conversion over more than limited areas, other than to restore stands to types suited for the site. Introduction of exotic species known to be invasive in natural communities will be avoided.)
   2) Maintenance of habitat connectivity and continuity among primary areas.
   3) Providing for habitat diversity.
   4) Management needs of rare animal and plant species populations occurring within the buffer area; and
   5) Protection of soil and hydrologic resources and processes within the primary area and extending into the buffer. (Buffers will be retained along streams, and watersheds of primary areas will be protected from hydrologic alteration.)

8. **Amendment and Modification**: The terms and conditions of this dedication may be amended or modified upon agreement of the Wildlife Resources Commission and Secretary of the Department of Environment and Natural Resources, and approved by the Council of State. Any portion of the tract dedicated pursuant to this instrument may be removed from dedication in accordance with the provisions of North Carolina General Statutes 113A-164.8.


Whitehall Plantation Game Land
Dedicated Nature Preserve
Lock Landing
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CAPE
FEAR
RIVER
Whitehall Landing
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NC Natural Heritage Program
November 2011
Legend
Property Boundary
Dedicated
Primary
Buffer

APPENDIX XIV – SUMMARY OF PUBLIC INPUT

As part of the creation of the Whitehall Plantation Game Land Management Plan, public input was solicited during April and May of 2014. With the idea that the Plan will address all current and potential issues, public input was sought to identify the concerns, desires, and needs of game land users and all interested parties. In order to achieve this, Management Biologists and Supervisory Staff created a series of seven (7) questions that encouraged people to comment on their level of satisfaction, concerns, and desires in relation to WRC game lands. Three methods were used to gather comments; public input meetings, an online comment session, and via email. Public comment was received online and through email from 1 April to 15 May 2014. The public input meeting was held on 8 April 2014 in the auditorium on the campus of Bladen Community College. The following is a summarization of comments received.

SUMMARY OF RESULTS

1. What habitats do you think are most important to protect and/or improve on this game land?

1 comment was received in regards to Question 1. This comment expressed interest in protecting or improving habitat beneficial to game animals, *i.e.* waterfowl, deer, turkey, and small game and stated that habitats should be addressed individually for the game that utilized each cover type.

2. Considering those that live on land and in water, what species do you think are most important to protect and/or improve on this game land?

1 comment was received in regards to Question 2. This comments stated that waterfowl, deer, and turkey were most important to protect and/or improve on Whitehall Plantation. It also stated that deer dog hunting should be eliminated and still hunting should be the only method of hunting deer on this property.

3. How do you use this game land?

2 comments were received in regards to Question 3. One comment stated that they used it for hunting deer and small game. The other comment stated that they used it for waterfowl and turkey hunting.

4. Please explain why you think the current level of access is or is not satisfactory on this game land?

2 comments were received in regards to Question 4. Both comments stated that the current level of access was satisfactory. One comment expressed a desire to improve the hunter campground in some manner.

5. *What suggestions, if any, do you have for changing how this game land is managed and maintained?*

2 comments were received regarding Question 5. One comment stated that they would like to see a week-long permitted hunt for black bears with a cost of $100.00. The other comment stated that planted wildlife openings, an emphasis on longleaf pine management, more management of mast producing hardwoods, and better management of edges are changes they would like to see.

6. *What would encourage you to start using the game land, or to continue using it more actively?*

2 comments were received regarding Question 6. One comment stated that better habitat management, planted wildlife openings, and conversion of loblolly pine stands to longleaf pine would encourage them to start using the game land more. The other comment elaborated on their minimal use of the property and alluded to the fact that the low deer population and dog deer hunting on the property deters them from using it more often.

7. *What additional comments do you have regarding this game land?*

2 comments were received in regards to Question 7. One comment requested that we keep it as a permit only game land and the other stated that they would like information about timber management activities in advance of their implementation.

1. *What habitats do you think are most important to protect and/or improve on this game land?*

Source of Input	Comment
Online	Whitehall is unique. As a Soil Scientist I see it has wetlands for waterfowl, lowlands for multiple species and sandy uplands for turkey, deer and small game/gamebirds. These areas should be address individually for the game that naturally utilizes them. I see potential for open field food plots as well.

2. *Considering those that live on land and in water, what species do you think are most important to protect and/or improve on this game land?*

Source of Input	Comment
Online	Waterfowl, turkeys and quail. Deer will adapt to any of the above habitat. I would encourage that deer hunting be limited to stand hunting only-no dog hunting.

3. *How do you use this game land?*

Source of Input	Comment
Online	I Use Whitehall For Bow Hunting Deer And Muzzleloading For Deer. I Also Hunt Small Game Squirrel And Rabbits.
Online	My family originated in Bladen Co. and I still have relatives there. I have used it for both waterfowl and turkey hunting for the past 3-4 years.

4. *Please explain why you think the current level of access is or is not, satisfactory on this game land?*

Source of Input	Comment
Online	I belive the current access IS adequate. The only proposal I would make is perhaps to improve the camping area in some manner. I fear to much access will only serve in the misuse and destruction of the gameland. Any additional access should only be granted to disabled hunters who wish to use the gamelands.
Online	When I Hunt At Whitehall I Always Stay In The Camping Area Because I Live Out or Town. Im Happy With Camping The Area, All The Roads Are Kept Up Well. Access By Walking Beyond The Gates Is Easy, All The Access Is Very Satisfactory To Me!

5. *What suggestions, if any, do you have for changing how this game land is managed and maintained?*

Source of Input	Comment
Online	The Last Few Years During Early Bow Season, ive Seen A Good Amount Of Black Bears Lots Of Cubs A Few Years Back, But They Are Grown Now. I Would Love To See A Lottery Draw For Bear With Only 2:One Week Long Permits Awarded. To Apply For The Permit It Should Be At The Cost Of $100.00, That Way Only Hunters That Apply And Are Rewarded Will Use The Permit Do To The High Cost And Not Just Apply Just Because. I Think The Bear Population At Whitehall And The Surrounding Private Land Is Stable Enough To Support The Harvest Of One Or 2 Bears Per Year.
Online	As a soil scientist, I see 3 unique "geographies" at Whitehall. Wetlands, lowlands, and sandy uplands. These should be managed separately. The wetlands, of course, should be managed for waterfowl. The only improvements I can see would be to include some planting (if possible)for waterfowl. The lowlands are presently in pine/hardwood. Encourgement of the hardwoods will produce mast trees and therefore, wildlife. Sandy uplands would be great for open field food plots and game birds if managed so. Presently in loblolly pine. Encourge long leaf and mast producers. This kind of plan makes several "edge effect" habitats.

6. *What would encourage you to start using this game land, or to continue using it more actively?*

Source of Input	Comment
Online	Improvements that would enhance the habitat of the natural game in the area. Converion of some of the loblolly pine to open field, long leaf pine, and hardwoods.
Online	Right Now I Hunt About One Week during Bow Season One Week For Muzzleloader And Maybe A Total Of 8 To 10 Days For Small Game. I Don't Apply For Gun Hunts Because I Don't Want to Hunt Around Dog Hunters. The Deer Population Is Very Low At Whitehall, I Enjoy Hunting There, But don't Spend Much Time At Whitehall, Because Of The Low Population Of Deer.

7. *What additional comments do you have regarding this game land?*

Source of Input	Comment
Online	Keep it as a permit only gameland.
Online	Information about the logging operation would be nice to have in advance.