

# **AN INVENTORY OF THE SIGNIFICANT NATURAL AREAS OF CHATHAM COUNTY, NORTH CAROLINA**

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Cover photograph: Haw River in Chatham County, by Merry Conlin.



## ABSTRACT

This inventory of the natural areas, biological communities, and rare species of Chatham County was funded by the Chatham County Government, planned in collaboration with Chatham County and Triangle Land Conservancy, and completed by the North Carolina Natural Heritage Program (NCNHP). This inventory identifies the most ecologically significant natural areas in the county, describes their features, and documents all natural communities and rare species of plants and animals associated with identified natural areas. Habitat conditions, natural processes, and protections are also described. The inventory is intended to provide support for land use decisions by county, state, and federal governments; conservation and land management organizations; and interested landowners and residents. Ecological field surveys were carried out by Merry Conlin of the North Carolina Natural Heritage Program during 2024 and 2025. Approximately 500 tracts were considered for surveys, based on existing ecological information or nomination from local residents and partners. Four hundred and thirteen landowners were contacted by NCNHP and Chatham County to request permission to survey. One hundred and seventy-two landowners granted permission for surveys (including public lands and privately owned nature preserves). One hundred and twelve tracts were surveyed by NCNHP staff in 2024-2025, and 56 natural areas of ecological significance were determined to qualify based on criteria established by the North Carolina Natural Heritage Program. Of these, six natural areas were newly described and 13 were expanded during surveys for this report. Some of the highest priority natural areas for conservation include aquatic habitats that support populations of animals that are endemic to the Cape Fear drainage in North Carolina, such as Deep River-Rocky River, Haw River and Upper Cape Fear Aquatic Habitats. Other high priority natural areas include two western sites: Ore Hill and Donnelley Hardpan. Both contain state and globally rare natural communities, a Xeric Hardpan Forest (Acidic Hardpan Subtype) and Upland Pool (Typic Piedmont Subtype), respectively. Two eastern sites are also rated with Exceptional significance. Moncure Boggy Streamheads contains the only known occurrence in the county of bog spicebush (*Lindera subcoriacea*). The Lower Deep River Slopes site is recognized for supporting ten natural communities and two rare plant species.

## ACKNOWLEDGMENTS

Many individuals and agencies contributed to the planning, progress, and completion of this inventory. Stephen P. Hall and Marjorie W. Boyer wrote the original Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina in 1992; much of the information included in this report is based on information originally provided by them. Their work has proven an indispensable foundation for conservation targets and successes.

I am particularly indebted to the following public agencies and personnel: Chatham County Commissioners approved funding for the 2024-2025 inventory, and Chatham County government staff with particular thanks to Brandon Dawson, who coordinated the County's support of the project, as well as Chance Mullis, Jason Sullivan, Hunter Glenn, Dan Garrett, Paula Phillips, Kim Tyson, Angela Plummer, Anne Lowry, and James Tiger, for their efforts in securing the project funding, assembling outreach materials, and identifying contact information for landowners. I am grateful to staff with the U.S. Army Corps of Engineers, NC Wildlife Resources Commission, and NC Division of Parks and Recreation for assisting with site identification and access to the county's public lands. For technical advice, data, editorial assistance, and more, I am grateful to the staff of the NC Natural Heritage Program, both past and present. I would particularly like to thank Stephanie Horton, Misty Franklin, Linda Rudd, Judy Ratcliffe, Laurie Hamon, Mike Schafale, Mitch East, Kayla Christianson, David Siripoonsup, Scott Pohlman, Andy Walker, Jame Amoroso, and Nathan Shepard.

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# INTRODUCTION

## Objectives

The primary objective of the Chatham County Natural Areas Inventory is to identify places of outstanding ecological significance. These natural areas contain the best remaining examples of natural habitats and/or locations of rare plants, animals, and natural communities in the county. A natural area designated by the Natural Heritage Program is an area of land or water identified as having special importance for the preservation of the natural biodiversity of North Carolina. Biodiversity is generally recognized in the scientific community to refer to the diversity not only of species but also of natural communities and ecosystems, as well as of genetically distinct populations below the species level. Each natural area contains one or more occurrences of a rare plant or animal, or a rare or high-quality example of a natural community. An inventory may lead to conservation of these important resources through recommendations for management and protection of the sites and the rare species locations.

Natural areas are critical for recreational, aesthetic, cultural, educational, scientific, and environmental health values. Natural areas are resources that make the state and its counties attractive to live in and to visit. They also include wildlife corridors along streams and rivers, as well as corridors of intact natural habitat that link upland areas. They can also play significant roles in groundwater recharge, pollution abatement, providing natural resilience to flooding and natural disasters, and storing and sequestering carbon. Natural areas are reservoirs of biological diversity; sanctuaries for native plants and animals; and key resources for educational, recreational, hunting, and fishing activities. With increasing population growth and land development in all parts of North Carolina, it is urgent that areas of outstanding natural significance be identified and that efforts be made to protect these sites for posterity through willing cooperation of landowners.

This report begins with a brief overview of how the inventory was conducted, a description of the county's environmental features, and a discussion of the natural communities, rare plants, and rare animals documented during the inventory. This is followed by a description and map of each natural area inventoried. The natural area descriptions include all natural communities and rare species found at each site.

## Methods

The methods employed in this inventory follow guidelines established by the North Carolina Natural Heritage Program (NCNHP). NCNHP maintains the state's primary inventory and database for rare plants, rare animals, high-quality plant communities, outstanding natural areas, and lands managed for conservation. The focus of the current inventory is the identification and description of important natural areas and high-quality natural communities in Chatham County.

The Chatham County Inventory Update was initiated in the spring of 2024 and the author carried out the majority of the field work during that year, with some follow-up site visits conducted in 2025. This inventory begins with existing data on natural communities and rare species maintained by NCNHP and other agencies. This inventory is unique in that it updates the survey completed by Hall and Boyer (1992). These data provide a framework or background that suggests where to look for natural communities and other flora and fauna. Potential survey areas were determined by NCNHP staff in consultation with local resource professionals and organizations such as Chatham County and Triangle Land Conservancy staff, as well as many of the individuals cited in the Acknowledgments section and nominations from local residents. Survey areas were selected from a review of U.S. Geological Survey topographic quad maps, remote imagery, geological and soil maps, and based on information collected during previous surveys of the county's natural areas. Public and private lands were visited after landowner permission was obtained. Some areas that were nominated for survey because of their "signature" on an aerial photo indicating their *likelihood* as

natural areas were not surveyed due to time constraints. There is little doubt that new high-quality natural areas will be found over time as formerly inaccessible or unknown sites become available for study.

Approximately 500 tracts were considered for surveys, based on existing ecological information or nominations from local residents and partners. Four hundred and thirteen landowners were contacted by NCNHP and Chatham County to request permission to survey. One hundred and seventy-two landowners granted permission for surveys (including public lands and privately owned nature preserves). One hundred and twelve tracts were surveyed by NCNHP staff in 2024-2025, and 56 natural areas were determined to qualify for inclusion in the statewide natural heritage inventory and this report. Of these, six natural areas were newly described and 13 were expanded during surveys for this report.

Plants were identified using Weakley (2024). The state and federal status of rare plants derive from Walker et al. (2024). No animal surveys were conducted by Natural Heritage Program biologists as part of the county inventory update. However, observations of rare animals from other sources were included when they were provided. The state and federal status of rare animals derive from Ratcliffe et al. (2024). Natural communities were identified using Schafale (2024). Natural areas were mapped to include the most ecologically significant natural features observed during field visits, and site boundaries were derived from field surveys using GPS in combination with topo map and aerial photography interpretation. Some previously delineated site boundaries were expanded by the author, reflecting the results of recent field visits. After all the sites were inventoried, they were ranked according to a prescribed formula established by the NCNHP and documented in this report.

Invasive exotic species impose negative impacts on native plants, animals, and the natural systems on which they depend, as well as having negative effects on human health, recreational opportunities on land and in the water, and drinking water sources (Pimental et al. 2000). The presence of invasive exotic species was noted during the inventory and is included in the natural area descriptions as appropriate for facilitating removal or prevention of invasion. However, the primary purpose of the inventory was to identify notable natural areas; identification of invasive species is incidental and not comprehensive. Areas with extensive invasions are excluded because they do not qualify as natural areas.

Criteria used to determine the significance of natural areas include the quality, rarity, and significance of natural community types and rare species as well as the overall integrity of the site and surrounding areas. The significance of the natural areas in the county was rated from a statewide perspective as Exceptional, Very High, High, Moderate, or General using a rating system developed by NCNHP (for more information see the Evaluation of Site Significance section). For sites that merit recognition as natural areas, natural communities and rare species are described using report formats developed by the NCNHP. Updated site boundary and rare species locational information is maintained in a Geographic Information System (GIS). The information is also kept at the Center for Geographic Information and Analysis (CGIA) in Raleigh. Data records for each site, as well as each natural community and rare species occurrence, are retained in the Biotics database at NCNHP headquarters in Raleigh.

## **DESCRIPTION OF THE STUDY AREA**

Chatham County is located on the eastern edge of the Piedmont ecoregion and near the center of the state (Figure 1). The county is bordered by three counties to the north—Alamance, Orange, Durham—and adjoins Randolph and Wake to the west and east, respectively. In the south, Chatham is bordered by Moore, Lee, and Harnett counties. The elevation ranges from 774 feet above sea level in Silk Hope to 150 feet along the Cape Fear River. The county encompasses a total area of 708.7 square miles (approximately 453,312 acres) (US Census Bureau 2021).

Major roads that cross Chatham County include US 15-501 and US 64 which cross the county north-south and east-west respectively. US 421 runs southeast and joins US 1 which crosses the county in the southeast (Figure 1). Chatham County population is rapidly growing, at the 36th most populous in the state, with 76,285 inhabitants documented in 2020 (US Census Bureau 2021). Siler City, the largest town in the county, had 7,702 residents in 2020 (US Census Bureau 2021).

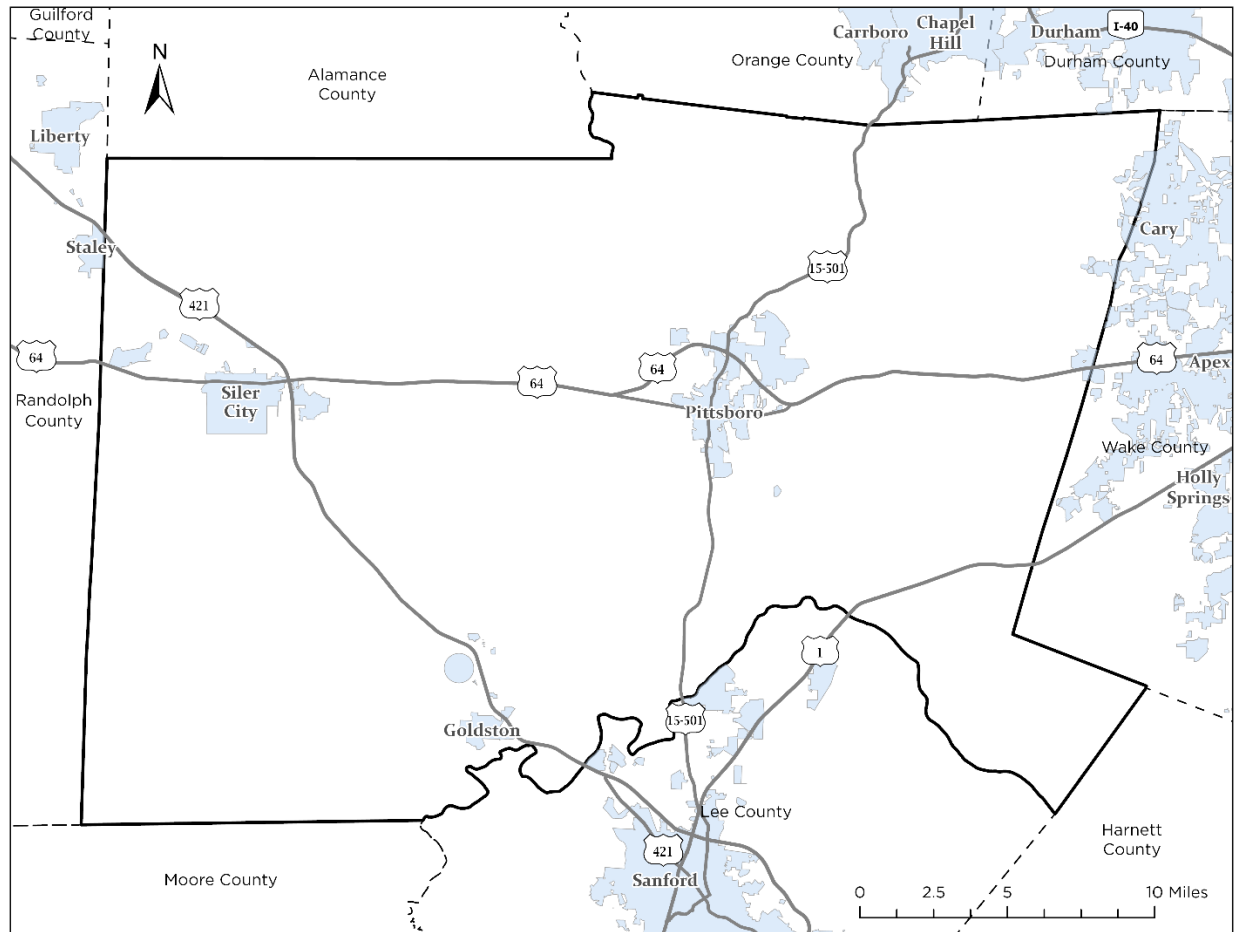


Figure 1. Towns, Roads, and Neighboring Counties of Chatham County, North Carolina.

## Climate

*Adapted from Hall & Boyer (1992)*

On a regional to continental scale, climate is the main abiotic factor shaping biogeography. Although influenced by topography, particularly elevation, variations in moisture and temperature directly determine what sort of biome an area will support. Although slight differences in average temperature or moisture might not seem to be sufficient to make any great difference in terms of community composition, they may make a profound difference during times of stress. During periods of drought, extreme cold, or prolonged rainy spells, organisms inhabiting wetter, warmer, or drier topography might be able to hang on long enough for the climate to revert to normal.



Unlike topography and geology, which change extremely slowly (in human terms), one of climate's significant characteristics is its variability through time. This is illustrated not only in the fairly predictable changes in season or the more random droughts and stormy periods mentioned above, but also in longer-term alterations in annual temperature and rainfall. This adds an important historical aspect to biogeography: in order to understand the present distribution of a region's fauna and flora, it is not enough to simply understand contemporary environmental conditions; the past sequence of environments must also be considered.

Chatham County receives an average of 45.9 inches of precipitation annually as recorded in Siler City (NC Climate Office 2020). This is similar to trends in surrounding counties in the Triangle. Snowfall is minimal, averaging 1.5 inches annually (NC Climate Office 2020). The overall climate is characterized by temperate winters and warm summers. The mean annual temperature is 59.4°F with a mean spring temperature of 58.8°F and a summer mean of 76.8°F (Palecki et al. 2021). Comparisons of the last two sets of climate normals (1981-2010 and 1991-2020) (Palecki et al. 2021), suggest the Piedmont has become slightly wetter, with wetter springs, and increased annual temperatures of 0.5–1°F.

The North Carolina Climate Report projects that by the end of this century, the average temperature of the NC Piedmont is likely to increase by about 2–6°F. On average, the Piedmont region sees about 13 days per year at or above 95°F (Kunkle et al. 2020). By the end of the century, it is likely that the number of very hot days will increase by 9–52 under lower carbon emissions scenario and even more under higher emissions scenarios, compared to the 1996–2015 average. Occurrences of cold days (maximum temperature of 32°F or lower) are relatively infrequent in the Piedmont Region, with just over 2 days per year on average; by the end of the century, climate models project that the annual number of cold days will be at or close to zero under both high and low emissions scenarios (Kunkle et al. 2020).

## **Topography and Physiography**

*Adapted from Hall & Boyer (1992)*

Chatham County is situated on the eastern edge of the Piedmont Physiographic Province. The Fall Line, dividing the Piedmont from the Coastal Plain, lies only a few miles east and south of the county border. Most of the landscape of this region consists of gently rolling terrain, broken occasionally by v-shaped river valleys and by scattered monadnocks—steep, isolated hills rising sharply above the surrounding terrain.

Apart from the monadnocks and river valleys, the prevailing landscape of the county, like most of the Piedmont, consists of gently rolling hills. The highest terrain occurs in the northwest where much of the land lies above 600 ft in elevation. The highest points in the county are also found in this region: two hills located near the Alamance County line north of Silk Hope stand at 760 ft and 774 ft. The lowest elevation, conversely, is found at the extreme southeast corner of the county, where the Cape Fear River makes its exit downstream from Buckhorn Dam; the elevation at this point lies below 150 ft. This general drop in elevation from northwest to southeast is well illustrated by the course of two of the rivers that run through the county, the Haw and Rocky Rivers. Sharply departing from this elevational trend, however, are scattered monadnocks such as Collins, Terrells, and Edwards Mountains, all located in the northcentral and northeast part of the county.

On a still more local level, variations in topography exert some of their main effects on biogeography by producing slightly different micro-climates from site to site. South-facing slopes support more xeric habitats than usual, due to their more direct reception of the sun's rays. The vegetation on such sites characteristically includes such xerophytic species as post and blackjack oak, huckleberries, and St. John's wort. North-facing slopes are conversely more mesic than normal and include a higher proportion of mesophytic species such as beech, northern red oak, and numerous wildflowers.

## **Waterways of Chatham County**

*Adapted from Hall & Boyer (1992)*

Chatham County's waterways are defining features in several ways. Situated at the confluence of the Haw and Deep Rivers, Chatham contains branches of two of the most important rivers in the Piedmont and gives birth to the Cape Fear River, itself one of the most important rivers in the entire state (Figure 2). In addition to these major rivers, the county is also drained by the Rocky River, a smaller drainage but one whose basin lies almost completely within Chatham County. New Hope Creek was impounded in 1981 to create the B. Everett Jordan Lake, a sprawling reservoir (USACE n.d.). Chatham thus possesses a wealth of riverine habitats, including deep water pools, extensive riffles, islands, and levees, all of which are found only along larger streams. While not exactly rare, these habitats are restricted in their distribution in the state as a whole and represented in most counties to a far lesser extent than in Chatham.

Many of the natural areas in the county are located within the valleys of the Haw and Rocky Rivers or in the ravines and floodplains of their tributaries. This distribution is partly accounted for by the fact that the steep slopes and wet bottomlands along these streams have historically escaped cultivation and most other human uses except for occasional timber harvest. Equally important, the more varied topography of the ravines and river valleys favors the occurrence of natural communities that differ from those prevailing over most of the county. For example, the plants and animals living on steep, north-facing river bluffs or ravine slopes tend to show strong affinities to communities more typical of the Blue Ridge than the Piedmont. Conversely, organisms found on south-facing slopes often show more southerly or Coastal Plain affinities. In either case, these communities are fairly restricted in their distribution and often contain species that are quite rare within the region as a whole.

These riparian communities are some of the richest habitats in the area. The presence of rare species of aquatic animals raises several of the Aquatic Habitats to Exceptional significance. Again, topography plays a major role in explaining the prominence of these aquatic communities. Unlike the case of most terrestrial species of the Piedmont, which have no major geographic barriers to their dispersal throughout the entire Atlantic Slope of North America, the aquatic species inhabiting the rivers within this region occur in isolated populations. For the most part, the rivers of the Atlantic Slope empty separately into the sea and form a ladder-like arrangement of drainage basins all the way from Florida to New Brunswick. For completely aquatic species, such as fish, mollusks, and a few amphibians, dispersal among river basins takes place extremely seldom, primarily by means of stream capture. As a result of this long isolation, many species have evolved into completely new forms unique to particular river systems. One well-known example is the Cape Fear shiner, a minnow found nowhere else on earth but the Cape Fear River and streams in the vicinity of the Fall Line in Chatham, Lee, Johnston, Harnett, and Moore Counties.

The ecological importance of Chatham County's waterways is further discussed in the Results and Discussion and Aquatic Species sections of this report.

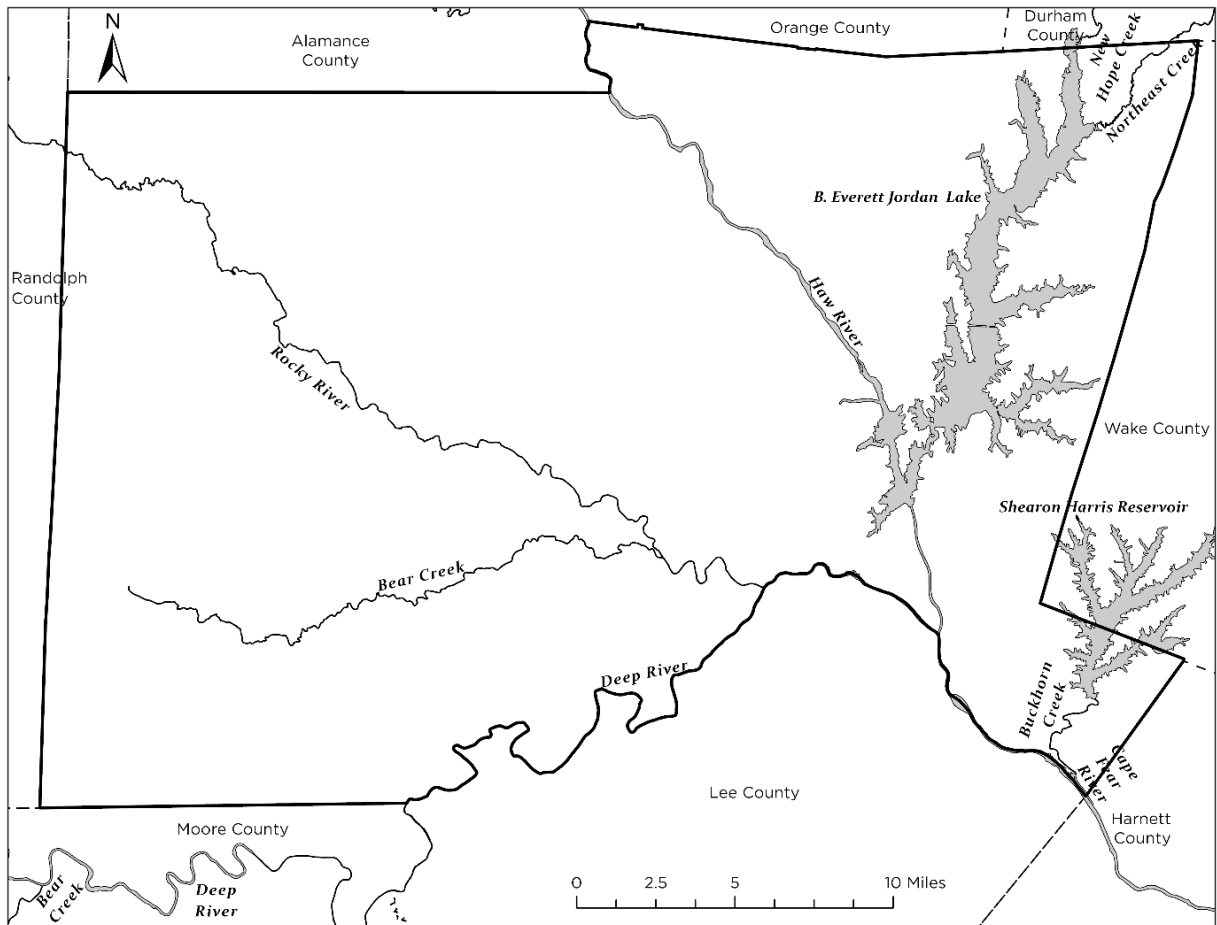


Figure 2. Principle Waterways of Chatham County, North Carolina.

## Geology of Chatham County and Surrounding Areas

*Prepared by: Philip J. Bradley Piedmont Geologist, NC Geological Survey*

### Introduction to the Geology of Chatham County

The rocks of Chatham County are very old and tell of hundreds of millions of years of geologic history. The rocks have not changed, but the geologic map and interpretation of the rocks have changed with new research and data collection. The geologic understanding of Chatham County remained relatively unchanged from the 1985 State Geologic Map (NCGS 1985) until the 2000's when the North Carolina Geological Survey (NCGS) began detailed mapping within the county. Yearly, individual 1:24,000-scale (detailed) geologic maps were published culminating with the completion of the compiled geologic map of Chatham County in 2022 (Bradley 2022).

For site specific information on the geology of an area, the individual 1:24,000-scale maps are the best available data source; however, some of the unit names on the individual 1:24,000-scale geologic maps are different from the compiled geologic map of the whole county. In most cases the general unit description has not changed; only the interpretation of the stratigraphic placement has changed. When conducting a site specific investigation, both the 1:24,000-scale maps and the compiled county map should be reviewed. As of 2025, the NC Geological Survey is completing additional modifications to the geologic map of the area. This map will be available as an NCGS open file report titled *Bedrock Geologic Map of the Chapel Hill*



100K. For general and nontechnical geologic history information, see *A Geologic Adventure Along the Eno River* (Bradley 2007) and *Exploring the Geology of the Carolinas* (Stewart and Roberson 2007).

## **Geologic Setting**

Chatham County and surrounding areas are underlain by four major geologic elements (Figure 3). They are, from west to east: Carolina terrane (aka Carolina slate belt), Deep River Triassic basin, the easternmost Carolina terrane, and small areas of Coastal Plain sediments. Coastal Plain sediments overlay units within the easternmost Carolina terrane in Chatham. Older alluvium deposits are present along major drainages in addition to modern floodplain deposits.

## **Simplified Geologic History of Chatham County**

The rocks of Chatham County record a long, sometimes violent, and complicated geologic past with many different episodes of volcanic activity that span millions of years. The geologic history of Chatham County began more than half a billion years ago, when, far away from ancient North America, a chain of volcanic island—known as a volcanic island arc—was forming. Multiple generations of volcanoes were actively erupting billions of tons of ash and other volcanic debris over millions of years. Fast-forward to many millions of years later, the island arc that Chatham County was part of underwent a new phase of volcanism. The volcanic periods of Chatham County are represented by rocks of the Carolina terrane and Easternmost Carolina terrane (Figure 3).

Later, the volcanic island arc rifted away (broke apart) from the ancient continent of Gondwana and slowly made its way across an ancient ocean toward an imminent collision with North America around 450 million years ago. Approximately 300 million years ago, the ancient African continent collided with ancient North America, forming the supercontinent Pangea. During the Triassic period, beginning about 245 million years ago, Pangea split apart, forming a system of rift-valleys up and down the eastern edge of North America. In Chatham County, rocks of the Deep River Triassic basin were deposited (Figure 3).

Approximately 200 million years ago, magma intruded the rocks and formed the multitude of dikes and sills of the rock type known as diabase found throughout the Piedmont and Chatham County. As Pangea continued to split apart, the continents we know today took their shape and the Atlantic Ocean was born. The great mountain range formed from the collision of ancient North America and Africa was eroded away. Its sediment was deposited on the newly formed Atlantic coastline, creating the sedimentary deposits of the Coastal Plain. Small erosional remnants of Coastal Plain sediments are present in eastern Chatham County (Figure 3). Millions of years of subsequent uplift and erosion slowly formed the landscape visible there today.

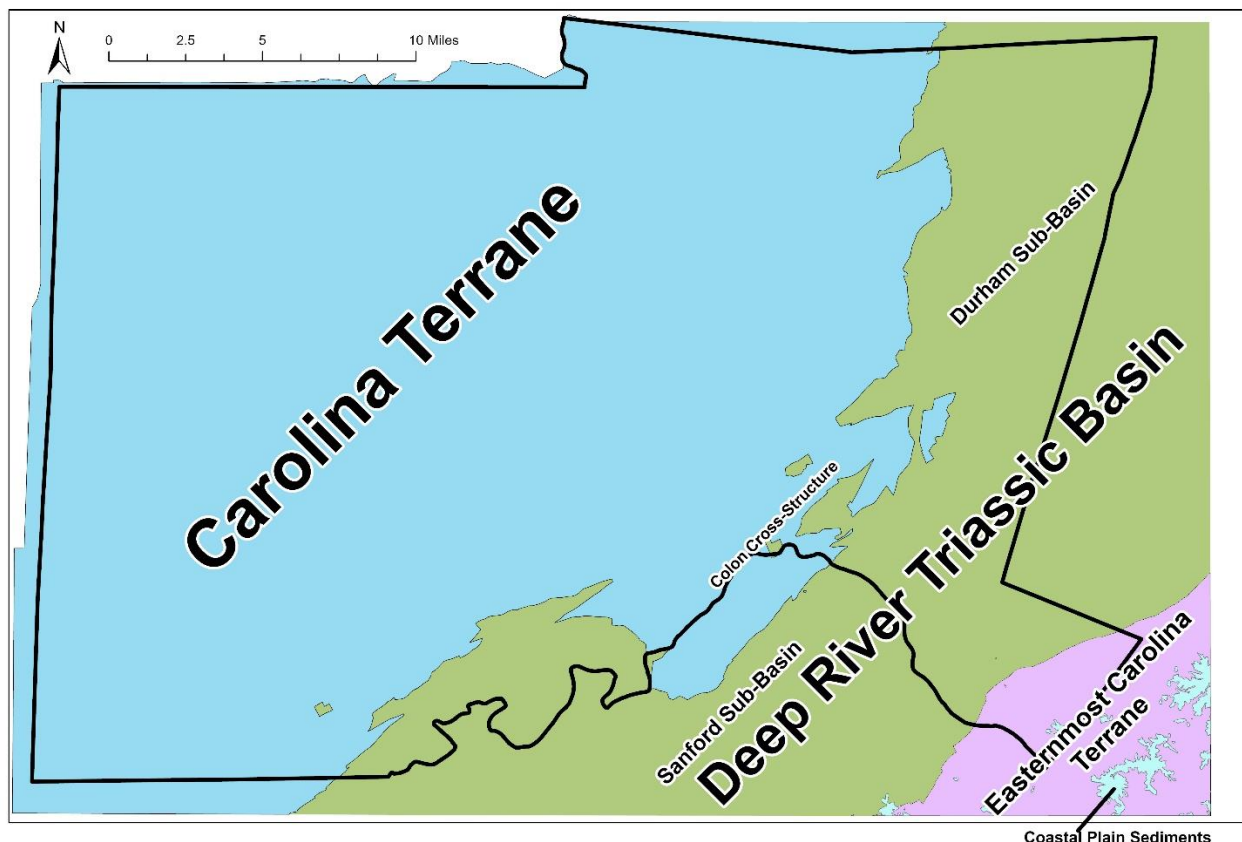


Figure 3. Major Geologic Elements Present in Chatham County and Surrounding Areas: Carolina Terrane, Deep River Triassic Basin, Easternmost Carolina Terrane, and Coastal Plain Sediments.

### Carolina Terrane

Underlying the western two-thirds of Chatham County, the Carolina terrane is composed of 630- to 530-million-year-old metamorphosed volcanic, volcano-sedimentary, sedimentary, and intrusive rocks (Hibbard et al. 2002; Hibbard et al. 2006). The Carolina terrane is separated into three parts: 1) the Hyco Formation of the Hyco volcanic arc – “the Old arc”, 2) the Aaron Formation (Hibbard et al. 2013) and 3) the Albemarle arc – “the New arc” (Hibbard et al. 2013) (Figure 4).

To help simplify the long and complicated history of the Carolina terrane, geologists have begun referring to the volcanic arc associated with the early history of the terrane—specifically the oldest portion of the Carolina terrane—as the Old Arc (see Hibbard et al. 2013 for detailed information). The Old Arc itself has a long history involving multiple periods of volcanism and evidence of a collision with another island arc, leaving traces of an ancient deformation event. The rocks associated with this Old Arc are now exposed in parts of the Piedmont of Virginia and southwest from there through Chapel Hill and Siler City, NC. In Chatham County and adjacent areas, the Old Hyco Arc consists of the Hyco Formation, which includes ca. 633 to 612 million year old metamorphosed layered volcanoclastic rocks and plutonic rocks.

Beginning about 550 million years ago, a new chain of volcanoes began to form on top of the now extinct and buried volcanoes of the Old Arc. The rocks associated with this New Albemarle Arc are now exposed in western Chatham County and extend west and southwest into the Uwharrie Mountains (which includes Morrow Mountain State Park) and into South Carolina. In North Carolina, these rocks have been dated at about 550 to about 530 million years old.

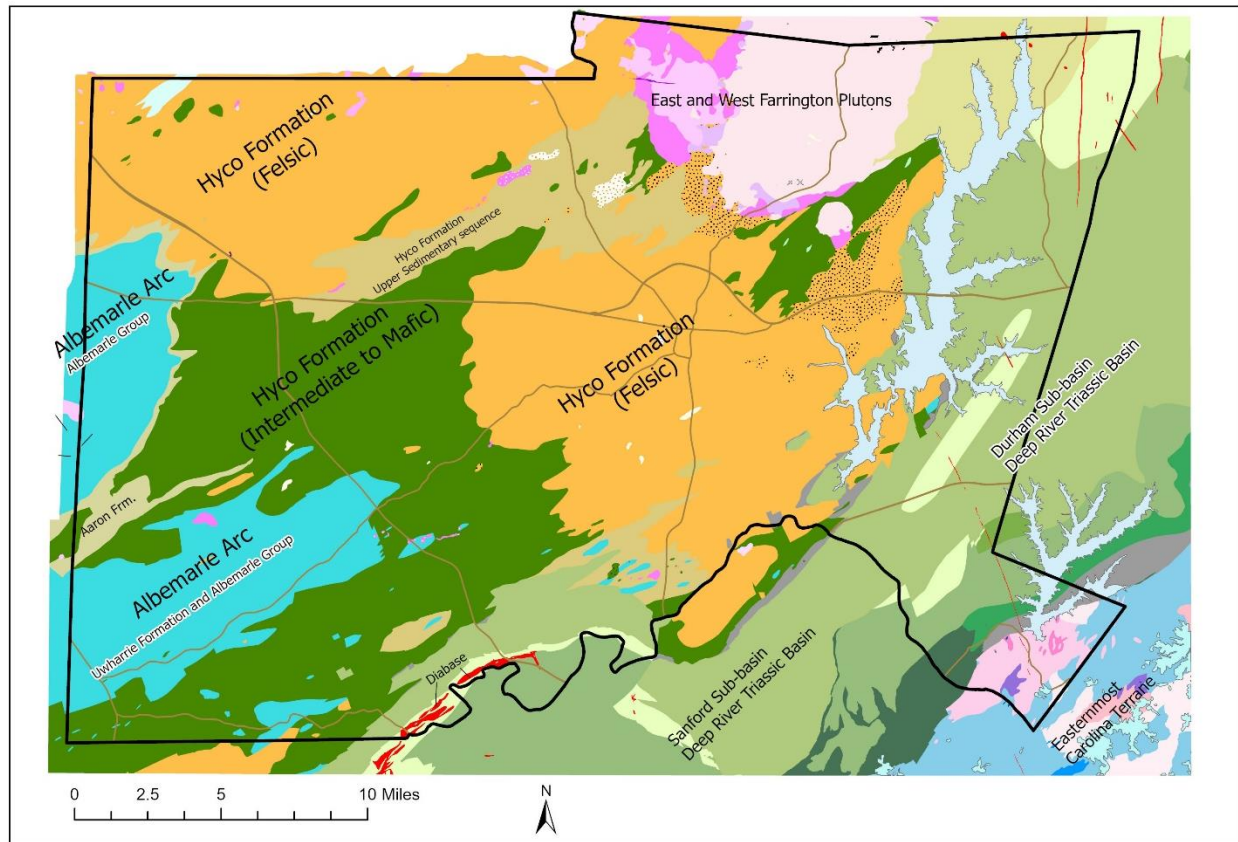


Figure 4. Simplified Geologic map of Chatham County.

### Hyco Formation of the Hyco arc – the Old arc

Generally, rock units of the Hyco Formation in Chatham County consist of packages of metamorphosed volcanic rocks and their volcanosedimentary detritus. The volcanic rocks and sedimentary rocks have low amounts of quartz crystal or quartz is absent in hand sample in comparison to rocks of the Aaron Formation and rocks associated with the Albemarle arc. Figure 4 presents a simplified geologic map of Chatham County and its surroundings. The Hyco Formation is separated into three generalized units: 1) metamorphosed felsic volcanic rocks, 2) metamorphosed intermediate to mafic rocks, and 3) metamorphosed volcanosedimentary rocks of the Upper sedimentary sequence.

### Felsic Portion of the Hyco Formation

The felsic portion of the Hyco includes areas of concentrated dacitic lavas and tuffs surrounded by a background matrix of volcanosedimentary rocks (conglomerates, sandstones, and siltstones). Dacite is a type of lava that is felsic (rich in silica and aluminum) in chemical composition. Dacite has a little more silica and aluminum (and less iron, magnesium, and calcium) compared with the intermediate to mafic (andesite and basalt) lavas. Rocks of felsic composition will weather to soils that are acidic. Because dacite has more silica, the rocks are generally more resistant to erosion than other rock types in the area and form some of the taller hills and peaks in the area.

### **Intermediate to Mafic Portion of the Hyco Formation**

The intermediate to mafic portion of the Hyco includes areas of concentrated andesitic to basaltic lavas and tuffs surrounded by a background matrix of volcanosedimentary rocks (conglomerates, sandstones, and siltstones). Andesite and basalt are types of lavas that have less silica and relatively abundant iron, magnesium, and calcium compared to a dacite. Rocks of andesite and basalt composition will weather to soils that are neutral or basic. Areas underlain by concentrated zones of andesite and basalt lavas within the unit often form resistant hills.

### **Volcanosedimentary Rocks of the Upper Sedimentary Sequence**

Extending northeast from Siler City toward NC 87 is a narrow zone of rock identified as the Upper Sedimentary sequence of the Hyco Formation (Figure 4). The rocks are interpreted to be part of the Hyco Formation but are primarily metamorphosed sedimentary rocks consisting of conglomerates, sandstones, and siltstones. The unit may sit in a large geologic fold that is a syncline—a synclinal valley.

### **Aaron Formation**

The sandstones, pebbly sandstones, and conglomerates of the Aaron are distinctive and commonly contain rounded to subrounded clasts of quartz ranging from sand- to gravel-sized. In the sandstones, feldspar is the most prominent mineral grain; quartz varies from sparse to abundant in hand sample. Lithic clasts are typically prominent and range from sand- to gravel-size. Soils from the Aaron Formation may be sandy in places.

### **Albemarle Arc Units – the New Arc**

In the western portion of Chatham County, two areas are underlain by rocks of the Albemarle arc (the New arc). Rock types associated with the Albemarle arc include metamorphosed tuffaceous sandstones, conglomeratic sandstones, siltstones with lesser amounts of fine to coarse tuff, welded tuff, and rhyodacitic lavas. Quartz and feldspar crystal fragments are common in the sedimentary components, tuffs, and lavas. Due to the local presence of abundant sand-size quartz grains, soils on top of Albemarle arc unit may produce zones with sandy soil.

### **Plutonic Rocks in the Carolina Terrane in Chatham County**

Plutonic rocks are igneous intrusive rocks that cooled slowly at depth in the earth and have interlocking mineral grains (examples: granite, granodiorite, diorite, and gabbro). Granite and granodiorite are felsic plutonic rocks. Diorite is an intermediate plutonic rock and gabbro is a mafic plutonic rock. The northeastern portion of Chatham County is dominated by the East and West Farrington plutons. The East Farrington pluton is composed dominantly of granite to granodiorite. The West Farrington pluton is a composite pluton that is characterized by diorite in the northern portions of the map area, diorite to granodiorite along its southwestern margins, and granodiorite in the central portions of the pluton. The granite and granodiorite portions of the plutons contain abundant sand-size quartz grains and can produce sandy acidic soils. Small plutons of granodiorite, diorite, and gabbro are present in the western portion of the county.

### **Easternmost Carolina Terrane in Chatham County**

The southeastern corner of the county is underlain by metamorphosed crystalline rocks of the Easternmost Carolina terrane. The rocks are interpreted to be part of the Carolina terrane but separated from the rest of the terrane by the Triassic basin. In Chatham County, the Easternmost Carolina terrane is underlain by metamorphosed granite and granodiorite (pinkish area on Figure 4), metamorphosed gabbro and diorite

(dark pink area on Figure 4), intermediate to mafic volcanic rocks (purple, Figure 4) and schists and gneisses from metamorphosed siltstones, sandstones, and conglomerate (blue, Figure 4).

### **Deep River Triassic Basin in Chatham and Nearby Counties**

Portions of the eastern and south-central areas of the county are underlain by Triassic-aged sedimentary rocks of the Deep River Triassic basin. The basin is separated into three sub-basins (Durham, Sanford and Wadesboro). The Colon cross-structure (Figure 3) located within Chatham and Lee counties, is a constriction zone in the basin and marks the transition between the Durham and Sanford sub-basins. Chatham County is underlain by rocks of both the Sanford and Durham sub-basins of the Triassic basin. In the Sanford sub-basin, three units have been identified from oldest to youngest as the Pekin, Cumnock, and Sanford Formations (Campbell and Kimball 1923; Reinemund 1955, Clark et al. 2001). In the Durham sub-basin, this three-layer system is not recognized. Hoffman and Gallagher (1989) began using the lithofacies association nomenclature and it was subsequently adopted for all mapping in the Durham sub-basin.

Generally, rock units consist of unmetamorphosed conglomerates, sandstones, siltstone, and mudstones. The Cumnock Formation in the Sanford sub-basin is distinctive and contains organic-rich shale (mix of siltstone and mudstone) and coal.

### **Diabase, Coastal Plain Sediments, and River Deposits**

Dikes and sills of Jurassic-aged diabase intrude the Triassic sedimentary and older crystalline rocks of the map area. Diabase is an intrusive igneous rock that is approximately 200 million years old. The diabase intruded into the existing rock as dikes and sills. Diabase is composed of minerals that contain abundant calcium, iron, and magnesium in comparison to other rocks of the area. Because of the abundance of calcium, iron, and magnesium, unique plant communities sometimes develop on top of areas underlain by diabase. Diabase dikes are narrow and range from just a few feet to up to 200 feet wide. Diabase sill layers may be present over larger areas. An area of diabase sills is present in southern Chatham County along the Deep River (red colored area on Figure 4).

Coastal Plain sediments are present in small part of eastern Chatham County (small patch near the “m” in the label ‘Easternmost Carolina Terrane’ on Figure 3). These sediments consist of unconsolidated sand to clay material. River deposits (alluvium) are present in most modern river valleys, with at least two levels of river terraces along the major drainages. These terraces, where preserved, likely mark the location and elevation of ancestral river systems, prior to incision to the modern floodplain levels.

### **Acknowledgements**

The detailed geologic mapping in Chatham County was funded in part by the USGS National Cooperative Geologic Mapping Program under STATEMAP. The geologic map of Chatham County (Figure 5 and Table 1) is a compilation of modified and edited data from portions of 19 previously published or manuscript 1:24,000-scale mapping. If conducting site specific investigation both the 1:24,000-scale maps and the compiled county map should be reviewed.



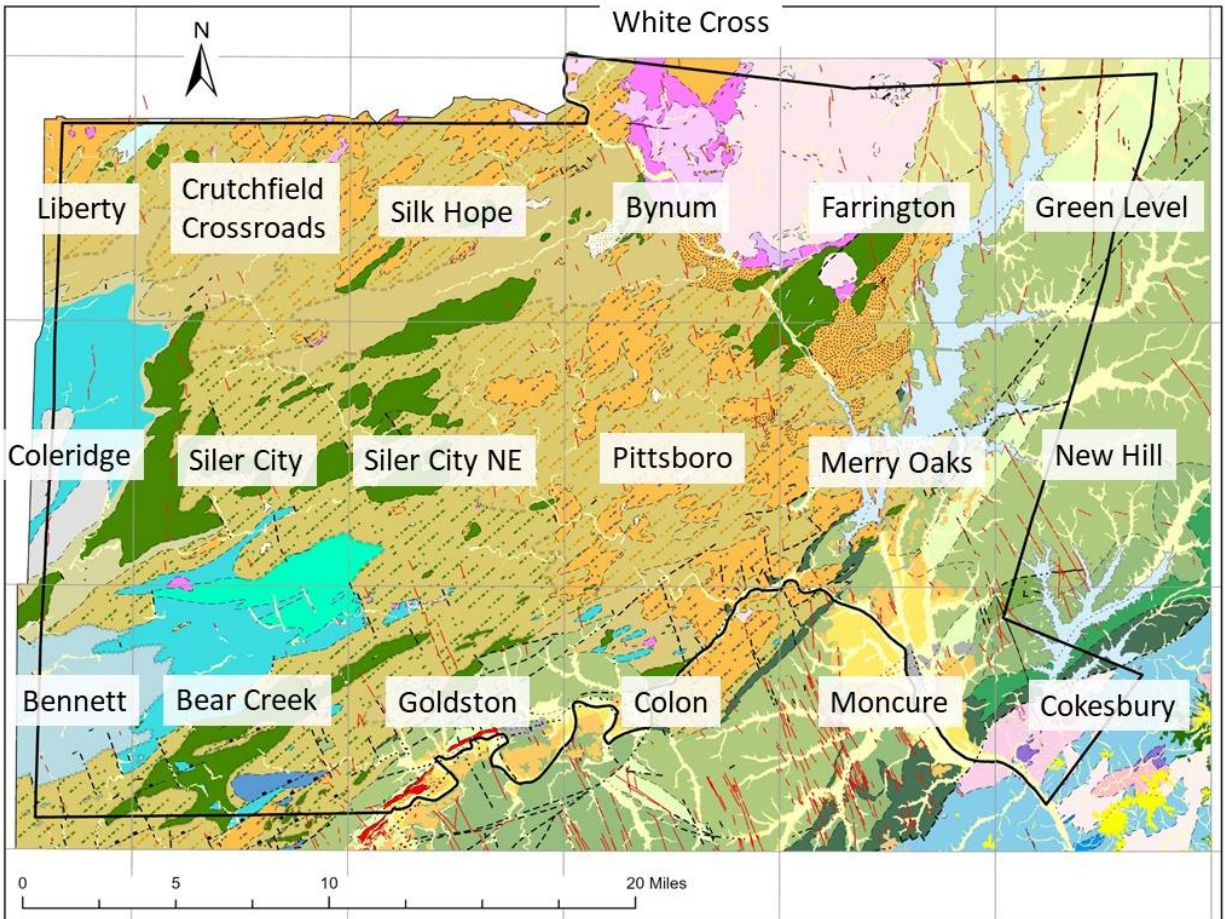


Figure 5. Index of 1:24,000-scale Geologic Maps of Chatham County. Base Image is the Compiled Geologic Map of Chatham County and Surrounding Areas (Bradley 2022).

Table 1. List of Maps that Were Compiled for the Chatham County Geologic Map.

Quadrangle	Reference
Liberty	Bradley, P.J, B.T. Peach, and H.D. Hanna, H.D. 2018. Geologic map of the Chatham County portion of the Liberty 7.5-minute Quadrangle, NCGS Open-file Report 2018-02, scale 1:24,000.
Crutchfield Crossroads	Bradley, P.J., H.D. Hanna, and B.T. Peach. 2017. Geologic map of Chatham County portion of the Crutchfield Crossroads 7.5-Minute Quadrangle, NCGS Open-file Report 2017-10, scale 1:24,000.
Silk Hope	Bradley, P.J., H.D. Hanna, and E.K. Michael. 2022. Geologic map of the Silk Hope 7.5-Minute Quadrangle, Chatham and Alamance counties, North Carolina, NCGS Open-file Report 2022-01, scale 1:24,000 (Supersedes NCGS Open-file Report 2014-02).
Bynum	Bradley, P.J., H.D. Hanna, E.F. Stoddard, and R. Bechtel. 2013. Geologic map of the Bynum 7.5-minute quadrangle. NCGS Open-file Report 2013-03, scale 1:24,000.
Farrington	Bradley, P.J., N.K. Gay, R. Bechtel, and T.W. Clark. 2007. Geologic map of the Farrington 7.5-minute quadrangle. NCGS Open-file Report 2007-03, scale 1:24,000.
Green Level	Watson, M.E. 1998. Geology of the Green Level 7.5-minute quadrangle, Chatham, Durham, and Wake Counties, North Carolina, North Carolina Geological Survey Open-File Report 98-3.

Quadrangle	Reference
	Clark, T.W., D.E. Blake, E.F. Stoddard, P.A. Carpenter, III, and R.H. Carpenter. 2004. Preliminary bedrock geologic map of the Raleigh 30' x 60' quadrangle, North Carolina: North Carolina Geological Survey Open-file Report 2004-02, scale 1:100,000, in color.
Coleridge	Bradley, P.J., B.T. Peach, and H.D. Hanna. 2018. Geologic map of the Chatham County portion of the Coleridge 7.5-minute Quadrangle, NCGS Open-file Report 2018-03, scale 1:24,000.
Siler City	Bradley, P.J., B. T. Peach, and H.D. Hanna. 2017. Geologic map of the Siler City 7.5-Minute Quadrangle, NCGS Open-file Report 2017-07, scale 1:24,000.
Siler City NE	Hanna, H.D., P.J. Bradley, and R. Bechtel. 2015. Geologic Map of the Siler City NE 7.5 Minute Quadrangle, NCGS Open-file Report 2015-02, scale 1:24,000.
Pittsboro	Bradley, P.J., H.D. Hanna, and R. Bechtel. 2014. Geologic map of the Pittsboro 7.5-minute quadrangle, Chatham County, NCGS Open-file Report 2014-01, scale 1:24,000.
Merry Oaks	Bradley, P.J., A.K. Rice, D.A. Grimley, H.D. Hanna, and M.J. Malaska. 2021. Geologic map of the of the Merry Oaks 7.5-minute Quadrangle, Chatham and Lee Counties, North Carolina: North Carolina Geological Survey Open-file Report 2021-02, scale 1:24,000, in color (Supersedes Open-file Report 2012-02).
New Hill	Clark, T.W., Manuscript geologic map of the New Hill 7.5-minute quadrangle, North Carolina: North Carolina Geological Survey, scale 1:24,000. Clark, T.W., D.E. Blake, E.F. Stoddard, P.A. Carpenter, III, and R.H. Carpenter. 2004. Preliminary bedrock geologic map of the Raleigh 30' x 60' quadrangle, North Carolina: North Carolina Geological Survey Open-file Report 2004-02, scale 1:100,000, in color.
Bennett	Bradley, P.J., A.K. Rice, and B.T. Peach. 2019. Geologic map of the eastern portion of the Bennett 7.5-Minute Quadrangle, NCGS Open-file Report 2019-05, scale 1:24,000.
Bear Creek	Bradley, P.J., A.K. Rice, and B.T. Peach. 2019. Geologic map of the Bear Creek 7.5-Minute Quadrangle, NCGS Open-file Report 2019-06, scale 1:24,000.
Goldston	Rice, A.K., P.J. Bradley, D.A. Grimley, and W.B. Blocher. 2020. Geologic map of the Goldston 7.5-Minute Quadrangle. NCGS Open-file Report 2020-06, scale 1:24,000.
Colon	Bradley, P.J., A.K. Rice, D.A. Grimley, W.B. and Blocher. 2020. Geologic map of the Colon 7.5-Minute Quadrangle. NCGS Open-file Report 2020-04, scale 1:24,000.
Moncure	Bradley, P.J., A.K. Rice, and D.A. Grimley. 2021. Geologic map of the Moncure 7.5-Minute Quadrangle, Lee and Chatham counties, North Carolina: North Carolina Geological Survey Open-file Report 2021-01 scale 1:24,000, in color.
Cokesbury	Butler, J.R., T.W. Clark, and N.K. Gay. 2016. Geologic map of the Cokesbury 7.5-minute quadrangle, NCGS Open-file Report 2016-22, scale 1:24,000.
White Cross	Bradley, P.J. and E.F. Stoddard. 2008. Geologic map of the White Cross 7.5-minute quadrangle, NCGS Open-file Report 2008-01, scale 1:24,000.
Compiled County Map Supersedes above maps	Bradley, P.J. (with contributions in alphabetical order from : R. Bechtel, W.B. Blocher, R.J. Butler, T.W. Clark, N.K. Gay, D.A. Grimley, H.D. Hanna, M.J. Malaska, B.T. Peach, A.K. Rice, E.F. Stoddard, and M.E. Watson). 2022. Compiled Geologic map of Chatham County and surrounding areas, North Carolina: North Carolina Geological Survey Open-file Report 2022-03, scale 1:50,000, in color. <a href="https://deq.nc.gov/energy-mineral-and-land-resources/geological-survey/ofrs-geological-survey/geologic-map-chatham-county-and-surrounding-areas-north-carolina">https://deq.nc.gov/energy-mineral-and-land-resources/geological-survey/ofrs-geological-survey/geologic-map-chatham-county-and-surrounding-areas-north-carolina</a> .

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## **General Vegetation**

*Adapted from Hall & Boyer (1992)*

The cool winters, hot humid summers, and evenly-distributed rainfall of Chatham County all produce a natural vegetation dominated by hardwood trees; like the rest of the Piedmont and nearly all of the eastern United States, Chatham County falls within the Eastern Deciduous Forest Biome.

Within any biome, gradations in climate and soils are further responsible for determining which species are the dominant members of their ecosystems. In North Carolina, the forests of the Blue Ridge, Piedmont, and Coastal Plain can all be distinguished according to which species of hardwoods or pines are most significant in terms of numbers or biomass. Due to its location, Chatham County contains forests dominated by the same mixture of oaks and hickories that are characteristic of the Piedmont as a whole. Chatham's proximity to the Coastal Plain, on the other hand, explains the presence of several species adapted to warmer and wetter conditions, including longleaf pine, sweet bay, laurel-leaf smilax, and bottomland animals such as the red-bellied water snake and Carolina anole.



## Land Use History

Chatham County was home to Native Americans of numerous tribes prior to being legislatively established in 1771 (Ward and Davis 1993). The Haw River drainage in particular hosts several archeological sites attributed to Siouan speaking tribes, many of which were mapped within the county (Ward and Davis 1993). In the mid-eighteenth century the county was settled by English, Scottish, and German migrants travelling over land as well as up the Cape Fear River (Chatham County Planning Board 1970).

After European settlement, subsistence farming was common and quickly grew into much larger and unsustainable operations over time (Chatham County Planning Board 1970). Cotton was an early agricultural product, as well as tobacco and livestock such as chickens and cattle (Chatham County Planning Board 1970). By the early 1900s almost all easily cultivated land had been farmed and some had been abandoned to return to successional forest (US NCRS 1937). Today, the largest land use in the county is for agriculture (including timber operations) representing three-quarters of total land (Chatham County Government 2020).

Similar to neighboring counties in the Piedmont, Chatham has a long history of timber harvest. Some sources (e.g., US NCRS 1937) claim the county was almost entirely cut by the early 1900s. Aerial imagery suggests another expansive period of harvests occurred prior to the mid-twentieth century. Hall and Boyer (1992) found that mature trees were limited to old buildings and homesites. Many of the forests in the county today are successional and have been cut several times in the past few centuries. Currently, timberland acres account for 56% of the county's total area and the majority of that remains privately owned (Pokhrel et al. 2024).

The major rivers of Chatham County have proven to be valuable resources throughout the county's history. At various points in time the Haw, Rocky, and Deep Rivers have been used for power generation, mills, and various industries (Osborn et al. 1985), in addition to providing drinking water to residents. There was once even an effort to make the Deep and Cape Fear Rivers navigable by tugboats, through extensive construction of dams and locks (Hadley 1980). There have been recent efforts to restore connectivity along some of these waterways with projects such as the Carbonton and Hoosier Dam removals, which were completed in 2005 and 2018, respectively (USFWS 2022a).

## RESULTS AND DISCUSSION

### Natural Areas

This natural area inventory documents 56 natural areas (Table 2, Figure 6), including three large Aquatic Habitats. Chatham County is in the upper third of North Carolina counties in regard to the overall number of natural areas. The natural areas described by the Natural Heritage Program cover approximately 29,168 acres in the county or approximately 6% of the county's surface area. Chatham County's natural areas are important areas for biodiversity. Natural areas are rated following a NCNHP protocol which results in two values, a Collective Value Rating (C1-C5) and a Representational Rating (R1-R5). The two ratings measure different and complementary qualities of each natural area. Collective Value rates each natural area based on the number and rarity of the rare species and natural communities it contains (the collection of biodiversity elements found at the natural area). Representational Value rates each natural area on its importance in protecting the best occurrences of each type of rare species and natural community in the state (the highest R-rated sites protect the most viable populations for each species or natural community type). See the Evaluation of Site Significance section of this document for more detail.

A few of the county's natural areas contain globally significant populations of rare flora and fauna. Four Chatham County terrestrial natural areas merit the highest significance rating (Exceptional), 11 are rated as having Very High significance, and the remainder of the sites are ranked with a High, Moderate, or General level of significance (Table 2). All three extensive Aquatic Habitats within the county are rated of Exceptional significance and support rare species at population sizes found in no other place in the state.

The natural areas described in this report represent an expansion from the 40 identified in the first inventory (Hall and Boyer 1992). Ongoing field work in Chatham County identified additional natural areas, and this inventory specifically identified six new sites. While updating the data for known natural areas, NHP staff split or combined several based on the latest conditions on the ground. Development pressure has increased significantly in the county and resulted in several modifications to natural areas originally described by Hall and Boyer (1992). Large swathes of forested area described as wildlife habitat in areas around Jordan Lake and along the Haw River have been fragmented or lost due to development and timber harvest. Three hundred and thirty-two acres were removed from known natural areas as a result of this update. This underscores the significance of conservation efforts in current natural areas, which represent best known habitats in the county.

Table 2. Natural Areas in Chatham County, North Carolina. The Highest Scoring R or C Rating Value Determines the Site Significance (see Evaluation of Site Significance for more info).

Site Map Number	Site Name	Representational Value Rating	Collective Value Rating
1	Bennett Hardpan	4-Moderate	5-General
2	Bennett Mountain	5-General	5-General
3	Big Woods Road Slopes	5-General	5-General
4	Big Woods Road Upland Forests	5-General	5-General
5	Boothe Hill	2-Very High	4-Moderate
6	Bush Creek Marshes	5-General	5-General
7	Bynum Forest	5-General	5-General
8	Cape Fear River/Buckhorn Levees	2-Very High	4-Moderate
9	Cape Fear River/McKay Island Floodplain	5-General	4-Moderate
10	Castle Rock Forests	5-General	5-General
11	Collins Mountain	5-General	5-General
12	CPF/Deep River-Rocky River Aquatic Habitat	1-Exceptional	1-Exceptional
13	CPF/Haw River Aquatic Habitat	1-Exceptional	3-High
14	CPF/Upper Cape Fear River Aquatic Habitat	1-Exceptional	3-High
15	Cub Creek-Edwards Ridge	5-General	4-Moderate
16	Donnelley Hardpan	1-Exceptional	4-Moderate
17	Gulf Diabase Forest	3-High	4-Moderate
18	Gum Springs Church Road Slopes	4-Moderate	5-General
19	Haw River Dicentra Slopes	3-High	4-Moderate
20	Haw River Levees and Bluffs	2-Very High	4-Moderate
21	Herndon Creek Ravine	5-General	5-General
22	Knoll Ridge	5-General	4-Moderate

<b>Site Map Number</b>	<b>Site Name</b>	<b>Representational Value Rating</b>	<b>Collective Value Rating</b>
23	LaGrange Slopes and Bottomlands	3-High	3-High
24	Lambeth Mountain	5-General	4-Moderate
25	Landrum Creek Forests	2-Very High	3-High
26	Lessler Montmorillonite Forest	3-High	4-Moderate
27	Little Indian Creek Galax Bluff	5-General	5-General
28	Little Terrells Creek Floodplain	4-Moderate	5-General
29	Lower Bear Creek Slopes	4-Moderate	3-High
30	Lower Deep River Slopes	1-Exceptional	3-High
31	Lower New Hope Creek Floodplain Forest and Slopes	3-High	3-High
32	McLaurin Road Forests	5-General	5-General
33	Moncure Boggy Streamheads	1-Exceptional	4-Moderate
34	Morgan Creek Floodplain Forest	2-Very High	3-High
35	Morgan Ridge	2-Very High	4-Moderate
36	NC 902 Laurel Bluffs	3-High	4-Moderate
37	New Hope Overlook Bluff and Slopes	5-General	5-General
38	Northeast Creek/Kit Creek Bottomlands	4-Moderate	3-High
39	Northeast Creek/Panther Creek Dikes and Bottomlands	4-Moderate	4-Moderate
40	Ore Hill	1-Exceptional	4-Moderate
41	Parkers Creek Ridges	5-General	5-General
42	Pittsboro Wilderness	5-General	5-General
43	Poes Ridge/Dam Road Upland Forests	5-General	5-General
44	Robeson Creek Depression and Hardpan	5-General	4-Moderate
45	Robeson Creek Slopes	5-General	5-General
46	Rock Rest Mafic Islands and Shore	2-Very High	4-Moderate
47	Rocky River Basalt Bluffs and Levees	2-Very High	3-High
48	Rocky River Dragonfly Riffles	2-Very High	3-High
49	Rocky River and Nick Creek Slopes	5-General	4-Moderate
50	Terrells Creek Galax Bluffs	5-General	5-General
51	Terrells Hardpan	4-Moderate	4-Moderate
52	Terrells Mountain	5-General	5-General
53	White Oak Creek Floodplain	2-Very High	4-Moderate
54	White Pines Natural Area	2-Very High	3-High
55	Wilkinson Creek Marshes	5-General	5-General
56	Woods Mill Bend	4-Moderate	4-Moderate

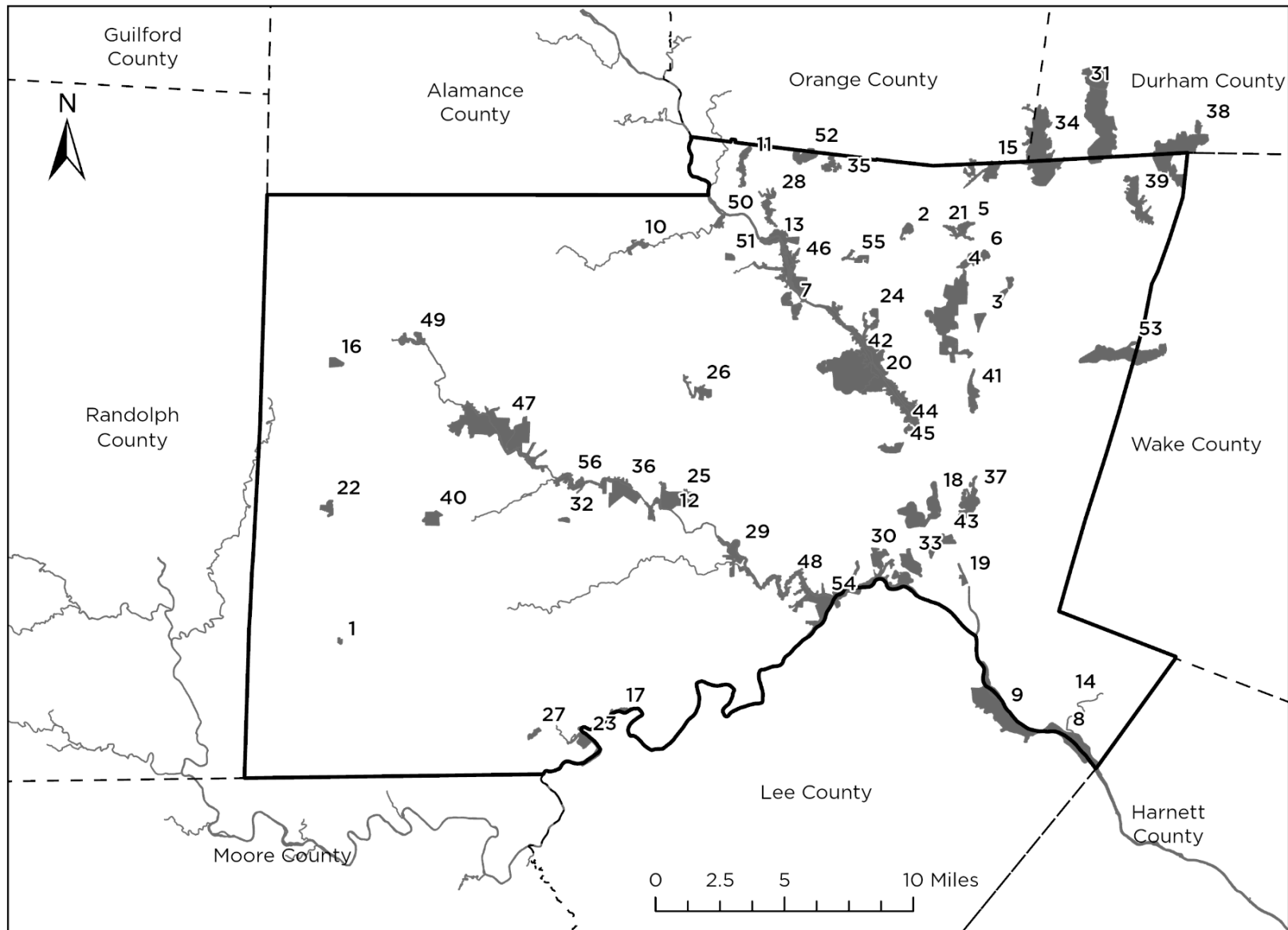


Figure 6. Location of Natural Areas, Terrestrial and Aquatic, in Chatham County, North Carolina. The Number Order Follows Table 2.

Natural areas are found throughout the county but are heavily represented along the riparian corridors of the major rivers (Figure 6). The Rocky River corridor boasts nine natural areas, including a portion of the Deep River-Rocky River Aquatic Habitat. These natural areas total approximately 5,000 acres of streamside areas and associated uplands. At least some portion of all these Rocky River sites have some level of protection, almost entirely through voluntary management or conservation agreements with private landowners and Triangle Land Conservancy. In several cases the protective agreements extend beyond natural area boundaries to additional regions of upland forested areas that protect aquatic habitat. A total of approximately 6,124 acres of protected land are found along the Rocky River. The Very High rated Rocky River Basalt Bluffs and Levees natural area is one of the largest found in this drainage system. It contains approximately 1,700 acres of protected land, representing 95% of the total natural area acreage. This natural area contains a good example of excellent condition Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) and is one of the top five occurrences of this community in the state. Nine other natural communities are known from the site. Additionally, the Rocky River itself is an extremely important aquatic resource. The Deep River-Rocky River Aquatic Habitat supports a diversity of aquatic fauna, including 16 rare aquatic species in Chatham County alone. The rarest of these species are the globally imperiled Carolina redbhorse (*Moxostoma* sp. 3) and the Federally Endangered Cape Fear shiner (*Notropis mekistocholas*). Intact vegetated riverside forests are essential for protecting these aquatic species from pollution and siltation from erosion.



Rock Rest Mafic Islands and Shore, Haw River, Chatham County NC. Photo By: Merry Conlin.



The Haw River corridor in Chatham County supports four terrestrial natural areas and portions of both the Haw River and Upper Cape Fear Aquatic Habitats. Several of the terrestrial sites contain large acreages of floodplain and adjacent upland slopes, including the Haw River Levees and Bluffs natural area, which covers approximately 1,300 acres, and Rock Rest Mafic Islands and Shore, which covers approximately 917 acres. Both natural areas are rated Very High and in combination support six unique kinds of floodplain and upland natural communities and populations of the Significantly Rare buttercup phacelia (*Phacelia covillei*). Outside of Jordan Lake, only two of the terrestrial natural areas, Rock Rest Mafic Islands and Shore and Lower Haw River State Natural Area, contain some acreage of protected lands within the Haw River corridor. South of the Haw and Deep River confluence are additional acres of state protected upland forested areas, outside of described natural areas.

The Haw River supports numerous rare aquatic species. Within the Chatham County portion of the Haw River Aquatic Habitat, nine rare aquatic species occur, including the Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*). Only a small reach of the Upper Cape Fear River Aquatic Habitat borders Chatham County, but it supports seven rare aquatic species. A few rare aquatic species occur both north and south of the B. Everett Jordan Lake dam, including the State Endangered yellow lampmussel (*Lampsilis cariosa*), Significantly Rare eastern creekshell (*Villosa delumbis*), and the Cape Fear shiner. These Aquatic Habitats likewise provide resources that support populations of the Significantly Rare dragonfly Septima's clubtail (*Gomphurus septima*).

The Deep River corridor has four terrestrial natural areas and a portion of the Deep River-Rocky River Aquatic Habitat on the Chatham County side. Many of these terrestrial natural areas overlap with the large diabase sill mapped near the river. All of these natural areas contain protected land, either by state or private conservation agreements. The largest natural area within this drainage is the Lower Deep River Slopes, with approximately 636 acres of associated streamside corridor and uplands. This natural area is rated Exceptional as it supports ten natural communities, including the rare Piedmont Basic Glade (Typic Subtype), and two rare plant species.

At the confluence of the Rocky and Deep Rivers is one of the jewels of Chatham County: the White Pines Preserve and White Pines Natural Area. With its cool, steep, mountain-like relictual features and high-quality aquatic habitat, this site supports a number of natural communities and rare species. This is one of the few locations in the Piedmont where the namesake white pine (*Pinus strobus*) and Catawba rhododendron (*Rhododendron catawbiense*) can be found growing naturally. The Rocky and Deep Rivers in this area provide critical habitat for two federally endangered species, the Cape Fear shiner (*Notropis mekistocholas*) and harperella (*Ptilimnium nodosum*). The upland site supports extensive Mesic Mixed Hardwood Forest (Piedmont Subtype) and Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) natural communities. These communities support Significantly Rare large witch-alder (*Fothergilla major*) and buttercup phacelia (*Phacelia covillei*). In the bottomlands, the floodplain of the Deep River broadens, and several high-quality alluvial communities are present. Piedmont Levee Forest (Typic Subtype) predominates with small, scattered Floodplain Pools which hold water well into the growing season. Within the neighboring rivers are patches of Rocky Bar and Shore (Water Willow Subtype).

A few of the highest rated natural areas in Chatham County occur outside of the riparian corridors. These include sites such as Donnelley Hardpan, Ore Hill, Moncure Boggy Streamheads and Morgan Ridge. Each of these upland sites contain instances of rare natural communities such as Upland Depression Swamp Forest, Upland Pool (Typic Piedmont Subtype), Piedmont Boggy Streamhead, and Xeric Hardpan Forest (Acidic Subtype). In several cases these rare communities support rare fauna and flora, including salamanders, bats, and plants.

## Natural Communities

The natural diversity of Chatham County is reflected in the variety and composition of its natural communities. Natural communities refer to assemblages of species in a specific physiographic, topographic, and geological setting (Schafale 2024). The presence of intact natural communities is a key component in the identification and assessment of natural areas. Mapping and analysis of natural communities is essential to supporting conservation, protection, restoration, and management of natural areas and the unique features that they contain. Complete descriptions, state level context, and keys for identifying natural communities can be found in *Classification of The Natural Communities of North Carolina Fourth Approximation* by Michael Schafale (2024).

Natural communities are significant in that they represent associations of plants and animals that occur in different environments across the landscape. These communities often contain specifically adapted rare species whose location can often be predicted by understanding where natural communities occur across



A Ravine of Blooming Atamasco Lily (*Zephyranthes atamasco*) in Rocky River Dragonfly Riffles Natural Area. Photo by: Merry Conlin

the landscape. For the many groups of organisms that have not been studied well enough to track individual rare species, conservation of the range of natural communities is the only way to ensure their survival. Natural communities are also the reservoirs for the diversity of common to uncommon species of the county.

The inventory sought to find the best examples of all the kinds of natural communities occurring in the county. Occurrences of natural communities are evaluated for the degree of intactness or departure from natural condition. Factors that are used to evaluate community condition include maturity of vegetation, vegetation composition and structure, presence or lack of nonnative species, the extent of the occurrence, and the landscape context. The least altered examples of natural communities are typically governed by natural ecological processes with minimal human interference in the development of their composition and structure. However, in cases where natural ecological processes are missing, as in the case of fire in fire-adapted communities, those with appropriate management are the best examples. Areas encroached on by invasive nonnative plants or animals may also require active management or restoration to retain their natural condition.



Thirty-two distinct natural communities, including broad forest types and wetlands, occur in Chatham County (Table 3). These communities are associated with a variety of topographic positions and soils. Chatham County possesses abundant floodplain habitat, particularly along the Haw and Rocky Rivers, where large acreages of alluvial communities are found. These include broad expanses of Piedmont Alluvial Forest and Piedmont Levee Forest (Typic Subtype), with interbedded Floodplain Pools, as well as the less common Piedmont Bottomland Forest. In the uplands, forested communities are often influenced by the predominant soils and microclimate as there is very little elevational gradient in the county. Various types of oak and hickory forest have the highest constancy, but Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs in the largest acreage. This community is often observed in the slightly sheltered ravines and lower slopes that drain to the major rivers.

The total natural communities described here represent an expansion from the earlier inventory, which identified 21 natural communities (Hall and Boyer 1992). This expansion is due to several factors, the first being the ongoing field surveys performed by NCNHP biologists who identify new communities. It is also due to changes in the classification of communities, where some previously unclassified communities have recently been described or refined into various subtypes following Schafale (2024).

Natural communities can be considered common or rare and use ranks similar to those defined for plants and animals. Chatham County supports 14 natural communities that are fairly restricted in their distribution (S1–S2, Table 3). The Upland Pool (Typic Piedmont Subtype) community, for example, is globally critically imperiled, and good examples are known from only four sites in the state. Of the rare communities in the county, most are either wetland communities or, conversely, have significant moisture availability limitations.



Mesic Mixed Hardwood Forest (Piedmont Subtype) at Cub Creek–Edwards Ridge Natural Area, Chatham County, NC  
Photo by: Merry Conlin.



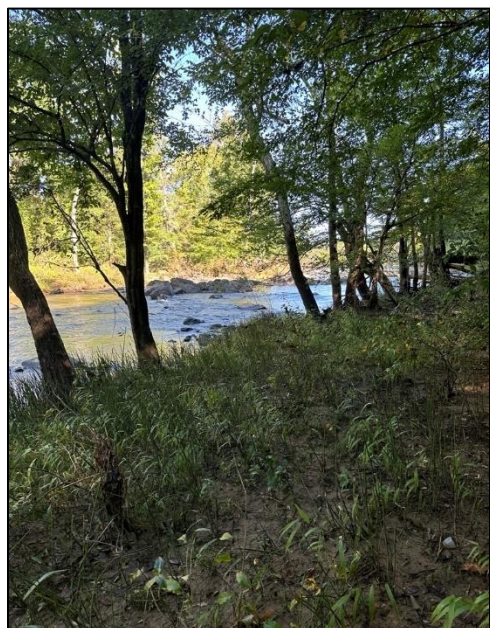
Table 3. Natural Community Types Occurring in Chatham County, NC with State and Global Ranks.

Ecological Theme Natural Community Type	Rank	
	State	Global
<b>Low Elevation Cliffs and Rock Outcrops</b>		
Piedmont Cliff (Acidic Subtype)	S2	G2?
Piedmont Cliff (Basic Subtype)	S1	G2?
<b>Piedmont and Mountain Floodplains</b>		
Floodplain Pool	S2	G3
Piedmont Alluvial Forest	S4	G4
Piedmont Bottomland Forest (High Subtype)	S2	G3G4
Piedmont Bottomland Forest (Typic Low Subtype)	S2	G2?
Piedmont Headwater Stream Forest (Typic Subtype)	S3S4	G3G4
Piedmont Headwater Stream Forest (Hardpan Subtype)	S2	G2
Piedmont Levee Forest (Typic Subtype)	S3S4	G3G4
Piedmont Swamp Forest	S2	G3G4
Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype)	S4	G4G5
Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype)	S4	G4?
Piedmont/Mountain Semipermanent Impoundment (Shrub Subtype)	S4	G4
Rocky Bar and Shore (Mixed Bar Subtype)	S3	G4
Rocky Bar and Shore (Southern Wild Rice Subtype)	S2	G4?
Rocky Bar and Shore (Water Willow Subtype)	S4	G4G5
<b>Piedmont and Mountain Glades and Barrens</b>		
Piedmont Basic Glade (Typic Subtype)	S2	G2
Xeric Hardpan Forest (Acidic Hardpan Subtype)	S1	G2
<b>Piedmont and Coastal Plain Mesic Forests</b>		
Basic Mesic Forest (Piedmont Subtype)	S3S4	G3G4
Mesic Mixed Hardwood Forest (Piedmont Subtype)	S4	G3G4
Piedmont/Coastal Plain Heath Bluff	S3	G3
<b>Piedmont and Coastal Plain Oak Forests</b>		
Dry Basic Oak—Hickory Forest	S2S3	G2G3
Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype)	S3	G3G4
Dry-Mesic Oak—Hickory Forest (Piedmont Subtype)	S4	G4G5
Dry Oak—Hickory Forest (Piedmont Subtype)	S4	G4G5
Mixed Moisture Hardpan Forest	S2	G2?
Piedmont Monadnock Forest (Typic Subtype)	S3	G3G4
<b>Piedmont and Mountain Upland Pools and Depressions</b>		
Upland Depression Swamp Forest	S2S3	G2G3
Upland Pool (Typic Piedmont Subtype)	S1	G1
<b>Upland Seepages and Spray Cliffs</b>		
Low Elevation Seep (Floodplain Subtype)	S2	G4
Low Elevation Seep (Typic Subtype)	S3	G3?
Piedmont Boggy Streamhead	S2	G2G3

## Low Elevation Cliffs and Rock Outcrops

The communities in this theme are characterized by patches of bare rock with minimal canopy cover. Species composition is affected by soil and moisture availability in crevices, ledges, and other microtopography. Large bluffs along the Rocky River support the Piedmont Cliff natural communities, of both the acidic and basic subtypes. While they are not found with substantial acreage, these communities comprise large, recognizable rock outcrops. In Chatham County, the basic subtype occurs on basalt rock with a flora indicative of base-rich conditions. The acidic subtype occurs on felsic volcanic rock and represents a mix of species both from the surrounding forest and those more specialized to rock outcrops.

## Piedmont and Mountain Floodplains



Piedmont Alluvial Forest along the Haw River. Photo by: Merry Conlin.

These are described as a Rocky Bar and Shore natural community with various subtypes defined by the most prevalent species. Smaller tributaries can be impounded by beavers and create the other nonforested community, Piedmont/Mountain Semipermanent Impoundments, with subtypes defined by the openness and composition of the dominant vegetation.

## Piedmont and Mountain Glades and Barrens

This theme contains forested areas with open to fairly open canopies, as canopy growth is limited by soils, geology, topography, fire regime, or a combination of these factors. Swathes of bare rock are not dominant in this theme as shallow soils are usually present, or if soils are deep they have properties that otherwise limit tree growth. In Chatham County, natural communities in this theme occur in smaller

Floodplain communities occur in areas bordering a river or stream which are exposed to regular flooding events or exist in a flooded state, such as beaver-created impoundments or rocky bars. These regions tend to have deep and rich alluvial soils with flood-tolerant species, which, unfortunately, often include nonnative invasives. Chatham County contains approximately 96 cumulative miles of major rivers and a high abundance of alluvial communities among them and their tributaries.

Communities within this theme are separated based on the completeness of the canopy. Forested communities in Chatham County are most often Piedmont Alluvial Forest, or in the larger floodplains, Piedmont Bottomland Forest (High Subtype) and Piedmont Levee Forest (Typic Subtype). Within the river or stream channels, nonforested communities such as large rocky cobble bars support species with traits suited to frequent



Piedmont Semipermanent Impoundment along Wilkinson Creek, Chatham County, NC. Photo by: Merry Conlin.

patches of Xeric Hardpan Forest, usually the acidic subtype where dense, acidic clays limit growth. Piedmont Basic Glade (Typic Subtype) is present at one site in the county (Lower Deep Slopes) where soils are slightly more basic.

### **Piedmont and Coastal Plain Mesic Forests**

This theme includes well-drained forested communities that are often on sheltered slopes or flats so that moisture is retained. This moderate water availability supports different hardwoods than those on the often-drier upper slopes and summits. Mesic Mixed Hardwood Forest (Piedmont Subtype) exemplifies this theme and is found with the largest acreage of any community in the county. Ravines that drain the uplands and contain a slightly cooler microclimate often contain this community. Several sites in the county contain even cooler, and often steeper, slopes with the Piedmont/Coastal Plain Heath Bluff community and an assemblage of species more abundant in the North Carolina mountains. In sites where soils are slightly more basic, a distinct flora emerges in the Basic Mesic Forest (Piedmont Subtype).

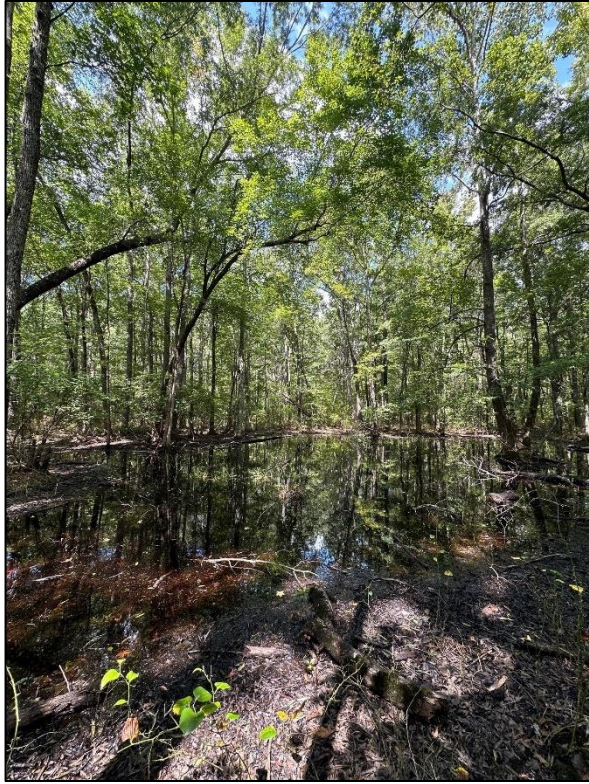
### **Piedmont and Coastal Plain Oak Forests**

Oak Forests are also widespread and commonly found within Chatham County. Many new patches were mapped as a result of this survey effort. Generally, this theme comprises well developed upland forests with abundant oak and hickory species on upper slopes, ridges, or upland flats. The most common community within this theme in the county is Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), which is associated with intermediate moisture levels, and is often found just upslope of the mesic communities. Several sites in the county with intact summits and ridges, particularly those that are south facing, contain Dry Oak—Hickory Forest (Piedmont Subtype) and in the driest cases, Piedmont Monadnock Forest (Typic Subtype). These drier communities are usually fairly open below a closed canopy, with naturally fewer shrubs and herbaceous species than those with more moderate moisture levels. An uncommon community in this theme, rare throughout the state, is Mixed Moisture Hardpan Forest. In this community, wetland and upland species are intermixed due to poorly drained soils or clay that can result in localized ponding and limited growth.



Dry Oak—Hickory Forest (Piedmont Subtype) in New Hope Overlook Bluff and Slopes Natural Area. Photo by: Merry Conlin.





Upland Pool (Typic Piedmont Subtype) at Donnelly Hardpan Natural Area. Photo by: Merry Conlin.

suite of species that are more common in the Coastal Plain. Low Elevation Seeps contain common Piedmont wetland flora with intermediate soil fertility.

## **Piedmont and Mountain Upland Pools and Depressions**

Communities within this theme support small wetlands that are isolated from streams, and which are usually fed by rainwater. The ponding in these communities often supports wetland vegetation that is remarkably distinct from the surrounding forest. Several Chatham County sites support Upland Depression Swamp Forest, which contains the most well-developed canopy of the communities within this theme. One site also contains an example of one of the rarest communities in the state, an Upland Pool (Typic Piedmont Subtype) which holds water for much, if not all of, the year. This community supports amphibians, including rare salamanders during their breeding seasons.

## **Upland Seepages and Spray Cliffs**

This theme is comprised of small wetland communities fed by groundwater or waterfall spray that lack localized pools. Chatham County contains two communities within this theme, Low Elevation Seeps of various subtypes, and Piedmont Boggy Streamheads. Both are seepage communities that are distinguished by their flora. Piedmont Boggy Streamheads contain a

## Flora

Chatham County is endowed with a variety of habitats that vary across geologic substrates, and this habitat diversity supports 1221 vascular plants, ranking 28th of the state's 100 counties (LeGrand et al. 2025). This habitat diversity also promotes a number of plant species considered rare or special status (Table 4). Thirty-four species of vascular plants with state or federal listed status have been reported from the county, 13 of which are only known from historical records. One listed plant species, Ozark Tassel-rue (*Trautvetteria applanata*), is a recent discovery from this county inventory not previously documented for Chatham County. Seven tracked nonvascular plants have been reported (two liverworts, three mosses, and one lichen). Only the rare lichen, Catawba dermiscellum (*Dermiscellum oulocheila*) and the rare liverwort, fringed heartwort (*Ricciocarpos natans*) have been recently observed. Nonvascular species remain largely under surveyed except for at targeted project sites, such as the White Pines Preserve. Recent surveys at this natural area have identified 50 new County records of lichens alone (Perlmutter et al. 2025).

Species rarity can be defined at several levels. The North Carolina Natural Heritage Program maintains information on the legal status (federal and/or state) for all rare plants in North Carolina. For species with a state or federally listed status, they are considered rare in terms of their distribution within the state and nation. Many species that lack formal federal or state legal protection are nonetheless rare or uncommon in North Carolina. In the previous Chatham County Inventory, the authors went on to define some 23 additional vascular plant species considered regionally rare at the time (Hall and Boyer 1992).



The Lichen Catawba dermiscellum (*Dermiscellum oulocheila*). Photo by: Gary Perlmutter. Used with Permission.



Inflorescence of Ozark Tassel-rue (*Trautvetteria applanata*) in Chatham County, NC. Photo by: Merry Conlin

Some species, such as the spring ephemeral buttercup phacelia (*Phacelia covillei*), are locally abundant in the county's floodplains and mesic slopes, while being considered globally vulnerable. Chatham County supports the most populations in the state of this rare flower, but it is much less common outside of the Cape Fear drainage statewide, only known from a few other watersheds. Other species are known from only a few populations globally. The formal status of rare species may be updated by state and federal agencies as they review the best available survey data. For more information and definitions of these statuses see the Explanation of Status and Rank Codes section of this document.





Buttercup Phacelia (*Phacelia covillei*), at Poes Ridge/Dam Road Upland Forests Natural Area, Chatham County, NC. Photo by: Merry Conlin.

Most of the county's rare species are associated with mesic habitats ranging from flooded rocky bars to slightly sheltered dry to mesic slopes. These habitats tend to contain the highest species richness and diversity in general. Species such as piedmont horsebalm (*Collinsonia tuberosa*), chinquapin oak (*Quercus muehlenbergii*), heartleaf skullcap (*Scutellaria ovata*), and Ozark tassel-rue (*Trautvetteria applanata*) favor not only mesic conditions but also soils slightly closer to circumneutral. Given the predominance of acidic soils in the Piedmont, those regions with a slightly higher soil pH often have a higher frequency of rare flora.

Other species have traits suited to drier conditions and are often observed in upland habitats under open canopies or along roadsides. This includes species such as showy aster (*Eurybia spectabilis*), tall boneset (*Eupatorium altissimum*), Lance-leaf Ragweed (*Ambrosia bidentata*), and Appalachian Loosestrife (*Steironema tonsum*).

The only federally endangered plant species known from the county, Harperella (*Ptilimnium nodosum*), occurs directly within the scour zones of rivers. Habitat for this species is gravel bars and rocky shoals, and it relies on the deposition of some fine sediments to become established (USFWS 2024). Nationwide this species occurs in 28 populations, only nine of which are deemed stable (USFWS 2024). This species has not been observed in Chatham County since it was reintroduced at several sites in the Rocky and Deep Rivers. It was last observed in 2015. There are four other state endangered or threatened species known from Chatham County. All are considered historic and have not been observed in over 30 years.

Table 4. Rare Plants Documented from Chatham County, North Carolina. (\*= Historical Record).

Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
VASCULAR PLANTS					
<i>Allium mobilense</i>	Mobile Onion	W-PK		SU	G5T4T5
<i>Ambrosia bidentata</i>	Lance-leaf Ragweed	W-PK		S2?	G5
<i>Baptisia albescens</i> *	Thin-pod White Wild Indigo	W-RS		S3	G4
<i>Cardamine douglassii</i>	Douglass’s Bittercress	SR-P		S2	G5
<i>Carex crus-corvi</i>	Crowfoot Sedge	SR-P		S2	G5
<i>Carex jamesii</i>	James's Sedge	SC-V		S2	G5
<i>Collinsonia tuberosa</i>	Piedmont Horsebalm	SR-P		S1S2	G3G4
<i>Crataegus beata</i>	Rochester Hawthorn	W-RS		S1?	G2G4
<i>Dichanthelium annulum</i> *	Ringed Witch Grass	E		S1	G3
<i>Dirca palustris</i>	Leatherwood	W-RS		S3	G5
<i>Enemion biternatum</i> *	Eastern Isopyrum	SC-V		S2S3	G5
<i>Eupatorium altissimum</i>	Tall Boneset	W-RS		S2	GNR
<i>Eurybia spectabilis</i>	Showy Aster	SR-O		S1S2	G5
<i>Fothergilla major</i>	Large Witch-alder	SR-T		S3	G3
<i>Gillenia stipulata</i> *	Indian Physic	T		S2	G5
<i>Hexastylis lewisii</i>	Lewis’s Heartleaf	W-RS		S3	G3
<i>Isoetes virginica</i> *	Virginia Quillwort	SR-L		S1	G1
<i>Juncus brachycarpus</i> *	Whiteroot Rush	W-PK		S2?	G4G5
<i>Krigia biflora ssp. biflora</i> *	Two-flower Dwarf-dandelion	W-PK		S2	G5T5
<i>Leersia lenticularis</i>	Catchfly Cutgrass	SR-P		S2?	G5
<i>Lemna minor</i> *	Common Duckweed	W-PK		S2S3	G5
<i>Lindera subcoriacea</i>	Bog Spicebush	SC-V		S2	G3
<i>Monotropsis odorata</i>	Sweet Pinesap	SR-O		S3	G3
<i>Paspalum fluitans</i> *	Horsetail Crown Grass	SR-P		S1	G5
<i>Phacelia covillei</i>	Buttercup Phacelia	SR-T		S3	G3
<i>Ptilimnium nodosum</i>	Harperella	E	E	S1	G2
<i>Quercus muehlenbergii</i>	Chinquapin Oak	W-RS		S2	G5
<i>Quercus palustris</i> *	Pin Oak	W-RS		S2	G5
<i>Scutellaria nervosa</i> *	Veined Skullcap	E		S1	G5
<i>Scutellaria ovata var. bracteata</i>	A Heartleaf Skullcap	W-PK		S2?	G5TNR
<i>Steironema tonsum</i>	Appalachian Loosestrife	SR-P		S2	G4
<i>Thermopsis mollis</i> *	Appalachian Golden-banner	SR-T		S3	G3G4
<i>Trautvetteria applanata</i>	Ozark Tassel-Rue	W-PK		S1?	NR
<i>Trifolium reflexum</i> *	Buffalo Clover	T		S1S2	G3G4
NONVASCULAR PLANTS					
<i>Anacamptodon splachnoides</i> *	Knothole Moss	W-PK		S2?	G3G5
<i>Cryphaea ravenelii</i> *	A Thread Cedar Moss	W-PK		S2?	G3?

Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
<i>Dermiscellum oulocheila</i>	Catawba Dermiscellum	W-PK		S1	GNR
<i>Entosthodon serratus</i> *	A Cord Moss	W-PK		SH	G4
<i>Plagiochila undata</i> *	A Liverwort	W-PK		S2	G4G5
<i>Ricciocarpos natans</i>	Fringed Heartwort	W-RS		S1	G5
<i>Thuidium alleniorum</i> *	Fernmoss	W-PK		S2?	G3G5

## Fauna

Chatham County supports a fairly large number of both terrestrial and aquatic rare species (Table 5). There are a total of 91 animal species with state or federal listed status for the county, including 12 species with historical records that have not been observed in the county in more than 25 years. Forty-seven species, or 52%, of the county's listed rare animal species are insects, with rare moths having the largest representation. Aquatic species make up the next largest percentage at 25%, comprising freshwater bivalves, fish, and crustaceans. Other well represented groups for rare taxa in the county include birds (12 listed species present), amphibians and reptiles (6 listed species present), and mammals (3 listed species present).

### Aquatic Species



Cape Fear Shiner Broodstock Collection from Rocky River. Photo By: Brandi Symons, USFWS, Public Domain.

A significant rare animal species found in Chatham County is the Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*). This fish species is globally restricted to the Cape Fear River drainage in North Carolina. At the time of the first Chatham Inventory, the Cape Fear Shiner was known from only three sites globally (Hall and Boyer 1992). Today, USFWS reports one population, with three subpopulations, in the Haw, Rocky-Deep and Cape Fear Rivers (2022b).

Numerous recovery efforts have been undertaken for this species, including the removal of dams in their habitat, translocations, propagation, and stocking of the species, among others (USFWS 2022a, 2022b). No observations of the Haw River subpopulation of Cape Fear Shiners have been reported in more than ten years, while the Deep and Rocky systems maintain some of the largest observation totals (USFWS 2022a). Portions of the Rocky River in Chatham County are designated critical habitat for the species (USFWS 2022a).

One additional globally critically imperiled fish is known from Chatham County. The State Threatened Carolina redbhorse (*Moxostoma* sp. 3) which occurs in the Haw, Deep, Rocky, and Cape Fear Rivers.

Chatham County's rivers also support ten state endangered or threatened freshwater bivalves. One species is federally listed as Threatened, the Atlantic pigtoe (*Fusconaia masoni*). This species occurs in limited populations in Atlantic Slope drainages from Virginia to Georgia (USFWS 2021). In Chatham County it occurs in the Cape Fear drainage and is reported locally from the Rocky River and its tributaries. Two more types of rare



aquatic species occur in or near Chatham's waterways, a Significantly Rare crustacean, the Carolina Ladle Crayfish (*Cambarus davidi*) and a Significantly Rare gastropod Panhandle Pebblesnail (*Somatogyrus virginicus*).

## Insects and Pollinators

*Prepared By: Laurie Hamon, NCNHP Pollinator Biologist*

Forests and adjacent open areas in Chatham County can provide important habitat for insect pollinators. Five Significantly Rare butterfly species have been reported in Chatham County, as well as four Watch List butterfly species and one Watch List bumble bee species (Table 5). Several of these species have likely been observed in the county due to their ability to use habitats altered by human uses, such as old agricultural fields, powerlines, roadsides, and urban areas.

In the southwestern part of the county, cobweb skipper (*Hesperia metea*) has been reported in the vicinity of the Bennett Hardpan Natural Area. This region is dominated by successional forest with an overstory of loblolly pine (*Pinus taeda*) but includes a small but significant example of Xeric Hardpan Forest (Acidic Subtype). This community type may provide the more open conditions that are appropriate for this species. A likely host plant for cobweb skippers, little bluestem (*Schizachyrium scoparium*), has previously been reported from this site. This area is also the site of a historical record of Georgia satyr (*Neonympha areolatus*), a species normally associated with pine savannas. Several plant species more indicative of Coastal Plain communities have been observed in this area, which may point to the potential of this site for supporting savanna associates such as Georgia satyr.

Several rare butterfly sightings have been reported from the vicinity of Jordan Lake, likely in part due to the high amount of search effort in this region. Checkered white (*Pontia protodice*) has been reported at the southern end of the lake, in an open area adjacent to a mix of alluvial bottomland, mesic slopes, and upland hardwood forests. The Jordan Lake area is also the location of a historical sighting of confused cloudywing (*Thorybes confusus*), a legume-feeding Watch List species that favors sandy open areas near pinewoods. Another Watch List butterfly reported from the Jordan Lake area and southeastern part of the state is Leonard's skipper (*Hesperia leonardus*), which is generally observed in open areas adjacent to forests. The rare butterfly oak hairstreak (*Satyrrium favonius*)—likely the Northern oak hairstreak subspecies (*S. satyrrium ontario*)—has been reported from western Pittsboro. This species relies on dry forests with plentiful oaks.



Checkered White (*Pontia protodice*). Photo By: Jeffrey S. Pippen, [www.jeffpippen.com](http://www.jeffpippen.com) Used with Permission.

Several rare or declining pollinator species are intermittently reported throughout Chatham County as passing visitors, especially in gardens, including Monarch (*Danaus plexippus*) and Eastern giant swallowtail (*Heraclides cresphontes*). These species are generally observed feeding on planted host and nectar plants, both native and nonnative. Besides butterflies, American bumble bee (*Bombus pensylvanicus*) is also intermittently reported. This species has experienced recent sharp declines in the northern part of its range. Like many bumble bees, this species is a generalist, feeding on many flowering plants. The degree to which this species nests and breeds in Chatham County remains unclear. Many flowering plants, including rare species, provide important pollen and nectar resources for pollinators. Early-season blooming plants, such as

Eastern isopyrum (*Enemion biternatum*), provide much-needed resources for early-emerging solitary bees. Late in the season, purple and yellow composites such as showy aster (*Eurybia spectabilis*) are popular resources for a large number of bees and butterflies.

The Haw River, Deep River, and Rocky River support important habitat for several uncommon dragonfly species, with three Significantly Rare and six Watch List species observed in Chatham County. These in-



Septima's Clubtail (*Gomphurus septima*) in Chatham County, NC. Photo by: Lori Arent. Used with Permission.

clude species generally associated with large rivers, such as cocoa clubtail (*Gomphurus hybridus*), Septima's clubtail (*Gomphurus septima*), spine-crowned clubtail (*Hylogomphus abbreviatus*), banner clubtail (*Hylogomphus apomyius*), cinnamon shadowdragon (*Neurocordulia virginensis*), and rapids clubtail (*Phanogomphus quadricolor*), as well as species associated with creeks and slow-moving streams such as Piedmont clubtail (*Hylogomphus parvidens*), coppery emerald (*Somatochlora georgiana*), and Laura's clubtail (*Stylurus laurae*). A diversity of features throughout Chatham County rivers, such as rapids, shoals, and rocky bars, provide important habitat for both nymphal and adult dragonflies. These rivers also provide habitat for at least 10 Watch List and 1 Significantly Rare mayfly, caddisfly, and stonefly species.

Multiple rare moth species have been reported in Chatham County, including two Significantly Rare species and 15 Watch List species. This includes two *Syssphinx* species that feed on honey locust (*Gleditsia triacanthos*), a species whose native status in Chatham County is unclear. It also includes several species associated with Piedmont Monadnock Forest, such as Charcoal Lytrosis (*Lytrosis permagnaria*). Recent surveys (in 2024–2025) by members of the NC Biodiversity Project have revealed a large diversity of moth species at the White Pines Preserve, including several new to the County (Hall et al. 2025). Some of these newly observed species are otherwise associated with the mountains of North Carolina (Hall et al. 2025). This may be because White Pines Preserve contains natural communities that resemble mountain habitat, with regionally uncommon species such as mountain laurel (*Kalmia latifolia*) and Catawba rhododendron (*Rhododendron catawbiense*).

## Terrestrial Vertebrates

The varied habitats in Chatham County support 12 rare permanent resident or breeding bird species (Table 5). Some of the rarest are historical in the county, including the Federally Threatened Red-cockaded Woodpecker (*Dryobates borealis*) and the State Special Concern Bachman's Sparrow (*Peucaea aestivalis*). Both species are better known from the Coastal Plain where their primary habitat of open pine forest, mainly

longleaf pine (*Pinus palustris*), is more abundant. Some parts of Chatham County contain elements of Coastal Plain flora, including relictual occurrences of longleaf pine. Bald Eagles (*Haliaeetus leucocephalus*), state listed as Threatened, are regularly observed in Chatham County around Jordan Lake. Chatham County additionally supports heron rookeries, which are protected under the Migratory Bird Treaty Act.

Wetlands in Chatham County support a Special Concern amphibian, the four-toed salamander (*Hemidactylium scutatum*). All of the uncommon reptiles known from the county are Watch List species and include two turtles and one snake. Three uncommon mammal species occur in Chatham County. The tricolored bat (*Perimyotis subflavus*) is federally Proposed Endangered. The other two species are both Watch List and Vulnerable in the state, the long-tailed weasel (*Neogale frenata*) and the eastern fox squirrel (*Sciurus niger*).

Table 5. Rare Animal Species Documented from Chatham County, North Carolina. (\*= Historical Record).

Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
Amphibians					
<i>Anaxyrus quercicus</i>	Oak Toad	SR		S2	G5
<i>Hemidactylum scutatum</i>	Four-toed Salamander	SC		S3	G5
Birds					
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	W-PD, W-TH		S3B, S1N	G5
<i>Anhinga anhinga</i>	Anhinga	W-RS		S3B	G5
<i>Antrostomus carolinensis</i>	Chuck-will’s-widow	W-PD		S4B	G5
<i>Antrostomus vociferus</i>	Eastern Whip-poor-will	W-PD		S3B	G5
<i>Chaetura pelagica</i>	Chimney Swift	W-PD		S4B	G4G5
<i>Dryobates borealis</i> *	Red-cockaded Woodpecker	E	T	S2	G3
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T	BGP A	S3B, S3N	G5
<i>Lanius ludovicianus</i>	Loggerhead Shrike	SC, W- RS		S2S3 B,S3 N	G4
<i>Lophodytes cucullatus</i>	Hooded Merganser	W-PK		S1B, S4N	G5
<i>Peucaea aestivalis</i> *	Bachman’s Sparrow	SC		S3B, S2N	G3
<i>Phalacrocorax auritus</i> *	Double-crested Cormorant	SR		S2B, S5N	G5
<i>Spiza americana</i>	Dickcissel	SR		S2B	G5
Butterflies					
<i>Danaus plexippus</i>	Monarch	W-PD	PT	S4	G4
<i>Heraclides cresphontes</i>	Eastern Giant Swallowtail	SR		S2	G5
<i>Hermeuptychia intricata</i>	Intricate Satyr	W-PK		S3?	GNR
<i>Hesperia leonardus</i>	Leonard’s Skipper	W-RS		S2S3	G4
<i>Hesperia metea</i> *	Cobweb Skipper	SR		S2	G4
<i>Neonympha areolatus</i> *	Georgia Satyr	SR		S2	G3G4

Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
<i>Pontia protodice</i>	Checkered White	SR		S1S2	G4
<i>Satyrrium favonius ontario</i>	Northern Oak Hairstreak	SR		S2S3	G5T4
<i>Thorybes confusus</i> *	Confused Cloudywing	W-PK		S3S4	G4
<b>Caddisflies</b>					
<i>Ceraclea mentiea</i>	Liar Long-horned Caddisfly	W-PK		S3	G4G5
<i>Ceraclea tarsipunctata</i>	Dot-footed Long-horned Caddisfly	W-PK		S3	G5
<i>Neophylax virginica</i>	a Uenoid Casemaker	W-PK		S1	GNR
<i>Triaenodes marginatus</i>	Bordered Long-horned Caddisfly	W-PK		S3	G5
<b>Crustaceans</b>					
<i>Cambarus davidi</i>	Carolina Ladle Crayfish	SR		S3	G3
<b>Dragonflies or Damselflies</b>					
<i>Gomphurus hybridus</i>	Cocoa Clubtail	W-PK		S3	G4
<i>Gomphurus septima</i>	Septima's Clubtail	SR		S3	G3
<i>Hylogomphus abbreviatus</i>	Spine-crowned Clubtail	W-RS		S3S4	G4
<i>Hylogomphus apomyius</i> *	Banner Clubtail	W-PK		S3	G3G4
<i>Hylogomphus parvidens</i>	Piedmont Clubtail	W-RS		S3	G4
<i>Neurocordulia virginienensis</i>	Cinnamon Shadowdragon	W-PK		S2?	G4
<i>Phanogomphus quadri-color</i> *	Rapids Clubtail	SR		S1S2	G3G4
<i>Somatochlora georgiana</i> *	Coppery Emerald	SR		S1?	G3G4
<i>Stylurus laurae</i> *	Laura's Clubtail	W-PD		S2S3	G4
<b>Freshwater Bivalves</b>					
<i>Alasmidonta undulata</i>	Triangle Floater	T		S3	G4
<i>Alasmidonta varicosa</i>	Brook Floater	E		S3	G3
<i>Elliptio cistellaeformis</i>	Box Spike	W-PK, W-TH		SU	G4
<i>Elliptio congaraea</i>	Carolina Slabshell	W-RS, W-TH		S3	G3
<i>Elliptio producta</i>	Atlantic Spike	W-PK, W-TH		SU	G3
<i>Elliptio roanokensis</i>	Roanoke Slabshell	SC		S3	G3
<i>Fusconaia masoni</i>	Atlantic Pigtoe	T	T	S3	G1
<i>Lampsilis cariosa</i>	Yellow Lampmussel	E		S3	G3G4
<i>Lampsilis radiata</i>	Eastern Lampmussel	T		S3	G5
<i>Lampsilis sp. 2</i>	Chameleon Lampmussel	SR		S2	G2
<i>Lampsilis splendida</i>	Rayed Pink Fatmucket	SR		S1	G3
<i>Sagittunio nasutus</i>	Eastern Pondmussel	T		S2	G3
<i>Sagittunio vauhanianus</i>	Carolina Creekshell	E		S3	G2G3
<i>Strophitus undulatus</i>	Creeper	T		S3	G5
<i>Toxolasma pullus</i>	Savannah Lilliput	E		S2	G2

Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
<i>Venustaconcha constricta</i>	Notched Rainbow	T		S3	G3
<i>Villosa delumbis</i>	Eastern Creekshell	SR		S4	G4
<b>Freshwater Fish</b>					
<i>Etheostoma collis</i>	Carolina Darter	SC		S3	G3
<i>Etheostoma flabellare</i>	Fantail Darter	W-TH		S3	G5
<i>Moxostoma sp. 3</i>	Carolina Redhorse	T		S2	G1G2 Q
<i>Notropis mekistocholas</i>	Cape Fear Shiner	E	E	S1	G1
<b>Freshwater or Terrestrial Gastropod</b>					
<i>Somatogyrus virginicus</i>	Panhandle Pebblesnail	SR		S2S3	G2G3
<b>Grasshopper or Katydid</b>					
<i>Hubbellia marginifera</i>	Pine Katydid	W-PK		S3?	GNR
<b>Mammal</b>					
<i>Neogale frenata</i>	Long-tailed Weasel	W-PK		S3	G5
<i>Perimyotis subflavus</i>	Tricolored Bat	E	PE	S3	G3G4
<i>Sciurus niger</i>	Eastern Fox Squirrel	W-RS		S3	G5
<b>Mayflies</b>					
<i>Anthopotamus myops</i>	a mayfly	W-PK		S3	G5
<i>Choroterpes basalis</i> *	a mayfly	SR		S2	G5
<i>Eurylophella enoensis</i>	Eno River Spiny Crawler Mayfly	W-TH		S3	G4
<i>Leptophlebia bradleyi</i>	a mayfly	W-TH		S2	G5
<b>Moths</b>					
<i>Arugisa latiorella</i>	Watson's Arugisa Moth	W-PK		S3?	G4
<i>Baltodonta broui</i>	a new Prominent Moth	W-PK		S2S3	G3G4
<i>Catocala illecta</i>	Magdalen Underwing	W-PK		SU	G5
<i>Catocala pretiosa</i>	Precious Underwing	W-PK		S2S3	G4
<i>Eupithecia peckorum</i>	Peck's Pug Moth	W-PK		S3?	G4
<i>Hypomecis longipectinaria</i>	Broadly Pectinate Hypomecis Moth	W-PK		S3S4	G3G4
<i>Idaea productata</i>	a Wave	W-PK		SU	G4
<i>Idaea scintillularia</i>	Diminutive Wave	W-PK		SU	GNR
<i>Lytrosis heitzmanorum</i>	a Geometrid Moth	W-PK		SU	G5
<i>Lytrosis permagnaria</i>	A Geometrid Moth	SR		S2S3	G3G4
<i>Nemoria bifilata</i>	White-barred Emerald	W-PK		S3?	G4
<i>Oligia chlorostigma</i>	a Brocade Moth	W-PK		SU	G4
<i>Paectes nubifera</i>	Clouded Paectes Moth	W-PK		SU	GNR
<i>Sympistis dinalda</i>	a Sallow	W-PK		SU	GNR
<i>Syssphinx bicolor</i>	Honey Locust Moth	W-PK		S3?	G5
<i>Syssphinx bisecta</i>	Bisected Honey Locust Moth	SR		S1?	G5



Scientific Name	Common Name	Status		Rank	
		NC	US	NC	Global
<i>Tornos abjectarius</i>	a Tornos Moth	W-PK		S2S3	GNR
<b>Reptiles</b>					
<i>Apalone spinifera aspera</i>	Gulf Coast Spiny Softshell	W-RS		S3	G5T5
<i>Clemmys guttata</i>	Spotted Turtle	W-PD		S4	G5
<i>Ophisaurus attenuatus longicaudus</i> *	Eastern Slender Glass Lizard	SC		S1	G5T5
<i>Virginia valeriae</i>	Smooth Earthsnake	W-RS		S3	G5
<b>Sawfly, Wasp, Bee, or Ant</b>					
<i>Bombus pensylvanicus</i>	American Bumble Bee	W-PK		S3S4	G3G4
<b>Stoneflies</b>					
<i>Acroneuria evoluta</i>	Constricted Stone	W-TH		S2	G5
<i>Isoperla burksi</i>	Banded Stripetail	W-PK		S2	G4
<i>Perlesta puttmanni</i>	Anna Stone	W-PK		S2?	G3G4

## Areas for Future Study

Even after two systematic inventory efforts, some portions of Chatham County still remain to be surveyed for important natural features. While there was an impressive and significant response from many landowners, access to some high priority privately-owned natural areas was limited in some cases where landowners did not respond to requests for access or denied permission. In particular, the western part of the county contains the fewest natural areas identified by the Natural Heritage Program. While this is in part resulting from past land use restricting site suitability, it is also due to less successful outreach efforts to landowners in this part of the county.

Additionally, data gathered during site visits provided the basis for this ecological assessment, but not all areas of an assessed property were visited in all seasons or during all trips. As such, this inventory should not necessarily be considered comprehensive. Some plant species, for example, are visible and/or identifiable only during certain times of the year. Also, while the inventory of the flora and plant communities was thorough, no detailed or methodical survey of the fauna was performed. Despite these limitations, the inventory highlights the best-known examples of biodiversity in Chatham County and the most unique natural features known at this time.

## CONSERVATION OPTIONS

*Prepared with contributions from Margaret Sands, Triangle Land Conservancy*

Protecting natural areas means choosing to put land into a status where its natural character will be retained in the long run and ideally where it will be managed to reduce threats to its ecological integrity. Many forms of conservation agreements protect large tracts in Chatham County. Government agencies also play an important conservation role. Twenty-one of the 56 sites identified in this inventory have some acreage on state or federally managed lands. Many of these sites are found along Jordan Lake.

The North Carolina Natural Heritage Program offers two conservation options under the state Nature Preserves Act to support protection of natural areas such as those described in this report. These programs can apply to either public or private lands. The first is the Registry of Natural Heritage Areas. Registry is a voluntary agreement signed between a landowner or manager and the North Carolina Department of Natural and Cultural Resources. It can provide the landowner with management recommendations, some degree of statutory protection of the land, and public recognition (if desired). Although it can be rescinded with 30 days' notice, and lapses if the land is sold, it has proven a useful way for landowners to show commitment to protecting important sites.

Registered Heritage Area agreements with private landowners have been highly successful in Chatham County. There are 17 active private registries within the county. The organization 130 of Chatham has protected 1,116 acres of streamside (riparian) areas to date, much of which is along the Rocky River, and 3,334 acres of upland habitats throughout the county. Additionally, 130 of Chatham has implemented several restoration projects and targeted nonnative invasive species removal.

The US Army Corps of Engineers, North Carolina Forest Service, and NC Wildlife Resources Commission also have entered into Registered Heritage Area agreements to protect publicly owned lands around Jordan Lake.

The second conservation option available through the Natural Heritage Program is Dedication as a State Nature Preserve. This type of agreement is legally binding and runs with the deed to the land, so that the agreement remains in place even if the ownership changes. It can be applied to state, local government, or private lands. Deep River State Trail, Lower Haw River State Natural Area, Jordan Game Land, and White Pines Preserve are all examples of Dedicated Nature Preserves within Chatham County.

For more information about Dedicated Nature Preserves or Registered Heritage Areas, contact the N.C. Natural Heritage Program, Department of Natural and Cultural Resources, 1651 MSC, Raleigh, NC 27699-1651; website: [www.ncnhp.org](http://www.ncnhp.org).

For privately owned natural areas, if landowners choose to protect their land for the long term, there are some additional options for partnerships beyond Registry or Dedication. One popular permanent option is the conservation easement. With a conservation easement, the land remains in private ownership, but certain uses, such as development, are restricted. The terms of conservation easements are flexible and are negotiated between the landowner and a qualified private conservation group, usually a land trust, in order to preserve the conservation values of the property and meet the needs of the landowner. The easement holder has the responsibility of enforcement and monitoring of the conservation easement in perpetuity for these legally binding agreements. Restricting the ability to develop a piece of land can change the fair market value of a property. Sometimes funding is available from local, state, or federal funding sources to compensate a landowner for the change in value. If the conservation easement is donated rather than sold in total or in part, there can be tax benefits for the owner. Several private, nonprofit land trusts operate within Chatham County and offer assistance to landowners who want to explore conservation options. Triangle Land Conservancy (TLC) and Piedmont Land Conservancy (PLC) both hold conservation easements and own fee-simple nature preserves within the county. A fee-simple preserve means the land trust owns the land and maintains perpetual stewardship and management responsibility. Additional options to protect natural areas include a planned gift or bequest, deed restrictions, tax deferral programs, and more. Opportunities to work with a land trust on protection are not limited to NCNHP natural areas or natural communities. Even working lands, such as active farms and timber lands, can be conserved. Triangle Land Conservancy is the primary land trust covering Chatham County. For more information on the various opportunities they offer, contact Triangle Land Conservancy at [www.triangleland.org](http://www.triangleland.org).

Landowners who are interested in improving the habitat value of their land can explore various cost-share programs that are available through the Natural Resources Conservation Services of the United States Department of Agriculture and local soil and water conservation districts. Various programs are available for soil and water protection, reforestation, erosion control, wildlife enhancement, and riparian-stream area restoration.

The NC Wildlife Resources Commission Wildlife Conservation Land Program allows private landowners who manage their property for protected wildlife species, priority wildlife habitats, or as Wildlife Reserve Land to apply for a property tax deferment.

Overall, there are 14,470 acres of Registered Natural Heritage Areas within the county, including approximately 3,376 acres held by the US Army Corps of Engineers. Four conservation areas are managed as Dedicated Nature Preserves. Twelve natural areas contain acreage under some form of agreement with private conservation organizations, such as Triangle Land Conservancy and Piedmont Land Conservancy. Fifteen total natural areas remain under no formal conservation agreements as of the date of publication.

## Restoration Options

Much of the terrestrial area in Chatham County is privately owned, in small to large tracts with immense restoration potential. Habitat corridors, particularly along the key tributaries and major rivers and intact forested regions, are critical for the persistence of native species. Depending on the native composition of a given property, or what was presumed to occur prior to disturbance, many options exist to restore native habitat. This section is intended to briefly introduce landowners and land managers to resources available to guide restoration efforts on their properties and is by no means exhaustive.

One of the earliest pieces of information required for a restoration project is the determination of the project goal, and which species are being managed. The information necessary to create a successful management plan includes an understanding of several elements described in this inventory such as: soil type, topography, water quality and drainage, tree composition and age, and other unique features. If the tract under



Cope's Gray Treefrog in Chatham County, NC. Photo by: Merry Conlin.

consideration is described in a NCNHP natural area, these elements are often described in addition to a list of the predominant natural communities. Considering the current or neighboring natural communities allows for the determination of a restoration target that could benefit numerous species.

Community or habitat level management guidance can be found in resources at various project scales. Landowners that are seeking advice on management of forest lands can access cost-sharing programs through the N.C. Forest Stewardship Program. The Forest Stewardship Program is supported by state and federal resource agencies and works with landowners to develop management plans for controlled burning, reforestation with natural vegetation, restoration of riparian buffer strips, and wildlife enhancement. For more information, see Megalos (2016).



Habitat management recommendations are available for a variety of settings, from backyards to forested tracts. For reptile and amphibian habitat, see resources produced by Partners in Amphibian and Reptile Conservation (PARC). This group provides a detailed guide for species and habitats found in the southeastern United States (Bailey et al. 2006). To manage for additional wildlife species, particularly in urban areas, N.C. State Cooperative Extension has a series of publications with detailed recommendations, covering birds (Moorman et al. 2022a), butterflies (Moorman et al. 2021), and landscaping with native food sources (Moorman et al. 2022b), among others.



Eastern Box Turtle in Chatham County, NC. Photo by: Merry Conlin.

Nonnative invasive species are a significant threat to the natural communities and species in Chatham County. If private landowners work to remove invasive species from their property, there can be a significant ecological benefit to the county. Tackling invasive species removal requires some planning and determination. Several resources exist to help with both recognizing nonnative invasive species and determining a management plan that supports restoration goals and the return of native species. Again, the N.C. State Extension program provides a useful introduction and links to additional sources (Moorman et al. 2019). The U.S. Forest Service has also produced a management guide that discusses the species encountered in the southeast and all possible management methods (Miller et al. 2015).



The Nonnative Invasive Autumn Olive (*Elaeagnus umbellata*), a Chatham County Familiar, with Characteristic Silvery Scales on the Leaf. Photo by: Merry Conlin.

## EXPLANATION OF STATUS AND RANK CODES

### Status Codes

Definitions of the state protection status for plants and animals differ. In North Carolina, Endangered, Threatened, and Special Concern animals have legally protected status through the North Carolina Wildlife Resources Commission (NCWRC) and plants have legally protected status through the North Carolina Plant Conservation Program (NCPCP). Significantly Rare designations indicate rarity and the need for population monitoring and conservation action. However, it is a nonregulatory NC Natural Heritage Program designation (NCNHP). The NCNHP also maintains Watch Lists for species of plants and animals that are uncommon, are not well studied, or are otherwise threatened with serious decline but are not currently legally protected or designated as Significantly Rare.

### N.C. STATUS — ANIMALS & PLANTS

Table 6. NC Status Codes and Definitions for Animals and Plants.

N.C. STATUS CODE	STATUS	DEFINITION
E	Endangered	<p>“Any native or once-native species of wild <b>animal</b> whose continued existence as a viable component of the State’s fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an ‘endangered species’ pursuant to the Endangered Species Act” (Article 25 of Chapter 113 of the General Statutes; 1987).</p> <p><b>OR</b></p> <p>“Any native or once-native species or higher taxon of <b>plant</b> whose continued existence as a viable component of the State’s flora is determined to be Endangered.” (GS 19B 106: 202.12).</p>
T	Threatened	<p>“Any native or once-native species of wild <b>animal</b> which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act” (Article 25 of Chapter 113 of the General Statutes; 1987)</p> <p><b>OR</b></p> <p>“Any native or once-native resident species of <b>plant</b> which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range or one that is designated as a Threatened species pursuant to the Endangered Species Act.” (GS 19B 106:202.12).</p>
SC	Special Concern	<p>“Any species of wild <b>animal</b> native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of this Article” (Article 25 of Chapter 113 of the General Statutes; 1987).</p>
SC-V	Special Concern-Vulnerable	<p>“Any species or higher taxon of <b>plant</b> which is likely to become a threatened species within the foreseeable future.” (NCAC 02 NCAC 48F .0401).</p>
SC-H	Special Concern-Historical	<p>“Any species or higher taxon of <b>plant</b> that occurred in North Carolina at one time, but for which all known populations are currently</p>

N.C. STATUS CODE	STATUS	DEFINITION
		considered to be either historical or extirpated.” (NCAC 02 NCAC 48F .0401).
SR	Significantly Rare	This is an NCNHP designation. Any species which has not been listed as an Endangered, Threatened, or Special Concern species, but which exists in the state (or recently occurred in the state) in small numbers (generally fewer than 100 statewide populations) and has been determined by the NCNHP to need monitoring. Significantly Rare species include species of historical occurrence with some likelihood of rediscovery in the state and species substantially reduced in numbers by habitat destruction, direct exploitation, or disease. Species considered extirpated in the state, with little likelihood of rediscovery, are given no N.C. Status (unless already listed by the NC Wildlife Resources Commission or NC Plant Conservation Program as E, T, or SC).
SR-G	Game Animal	Species is a game <b>animal</b> or a furbearer, and therefore (by law) cannot be listed for state protection as E, T, or SC.
SR-L	Significantly Rare-Limited	The range of the species is <b>limited</b> to North Carolina and adjacent states (endemic or near endemic). These are species that may have 20-50 populations in North Carolina, but fewer than 100 populations rangewide. The preponderance of their distribution is in North Carolina and their fate depends largely on conservation here.
SR-T	Significantly Rare-Throughout	The species is rare <b>throughout</b> its range (fewer than 100 populations total).
SR-D	Significantly Rare-Disjunct	The species is <b>disjunct</b> to North Carolina from a main range in a different part of the country or world.
SR-P	Significantly Rare-Peripheral	The species is at the <b>periphery</b> of its range in North Carolina. These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats that are unusual in North Carolina.
SR-O	Significantly Rare-Other	The range of the species is sporadic or cannot be described by the other Significantly Rare categories.
W_	Watch List	This is an NCNHP designation for any other species believed to be rare and of conservation concern in the state but not warranting active monitoring at this time.
W-PD	Population Decline in NC	Species that are known to be <b>declining in North Carolina for reasons beyond habitat loss</b> . The distribution or population sizes of such species in the state are relatively well-known. Reasons for decline include exotic pests or pathogens, overcollection, poaching, and failure of reproduction. Because many of these taxa were once abundant or even dominant in parts of N.C., they may still be fairly common or frequently encountered, despite the strong decline. If current trends continue, however, many of these species will be threatened with extirpation in all or a major part of their ranges in N.C.
W-RS	Rare but Relatively Secure	Species whose status in N.C. is relatively well known and appear to be relatively secure at this time. While still notably rare, these species do not currently require site-specific monitoring and so are not on the Rare List. Many of these species were formerly on the Rare List; they

N.C. STATUS CODE	STATUS	DEFINITION
		are retained in this category because they require a lower level of monitoring to ensure their long-term security.
W-PK	Poorly Known in NC	Species with inadequate information about their distribution and rarity in N.C. These are generally species which appear to be rare based on museum records and field experience of NCNHP staff, consultants, and cooperating scientists. Further information is needed to determine the true status of these species in N.C.
W-QD	Rare but Questionable Documentation	Species that have been reported from N.C. without adequate documentation. These species should be listed at a higher level when their reported occurrence in N.C. is verified. This category includes sight records, old and vague reports for which no documentation has appeared, and, in a few cases, more recent literature reports for which we have not yet received documentation.
W-TH	Threat to Habitat	Species with increasing threats to their habitat but not yet warranting active tracking, whether or not populations are known to be declining. These threats can include loss of habitat from development and other modification (e.g., the dramatic loss of maritime forests), degradation of habitat (e.g., pollution and sedimentation of rivers and streams), and disturbance to the habitat (e.g., humans and vehicles on beaches), among other types of threats. Threats include use of pesticides, acid rain, and fire suppression.
W-NN	Rare but Believed Not Native	Species known to occur in N.C. that current data suggest are not native to N.C. but whose native occurrence is plausible. Some of these species were previously listed at a higher level, but field and/or genetic investigations suggest that all known N.C. occurrences are introductions.
W-QT	Rare but Questionable Taxonomy	Species that include taxa of dubious validity and taxa under study and potentially to be named. If further study reveals that these are valid taxa, they would warrant addition to the Rare List. This category has been used for named and unnamed taxa that appear likely to achieve recognition by accepted taxonomic authorities.

## U.S. STATUS — ANIMALS & PLANTS

The Federal Status is designated by the U.S. Fish and Wildlife Service (USFWS) and the U.S. National Marine Fisheries Service (USNMFS) in accordance with the U.S. Endangered Species Act of 1973 (USESA), as amended.

Table 7. U.S. Status Codes and Definitions for Animals and Plants.

U.S. STATUS CODE	STATUS	DEFINITION
E	Endangered	A taxon “which is in danger of extinction throughout all or a significant portion of its range” (Endangered Species Act, Section 3).
T	Threatened	A taxon “which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range” (Endangered Species Act, Section 3).

U.S. STATUS CODE	STATUS	DEFINITION
T(S/A)	Threatened due to Similarity of Appearance	Section 4 (e) of the [Endangered Species] Act authorizes the treatment of a species (subspecies or population segment) as endangered or threatened even though it is not otherwise listed as endangered or threatened if — (a) the species so closely resembles in appearance an endangered or threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act. (Endangered Species Act, Section 4).
C	Candidate	Taxa for which the USFWS has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened. Proposed rules have not yet been issued because this action is precluded at present by other listing activity. Development and publication of proposed rules on these taxa are anticipated. The USFWS encourages state and other federal agencies as well as other affected parties to give consideration to these taxa in environmental planning.
BGPA	Bald and Golden Eagle Protection Act	In the 9 July 2007 Federal Register (72:37346-37372), the bald eagle was declared recovered and removed (delisted) from the Federal List of Threatened and Endangered Wildlife. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16U.S.C. 668-668d) becomes the primary law protecting bald eagles. The Eagle Act prohibits take of bald and golden eagles and provides a statutory definition of “take” that includes “disturb.” The USFWS has developed National Bald Eagle Management Guidelines to provide guidance to land managers, landowners, and others as to how to avoid disturbing bald eagles. For additional information please see <a href="http://www.fws.gov/program/eagle-management">http://www.fws.gov/program/eagle-management</a>
XN	Nonessential Experimental Population	The Endangered Species Act permits the reintroduction of endangered animals as “nonessential experimental” populations. Such populations, considered nonessential to the survival of the species, are managed with fewer restrictions than populations listed as endangered. “Section 10 (j) of the Endangered Species Act of 1973, as amended, provides for the designation of introduced populations of federally listed species as nonessential experimental. This designation allows for greater flexibility in the management of these populations by local, state, and Federal agencies. Specifically, the requirement for Federal agencies to avoid jeopardizing these populations by their actions is eliminated and allowances for taking the species are broadened.” (U.S. Fish and Wildlife Service, 1995).
P_	Proposed	A species which has been formally proposed in the Federal Register for listing as Endangered or Threatened. The status would therefore be PE or PT, respectively.

## Rank Codes

The State Rank is a measure of the relative imperilment of both species and ecological communities in the state of North Carolina. For plant and animal species these ranks provide an estimate of extinction risk. This information has been developed by the NC Natural Heritage Program, NatureServe, and a large number of collaborators in government agencies, universities, natural history museums and botanical gardens, and other conservation organizations. These ranks have been developed primarily to help in guiding conservation and to inform environmental planning and management. State ranks are based on a one to five scale, ranging from critically imperiled (S1) to demonstrably secure (S5). These status assessments are based on the best available information, considering a variety of factors such as abundance, distribution, population trends, and threats. Global ranks apply to the status of a species throughout its range. The system is widely used by nationwide agencies and organizations, as the best available scientific and objective assessment of a species' rarity throughout its range.

A rank involving two numbers indicates uncertainty of rank. For example, an S2S3 or a G2G3 rank indicates that the species may be S2 or S3 (or G2 or G3), but that existing data do not allow that determination to be made.

### N.C. RANK — ANIMALS, PLANTS, & NATURAL COMMUNITIES

Table 8. N.C. Rank and Definitions.

N.C. RANK	DESIGNATION	DESCRIPTION
S1	Critically Imperiled	Critically imperiled in North Carolina due to extreme rarity or some factor(s) making it especially vulnerable to extirpation (local extinction) from the state. Typically 5 or fewer occurrences or very few remaining individuals (<1,000), or less than 2,000 acres occupied in the state.
S2	Imperiled	Imperiled in North Carolina due to rarity or some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or 2,000- 10,000 acres occupied in the state.
S3	Vulnerable	Vulnerable to extinction in North Carolina either because rare or uncommon, or found only in a restricted range (even if abundant at some locations), or due to other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals or 10,000- 50,000 acres occupied in the state.
S4	Apparently Secure	Apparently secure and widespread in North Carolina, usually with more than 100 occurrences and more than 10,000 individuals.
S5	Secure	Common, widespread, and abundant in North Carolina. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
S#S#	Range Rank	A numeric range rank (e.g., S2S3) is used to indicate uncertainty about the exact status of the element.
SH	Historical	Occurred in North Carolina historically, with some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years. Upon verification of an extant occurrence, SH-ranked elements would typically receive an S1 rank.



<b>N.C. RANK</b>	<b>DESIGNATION</b>	<b>DESCRIPTION</b>
SX	Presumed Extirpated	Believed to be extirpated in North Carolina and has not been located despite intensive searches of historical sites and other appropriate habitat.
SU	Unrankable	Currently cannot be assigned a rank in North Carolina due to lack of information or substantially conflicting information about status or trends. Need more information.
SNR	Not Ranked	Statewide rank not yet assessed.
SNA	Not Applicable	A conservation status rank is not applicable because the element is not a suitable target for conservation because it is (1) an interspecific hybrid without conservation value, (2) not native to North Carolina, (3) outside its usual range and not regularly found in North Carolina, (4) never confidently documented as present in North Carolina, or (5) a taxon not confidently documented as present in North Carolina.
S_B	Breeding	Rank of breeding population in North Carolina. Used for migratory species only. (Used as qualifier of above ranks, e.g., S5B.)
S_N	Nonbreeding	Rank of nonbreeding population in North Carolina. Used for migratory species only. (Used as qualifier of above ranks, e.g., S3N.)
S_?	Uncertain	Indicates an inexact or uncertain numeric rank. (Used as qualifier of above ranks, e.g., "S2?".)

## GLOBAL STATUS — ANIMALS, PLANTS, & NATURAL COMMUNITIES

The Global Rank is a measure of the relative imperilment of both species and ecological communities globally. Global ranks are assigned by NatureServe staff and contract biologists, based on a consensus of scientific experts, individual natural heritage programs, and the Natural Heritage Network. They apply to the status of a species throughout its range. This system is widely used by other agencies and organizations, as the best available scientific and objective assessment of a species' rarity throughout its range.

Table 9. Global Rank Designations and Descriptions.

<b>GLOBAL RANK</b>	<b>DESIGNATION</b>	<b>DESCRIPTION</b>
G1	Critically Imperiled	Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction. Typically five or fewer occurrences or very few remaining individuals (<1,000), acres (<2,000), or linear miles (<10) globally.
G2	Imperiled	Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction. Typically 6 to 20 occurrences, or few remaining individuals (1,000 to 3,000), acres (2,000 to 10,000), or linear miles (10 to 50) globally.
G3	Vulnerable	Vulnerable globally either because very rare throughout its range found only in a restricted range (even if abundant at

GLOBAL RANK	DESIGNATION	DESCRIPTION
		some locations), or because of other factors making it vulnerable to extinction. Typically 21 to 100 occurrences, between 3,000 and 10,000 individuals, or 10,000-50,000 acres occupied globally.
G4	Apparently Secure	Uncommon but not rare (although it may be rare in parts of its range, particularly on the periphery) and usually widespread. Apparently not vulnerable in most of its range, but possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	Secure	Common, widespread, and abundant (although it may be rare in parts of its range, particularly on the periphery). Not vulnerable in most of its range. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
G#G#	Range Rank	A rank involving two numbers indicates uncertainty of rank. For example, a G2G3 rank indicates that the species may be a G2 or a G3, but that existing data do not allow that determination to be made.
GH	Historical	Known only from historical occurrences, but with some expectation that it may be rediscovered. May still be extant; further searching is needed.
GX	Presumed Extinct	Believed to be extinct throughout its range with virtually no likelihood that it will be rediscovered. Not located despite intensive searches of historical sites and other appropriate habitat.
GU	Unrankable	Currently unrankable due to lack of information or due to substantially conflicting information about status or trends; need more information.
GNR	Not Ranked	Global rank not yet assessed.
GNA	Not Applicable	A conservation status rank is not applicable because the Element is not a suitable target of conservation activities. A rank is not assigned either because it is (1) an interspecific hybrid without conservation value; or (2) the element is a product of domestication or cultivation.
G_T#	Intraspecific Taxon	The rank of a taxonomic subspecies or variety. As an example, G4T1 would apply to a subspecies of a species with an overall rank of G4, but the subspecies warranting a rank of G1.
G_?	Inexact or Uncertain	Denotes inexact or uncertain numeric rank. Used as qualifier of above ranks.
G_Q	Questionable Taxonomy	Questionable taxonomy that may reduce conservation priority. Distinctiveness of this entity as a taxon at the current level is questionable. Resolution of this uncertainty may result in change from a species to a subspecies or inclusion of this taxon in another taxon, with the resulting species having a lower-priority conservation status rank. Used as qualifier of above ranks.

## Evaluation of Site Significance

The significance of natural areas in this report was evaluated using a standard method, developed by NCNHP in late 2012, for evaluating and rating natural areas. The rating system takes into account the quality, rarity, and number of occurrences of natural heritage elements (i.e., rare plants and animal species and significant examples of natural communities). The purpose of the rating system is to help identify which natural areas statewide are the highest priority for conservation efforts. The rating system methods can also be scaled down to identify county or regional priorities. Each natural area receives two significance ratings, which measure different values:

1. **Element Representational Value** rates each natural area the quality/importance of the occurrences of the individual elements it contains, relative to the quality/importance of the occurrences of these elements elsewhere throughout the state.
2. **Element Collective Value** rates each natural area on the number and rarity of the individual elements it contains. This helps identify the natural areas that have a high number of rare species or natural communities within a given site.

This paired rating system provides two distinct values for each site, one (Representational Value) that reflects the biodiversity of the state and one (Collective Value) that reflects the overall biodiversity of each natural area. Each site is assigned two values: a Representational Rating (from R1-R5) and a Collective Value Rating (from C1-C5). The two ratings measure different and complementary qualities of each site.

### Element Representational Value

NCNHP uses Element Occurrence (EO) viability ranks to determine the natural areas containing the 30 best extant natural occurrences of each tracked species of plant, animal, or natural community (known as “elements of biodiversity” or “elements”). The relative importance rank for each occurrence is assigned using the categories listed in Table 1. Collectively, these natural areas make up a portfolio representing the best sites for each element tracked by NCNHP. Each of the natural areas is thus rated according to the importance of the Element Occurrences contained within the site with R1 and R2 -rated natural areas containing the very best occurrences in the state (and perhaps globally) for the species or natural communities that are considered the defining element present at each site.

Table 10. Representational Value Rating Categories for Natural Areas Based on Element Occurrences.

Representational Value Rating	Definition	Defining EO Importance	
		Global Rank: G1-G2, G3 endemic or near-endemic	Global Rank: G3 (not endemic) G4- G5
R1 (Exceptional)	Natural area contains one of the best three examples of G1, G2, or G3 Endemic\Near-endemic Elements.	1 <sup>st</sup> to 3 <sup>rd</sup>	—
R2 (Very High)	Natural area contains the 4 <sup>th</sup> – 6 <sup>th</sup> best examples in the state of G1-G2 or G3 Endemic\Near-endemic Elements, and/or one of the best three examples of any non-Endemic G3, G4, or G5 Element within it.	4 <sup>th</sup> – 6 <sup>th</sup>	1 <sup>st</sup> to 3 <sup>rd</sup>

Representational Value Rating	Definition	Defining EO Importance	
		Global Rank: G1-G2, G3 endemic or near-endemic	Global Rank: G3 (not endemic) G4- G5
R3 (High)	Natural area contains the 7th to 10th best examples in the state of G1-G2 or G3 Endemic\Near-endemic Elements and/or the 4th to 7th best occurrences of any non-Endemic G3 or any G4 or G5 Element within it.	7 <sup>th</sup> – 10 <sup>th</sup>	4 <sup>th</sup> – 7 <sup>th</sup>
R4 (Moderate)	Natural area contains the 11th to 14th best examples in the state of G1-G2 or G3 Endemic\Near-endemic Elements and/or the 8th to 11th best occurrences of any non-Endemic G3 or any G4 or G5 Element within it.	11 <sup>th</sup> – 14 <sup>th</sup>	8 <sup>th</sup> – 11 <sup>th</sup>
R5 (General)	Natural area contains one of the 30 best examples in the state of Elements within it, which do not qualify for categories R1-R4.	15 <sup>th</sup> to 30 <sup>th</sup>	12 <sup>th</sup> to 30 <sup>th</sup>

The NCNHP database is queried for occurrences (EOs) for each element. After EOs are sorted and ranked from 1-30 for each element, natural areas are rated on the viability or quality of the occurrences they contain. The highest element importance in the site determines the natural area significance rating. For example, Moncure Boggy Streamheads contains three Element Occurrences:

- Bog Spicebush is the 3<sup>rd</sup> best example of a G3 near-endemic plant (yielding R1 rating)
- Piedmont Boggy Streamhead is the 7<sup>th</sup> best example of a G2G3 natural community (yielding R3 rating)
- Dry Oak—Hickory Forest (Piedmont Subtype) is the 50<sup>th</sup> best example of a G5 natural community (yielding an R5 Rating)

When taken together, the overall Representational Value rating of the site is R1 (Exceptional), based on the highest score of any of the elements; this element is often called the “defining element” for the natural area.

### Element Collective Value

The Element Collective Value Rating for each site sums the number of elements at a given site, weighted by their degree of imperilment at both the global level (G-Rank) and just within North Carolina (S-Rank).

The imperilment scores are assigned to each extant Element on a 10-point scale, based on their combination of G-Ranks and S-Ranks as shown in Table 2. The highest scores are given to elements that are considered imperiled at both the global (G1) and state (S1) levels with successively lower scores given to elements that are considered more secure (G5S5 being considered secure at both the global and state levels).

Table 11. Collective Value Point Scoring for Each G-Rank and S-Rank Combination.

G-Rank	S-Rank	Element Score
G1	S1	10
G2	S1	9
G2	S2	8
G3	S1	7
G3	S2	6
G3	S3	5
G4/G5	S1	4

G-Rank	S-Rank	Element Score
G4/G5	S2	3
G4/G5	S3	2
G4/G5	S4/S5	1

Table 12. Collective Value Ratings.

Collective Value Rating	Cumulative Element Score	Minimum Number of Elements
C1 (Exceptional)	91 and above	10
C2 (Very High)	61-90	7
C3 (High)	31-60	4
C4 (Moderate)	11-30	2
C5 (General)	2-10	1

For each site, the scores for occurrences of each element are added to give the final Collective Value Score for the site (Table 3). The total scores are divided into five categories of “site significance”: Exceptional (C1 rating), Very High (C2 rating), High (C3 rating), Moderate (C4 rating), and General (C5 rating). For example, if a site has four elements – a G2S2, a G3S1, a G5S1, and a G5S3 – it scores:  $8 + 7 + 4 + 2 = 21$  points. A score of 21 points yields a C4 (Moderate) Collective Value rating for the site.

## BIOLOGICAL SURVEYS AND ENDANGERED SPECIES LAWS

Obtaining landowner permission to survey is an integral part of biological inventory. Occasionally, however, permission to survey private lands is not granted due to the belief that if a rare species is discovered, restrictions and land-use limitations will be imposed. Clearly, when this occurs the search for scientific information is hindered. A secondary effect of not granting permission to survey is that owners of biologically significant lands do not learn about the conservation options and tax incentives that are available to them. Those who grant permission and are found to own significant lands are given results from the biological survey and, if they wish, are put in contact with an appropriate conservation organization or are made aware of other management or protection options.

In reality, there is very little reason for landowners to have concerns about the presence of rare species on their land. A summary of federal and state endangered species laws relevant to private landowners was prepared by Mark A. Cantrell of the U.S. Fish and Wildlife Service and Kenneth A. Bridle of the Piedmont Land Conservancy in Greensboro, NC. Some of that information is presented below to help dispel concerns that landowners may have about rare species and to provide clarification on potential land-use restrictions.

### Federal Law

1. The Endangered Species Act (USESA) protects only plants and animals that are federally listed as endangered or threatened. Since federally listed species are by definition very rare, the likelihood of any occurring on a given tract of private land is very small.
2. The USESA protects federally listed animal species from the potentially harmful actions of private landowners. Because this may lead to restrictions on their use of lands, Congress, the U.S. Fish and Wildlife Service (USFWS), and other partners have worked to develop flexible tools for resolving conflicts. These tools include Section 10 permits, such as habitat conservation plans, safe harbor agreements, and candidate



conservation agreements. Federal funds are also available to assist landowners with management and conservation of listed and candidate species (rare federally but not officially listed) on their land. Plants on private land are not subject to provisions of the USESA, unless federal funding or permitting is involved.

3. Engaging in interstate or foreign trade of a federally listed species without a permit is illegal for plants and animals. “Taking” (i.e., harassing, harming, pursuing, hunting, killing, trapping) or possessing illegally taken animals is a violation of the USESA. Removing, digging up, cutting, damaging, or destroying a federally listed plant is illegal on federal lands.

4. Through the habitat conservation planning process, the USFWS may issue a permit so that private landowners may lawfully “take” a federally listed animal species if it is “incidental to and not the purpose of carrying out otherwise lawful activities.” These permits are available as long as the landowner implements an approved habitat conservation plan, and the “taking” does not jeopardize the continued existence of the species. A private landowner is not required to prepare a conservation plan for the “taking” of listed plant species as long as the activity does not involve federal funding or permitting or is not in violation of other laws.

5. Under the USESA, private developers can obtain permits to legally harm or even kill federally listed species on their property provided that they show that attempts were made to minimize impacts on the species in other ways.

6. The existence of a federally listed plant species on private property has no legal effect on the landowner unless a project requires a federal permit or uses federal funds and will clearly result in adverse impacts to the listed plant. Landowners, individuals, and agencies are prohibited from taking listed animals without authorization, whether the action is private or federally funded.

7. When critical habitat is designated for federally listed species, the protection applies only to federal actions, not to state or local projects, and not to the actions of private landowners unless there is federal funding or permitting involved.

## **State Law**

1. North Carolina endangered species laws apply to species listed by the state as Endangered, Threatened, or Special Concern.

2. The state plant and animal endangered species laws are modeled after the USESA, in that they prohibit illegal trafficking or poaching of listed species.

3. The state endangered animal species law states that “no rule may be adopted that restricts use or development of private property.”

4. The state endangered plant species law states that “the incidental disturbance of protected plants during agricultural, forestry, or development operations is not illegal so long as the plants are not collected for sale or commercial use.” Collection of federally or state listed plants from public or private land can only be done with the landowner’s written permission and a permit from the N.C. Department of Agriculture’s Plant Conservation Program.

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## **Mapping Data Sources:**

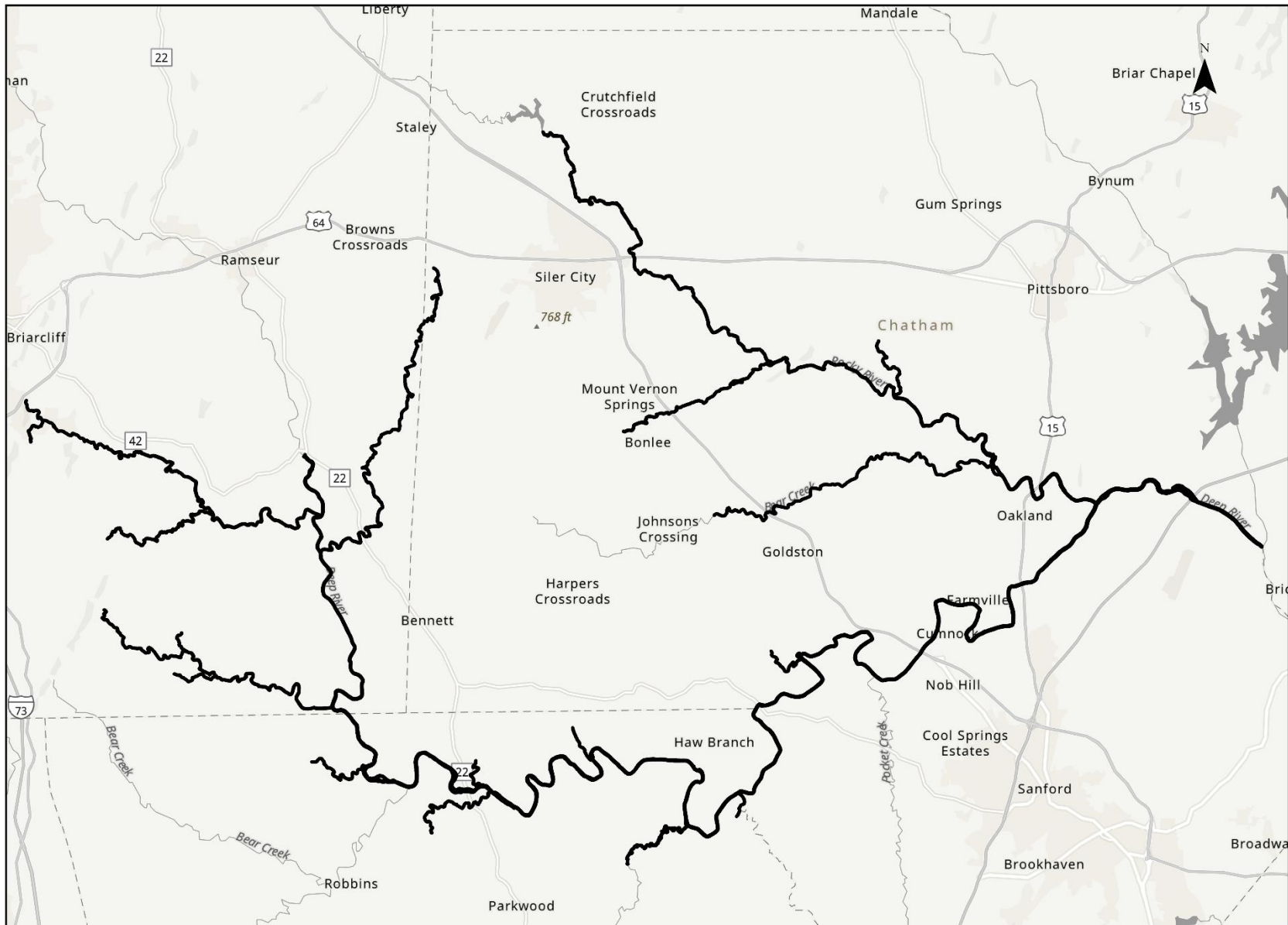
Chatham County. Chatham County 2023 Aerial Imagery delivered as part of the Pictometry imagery acquisition project. Eagle View. 2-inch resolution. Chatham County, Chatham County Tax Department.

Esri. “USA NAIP Imagery” [basemap]. Scale Not Given. “NAIP Imagery.” July 6, 2020. Retrieved May 1, 2025, from <https://www.arcgis.com/home/item.html?id=2984dd4517c14e00b9d810bd35b5cc5b>.

Esri. “World Topographic Map (with Contours and Hillshade)” [basemap]. Scale Not Given. “World Topographic Map.” July 6, 2020. Retrieved May 1, 2025, from <https://www.arcgis.com/home/item.html?id=18d32a699af64bfba4e78eba5a4dd705>.

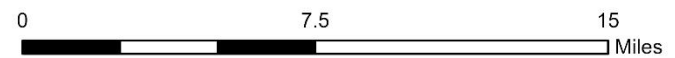


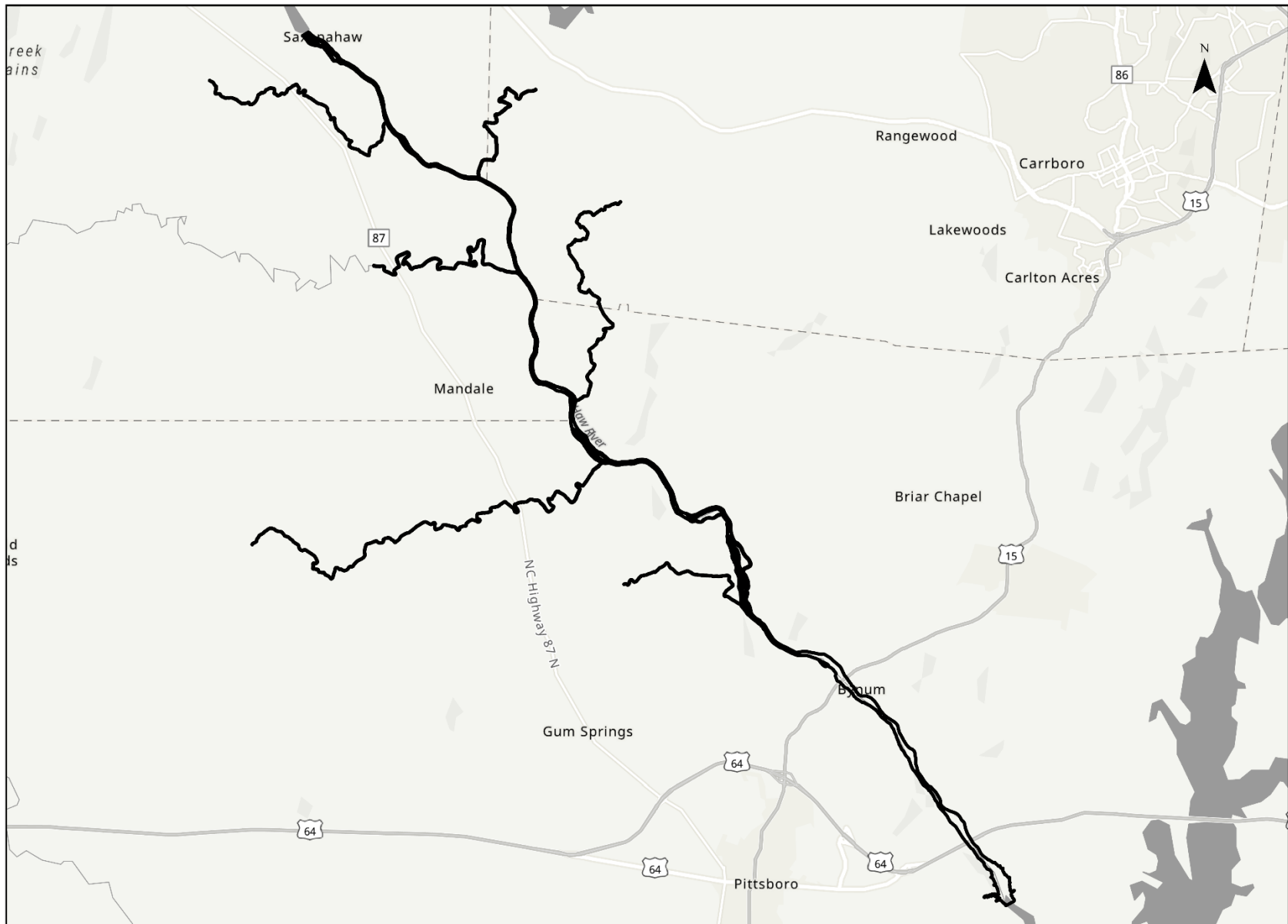
## **NATURAL AREA DESCRIPTIONS**



## CPF/Deep River-Rocky River Aquatic Habitat

N.C. Natural Heritage Program  
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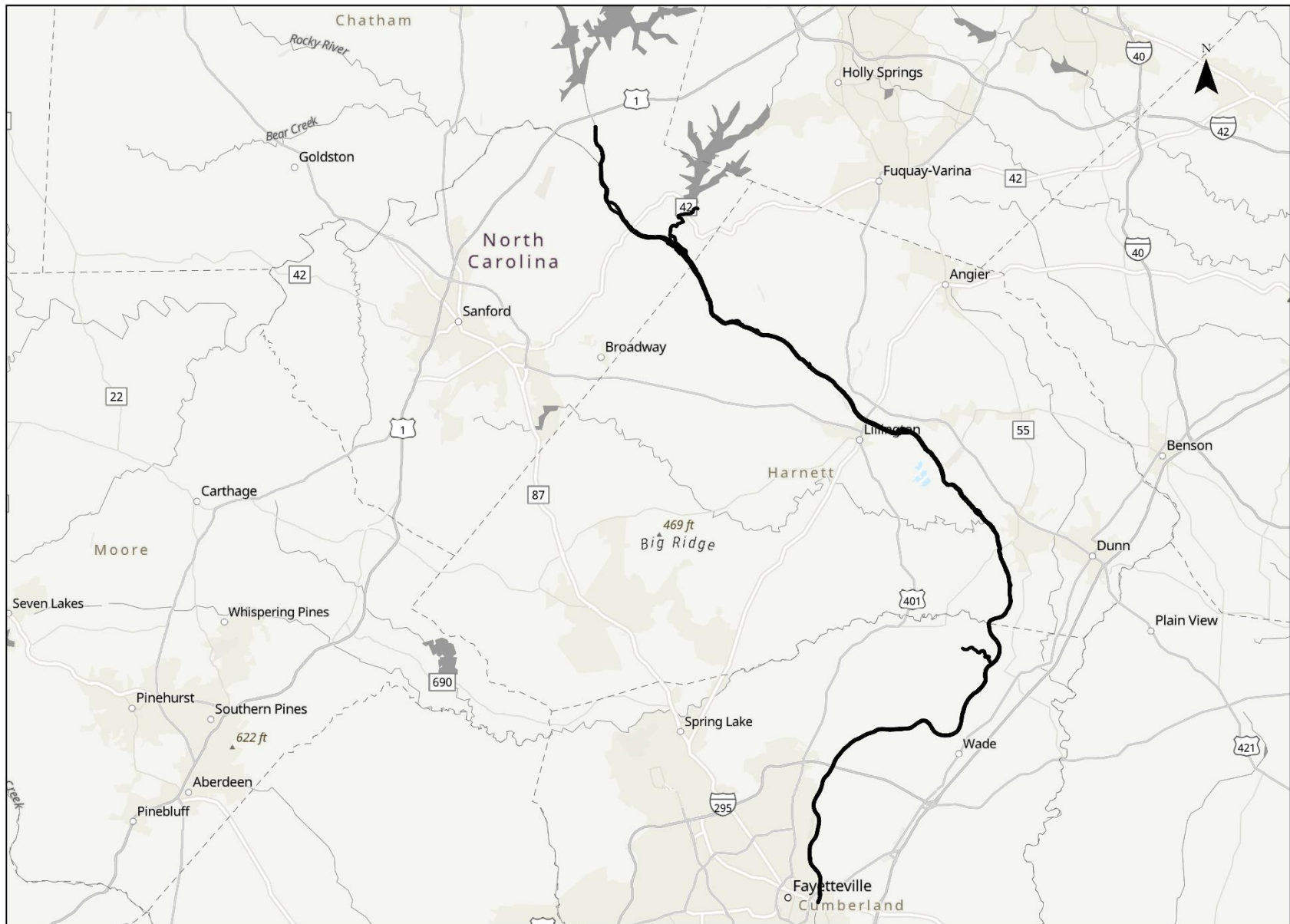




## CPF/Haw River Aquatic Habitat

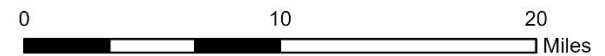
N.C. Natural Heritage Program  
June 2025

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## CPF/Upper Cape Fear River Aquatic Habitat

N.C. Natural Heritage Program  
June 2025





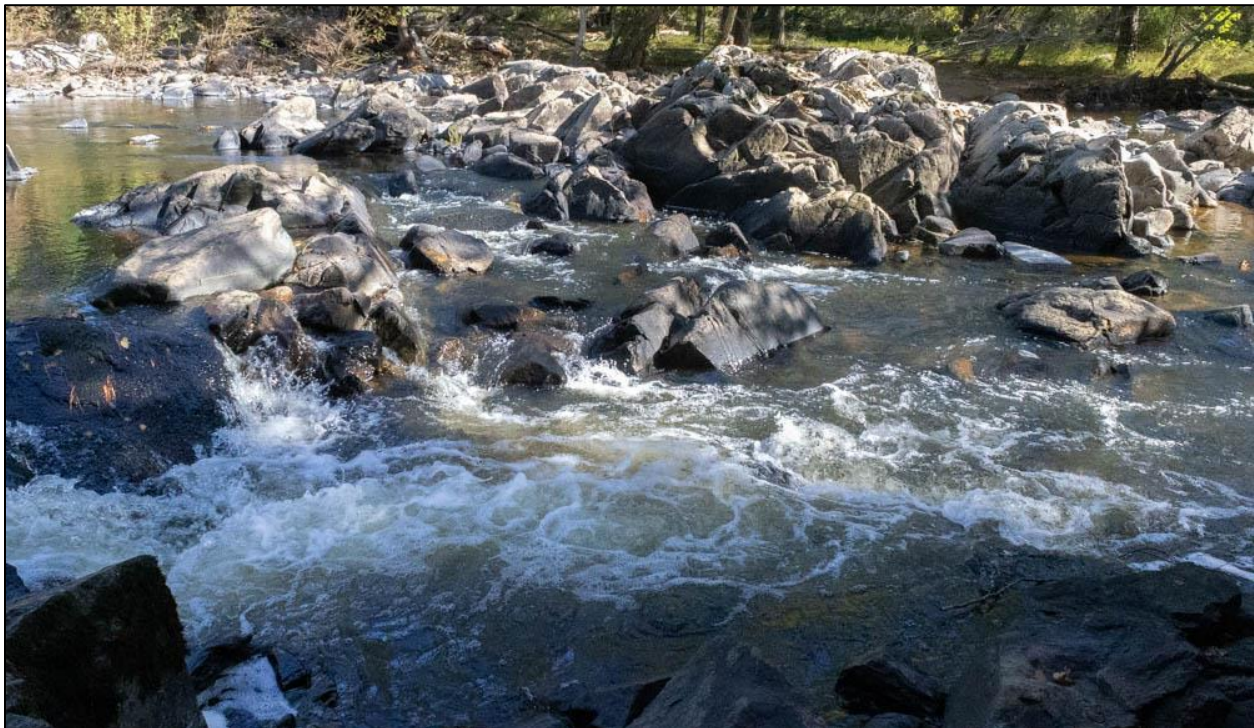
## Chatham County Natural Area Inventory

### Aquatic Habitats: Deep River-Rocky River, Haw River, Upper Cape Fear River

Deep River-Rocky River Aquatic Habitat	
<b>Site Significance:</b> Exceptional	<b>Size:</b> 2,279 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Public Waters
<b>Collective Value:</b> Exceptional (C1)	<b>Chatham Quadrangle:</b> Goldston, Colon, Robbins, Coleridge, Bennett, Crutchfield Crossroads, Merry Oaks, Siler City, Siler City NE, Pittsboro, Bear Creek, Moncure

Haw River Aquatic Habitat	
<b>Site Significance:</b> Very High	<b>Size:</b> 1,176 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Public Waters
<b>Collective Value:</b> High (C3)	<b>Chatham Quadrangle:</b> Bynum, Merry Oaks, Farrington, Silk Hope

Upper Cape Fear River Aquatic Habitat	
<b>Site Significance:</b> Exceptional	<b>Size:</b> 2,297 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Public Waters
<b>Collective Value:</b> High (C3)	<b>Chatham Quadrangle:</b> Moncure, Cokesbury



The Rocky River above the Confluence with the Deep River. Photo by: Stephen Hall. Used with permission.



**SIGNIFICANT FEATURES:** All three Aquatic Habitats: Deep River-Rocky River, Upper Cape Fear, and Haw River, are rated with the highest possible biodiversity significance score: Exceptional. These three natural areas receive the highest Collective value scores across the Cape Fear Drainage for their support of rare aquatic or riverine affiliated species, 21 of which have current occurrences in Chatham County. Some of the rarest species include two fish, the Federally Endangered Cape Fear shiner (*Notropis mekistocholas*) and State Endangered Carolina redhorse (*Moxostoma* sp. 3); a Federally Threatened bivalve Atlantic pigtoe (*Fusconaia masoni*); and the Federally Endangered plant harperella (*Ptilimnium nodosum*).

**LANDSCAPE RELATIONSHIPS:** The Deep River-Rocky River and Haw River Aquatic Habitats are upstream tributaries of the Upper Cape Fear Aquatic Habitat, and all have watersheds that overlap with Chatham County. A number of terrestrial natural areas within the county have been identified in the Deep River-Rocky River watershed, including the Gulf Diabase Forest, Rocky River Basalt Bluffs and Levees, Wood's Mill Bend, NC 902 Laurel Bluffs, Lower Bear Creek Slopes (also along Bear Creek), Rocky River Dragonfly Riffles, and White Pines Natural Area. Along the mainstem of the Haw River Aquatic Habitat Chatham County natural areas include Rock Rest Mafic Islands and Shore and Haw River Levees and Bluffs. Additional terrestrial natural areas are identified along tributaries including Castle Rock Forests and Terrells Creek Galax Bluffs along Terrells Creek. Two terrestrial sites are found at the upstream end of the Upper Cape Fear Aquatic Habitat: Cape Fear River/ Buckhorn Levees and Cape Fear River/ McKay Island Floodplain.

**SITE DESCRIPTION:** All three of the aquatic natural areas found within Chatham County extend outside of the county. Discussion here is limited to occurrences within the county's watersheds. Many of the rare species found in one major river drainage system also occur in other drainages within the county. Collectively, these Aquatic Habitats represent Chatham County's most valuable natural resources, as they provide habitat for 21 total rare aquatic species and numerous additional terrestrial species during parts of their lifecycles.

Along much of Chatham County's major rivers, there are many areas of rock riffles. These consist of small to large outcroppings of bedrock. Riffles are covered by high water flooding events but are variously exposed at other times; during droughts extensive areas become exposed and one can walk across the rivers. The rock outcrops and riffles comprise a natural community called Rocky Bar and Shore, while sand and mud deposits form the Sand and Mud Bar community. Due to frequent flooding events, few species of plants manage to grow in the riverbed, but during low water periods of summer, one may see extensive populations of mosses, lichens, water-willow (*Justicia americana*), and southern wildrice (*Zizaniopsis miliacea*) among the rocks. This type of habitat is abundant near the confluence of the Deep and Rocky Rivers. This is the preferred habitat of the Federally Endangered Cape Fear shiner (*Notropis mekistocholas*). Lining the banks and low terraces of all three rivers are floodplain forest communities which grade into mesic mixed hardwoods upslope.



Rocky Bar and Shore (Water Willow Subtype) in the Rocky River Chatham County, NC. Photo by: Michael Schafale.

The Deep River in Chatham County is largely composed of flat water occasionally broken up by broadly spaced rock bars. Much of this portion of the Deep River-Rocky River corridor is underlain by the Carolina Terrane with steeper banks. Downstream of the confluence with the Haw, the Upper Cape Fear is underlain by the Triassic Basin, which often erodes into broader floodplains. Approximately 181 miles of the Deep River-Rocky River Aquatic Habitat occurs in Chatham County, much of that comprised of the Rocky River whose basin lies almost completely within the County. The Deep River-Rocky River Aquatic Habitat supports one of the best-known occurrences of Federally Endangered Cape Fear shiner and nineteen additional rare species. A portion of the mainstem Deep and Fork Creeks are designated Critical Habitat for the Cape Fear shiner. Populations of the State Endangered Carolina redbreast (*Moxostoma* sp. 3) and nine State Listed Threatened or Endangered freshwater mussels are also documented from the Deep River-Rocky River Aquatic Habitat. One of the Chatham County occurrences of the Federally Threatened Atlantic pigtoe (*Fusconaia masoni*) is now historical as it has not been observed in more than 20 years. One of just two known populations of harperella (*Ptilimnium nodosum*) in NC is known from an island in the Deep River, though it has not been observed in several years.





Deep River, West of US 1, Chatham County, NC. Photo by: Scott Pohlman.

Both the Haw River Aquatic Habitat and Upper Cape Fear Aquatic Habitat in Chatham County encompass smaller reaches, approximately 28 miles and 9.5 miles respectively. This reach of the Haw contains areas of rapids and numerous rocky islands. This section of the Cape Fear contains many flooded terraces and rocky riffle bars. The Federal Endangered Cape Fear Shiner is found in the mainstem Haw River. The State Endangered Carolina redhorse (*Moxostoma* sp. 3) and several species of rare freshwater mussels are found in the mainstems of both rivers and tributaries. The State Special Concern Carolina darter (*Etheostoma collis*) is documented from the Haw River Aquatic Habitat but has not been reported from the other two Aquatic Habitats to date.

**THREATS:** Species restricted to these reaches of good quality aquatic habitat mean that they are particularly vulnerable to any changes in those systems. The Cape Fear shiner, and all of the rare aquatic species described here, face habitat loss and degradation as their primary threat (USFWS 2022). Habitat loss has occurred in the damming of sections of these rivers restricting aquatic species passages. Habitat degradation takes many forms, including point and nonpoint source pollutants, increased sediment loads, and reduction of forested riparian zones, among other mechanisms.





Haw River at Rock Rest Mafic Islands and Shore. Photo by: Merry Conlin.

**RARE PLANTS:** *Harperella (Ptilimnium nodosum)* — US and NC Endangered, historical.

**RARE ANIMALS:** Twenty-one rare aquatic species have been documented in the Aquatic Habitats of Chatham County: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), State and Federally Threatened Atlantic pigtoe (*Fusconaia masoni*) and 12 species state listed as Endangered, Threatened or Special Concern including brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vaughaniana*), Carolina darter (*Etheostoma collis*), Carolina redhorse (*Moxostoma* sp. 3), creeper (*Strophitus undulatus*), eastern pondmussel (*Sagittunio nasutus*), notched rainbow (*Venusta concha constricta*), Roanoke slabshell (*Elliptio roanokensis*), Savannah lilliput (*Toxolasma pullus*), triangle floater (*Alasmidonta undulata*), yellow lampmussel (*Lampsilis cariosa*), and eastern lampmussel (*Lampsilis radiata*). Six species are Significantly Rare with current occurrences including Carolina ladle crayfish (*Cambarus davidi*), chameleon lampmussel (*Lampsilis* sp. 2), eastern creekshell (*Villosa delumbis*), panhandle pebblesnail (*Somatogyrus virginicus*), rayed pink fatmucket (*Lampsilis splendida*), and Septima's clubtail (*Gomphurus septima*). One Watch List species is documented as well, the spine-crowned clubtail (*Hylogomphus abbreviatus*).

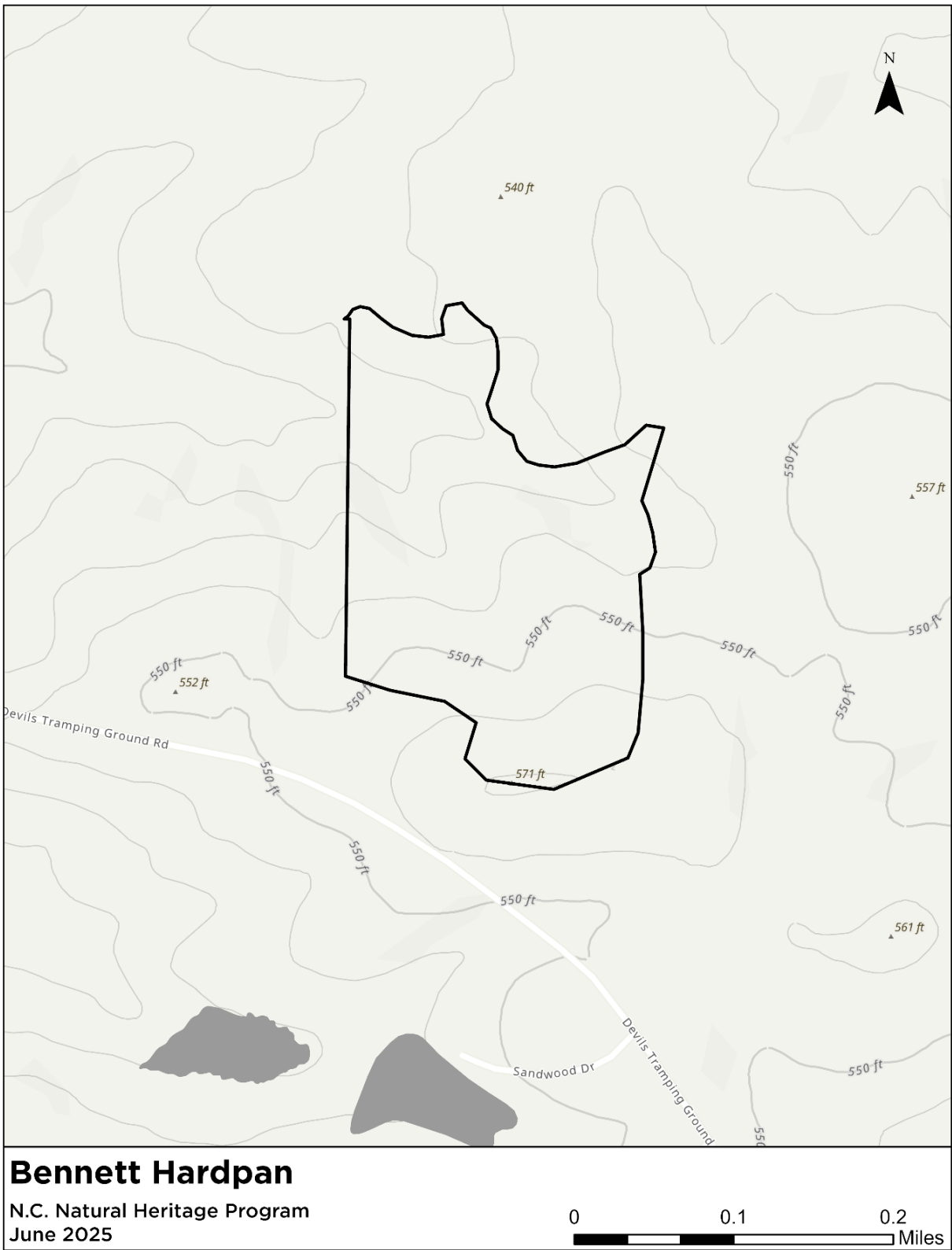
## REFERENCES:

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.

NCWRC PAWS Aquatics data, queried for all tracked species observed during 2023, retrieved on March 15, 2024; and previous queries since 2000.

U.S. Fish & Wildlife Service (USFWS). 2022. Cape Fear Shiner (*Notropis mekistocholas*) Status Review: Summary and Evaluation. Raleigh Ecological Services Field Office, Raleigh, NC.

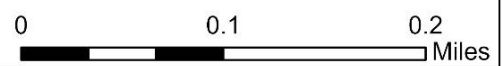








**Bennett Hardpan**  
N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Bennett Hardpan

<b>Site Significance:</b> Moderate	<b>Size:</b> 19 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bear Creek

**SIGNIFICANT FEATURES:** Bennett Hardpan natural area is rated Moderate significance for a patch of Xeric Hardpan Forest (Acidic Hardpan Subtype) natural community, which is considered Critically Imperiled (S1) in North Carolina and globally imperiled (G2).

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat is 4 miles to the west, and this site is within its watershed. Knoll Ridge is 4.5 miles to the north. Ore Hill is 5.4 miles to the north.

**SITE DESCRIPTION:** Bennett Hardpan natural area occurs on upland flats on the Uwharrie geologic formation, a region of meta-mudstone that has characteristically poor drainage and acidic clayey soils. These features result in variable moisture availability, with dry summer conditions and flooded winter conditions. While much of the natural area is successional with loblolly pine, a portion is the rare Xeric Hardpan Forest (Acidic Hardpan Subtype). Small areas of two other communities add diversity to the site. Along an intermittent stream is Piedmont Headwater Stream Forest (Hardpan Subtype). Adjacent to it in one area is a Mixed Moisture Hardpan Forest.

Xeric Hardpan Forest (Acidic Hardpan Subtype) is the most extensive natural community found at this site. This community's occurrence at this site is somewhat unique compared to other examples in the state. The uplands do have a slight slope and soils are present that are not commonly associated with this community. The result is a somewhat intermediate character forest ranging from Piedmont hardwoods to longleaf pine. Prior to some past disturbance, this area could possibly have been longleaf pine. The current conditions are a slightly open forest dominated by post oak (*Quercus stellata*) with abundant blackjack oak (*Quercus marilandica*). Parts of the community are mature with canopy trees averaging 12 inches in diameter or more. The southern parts are younger. Canopy trees present in smaller numbers include short leaf pine (*Pinus echinata*), black oak (*Quercus velutina*), and occasionally white oak (*Quercus alba*) and southern red oak (*Quercus falcata*). The understory generally is not very distinct. Shrubs are patchy. Large beds of dangle-berry (*Gaylussacia frondosa*) dominate some areas, and sparser small black blueberry (*Vaccinium tenellum*) and stagger-bush (*Lyonia mariana*) are present in places. Muscadine grape (*Vitis rotundifolia*) covers the ground in a few areas. The herb layer ranges from sparse to moderate. Blackseed needlegrass (*Piptochaetium avenaceum*) and poverty oat-grass (*Danthonia spicata*) dominate some patches. Elsewhere, sparser herbs include little bluestem (*Schizachyrium scoparium*), river oats (*Chasmanthium laxum*), and a few sweet goldenrod (*Solidago odora*).

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Xeric Hardpan Forest (Acidic Hardpan Subtype)

**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

**REFERENCES:**

Schafale, M. P. 2019. Site Survey Report: Bennett Hardpan Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Bennett Mountain

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles

## Chatham County Natural Area Inventory

### Bennett Mountain

<b>Site Significance:</b> General	<b>Size:</b> 96 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** Bennett Mountain natural area is of General significance for the collection of five natural communities found at this site. One natural community, the Low Elevation Seep (Floodplain Subtype) is uncommon in the state. Both types of Piedmont/Mountain Semipermanent Impoundment, Open Water and Piedmont Marsh are uncommon in the county. A good quality example of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) is present as well.

**LANDSCAPE RELATIONSHIPS:** Herndon Creek Ravine lies 1 mile to the east. Wilkinson Creek Marshes is approximately 2 miles southwest.

**SITE DESCRIPTION:** Bennett Mountain is a western outlier of the granitic pluton that forms Edwards Mountain and Boothe Hill. This site was originally surveyed and described by Hall and Boyer in the 1992 Chatham County Inventory. This area is scenically attractive with large boulders and mature hardwoods. The natural area consists of upland slopes and knobs and a segment of the floodplain of Pokeberry Creek. The forest on the knob is mostly Dry-Mesic Oak—Hickory Forest, with Mesic Mixed Hardwood Forest downhill and a small patch of Dry Oak—Hickory Forest on the summit. The floodplain of Pokeberry Creek supports a large beaver pond complex. Most of the floodplain is the Piedmont Marsh Subtype, and several patches of Open Water Subtype are present. A small Low Elevation Seep (Floodplain Subtype) community is also present.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the crest of the mountain and upper slopes of the knob. This is one of the larger patches of natural community found at the site. White oak (*Quercus alba*) dominates the canopy. The forest is fairly mature with canopy trees averaging 12 inches diameter in most parts. The understory is dominated by sourwood (*Oxydendrum arboreum*).

Mesic Mixed Hardwood Forest occurs on lower slopes and forms the uplands bordering Pokeberry Creek. The canopy is dominated by American beech (*Fagus grandifolia*) and white oak (*Quercus alba*), with some tulip tree (*Liriodendron tulipifera*). The forest is mature, with canopy trees averaging 12 inches diameter with larger trees reaching to 16–18 inches diameter. The understory includes dogwood (*Benthamidia florida*), sourwood (*Oxydendrum arboreum*), downy serviceberry (*Amelanchier arborea*), and sassafras (*Sassafras albidum*). Shrubs include maple-leaf viburnum (*Viburnum acerifolium*), downy arrowwood (*Viburnum rafinesqueanum*), American strawberry-bush (*Euonymus americanus*), American hazelnut (*Corylus americana*), and American witch-hazel (*Hamamelis virginiana*). Herbaceous species include little brown jug (*Hexastylis arifolia*), downy rattlesnake-plantain (*Goodyera pubescens*), beechdrops (*Epifagus virginiana*), southern lady fern (*Athyrium asplenoides*), and common Solomon's-seal (*Polygonatum biflorum*).

Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) occurs where open water patches are formed within the channel of Pokeberry Creek. Several types of open water areas are present, behind actively maintained beaver dams, some small open ponds, and some just drowned stream channels. No established aquatic vegetation is visible within the open water.

Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype) occurs in most of the floodplain areas on the edges of open water ponds and in abandoned ponds. The vegetation is heterogeneous.



Patches are dominated by club-head cutgrass (*Leersia hexandra*), parts by arrow-leaved tearthumb (*Persicaria sagittata*) or an upright smartweed (*Persicaria* sp.), and most parts are mixes of herbs. Species include cottongrass bulrush (*Scirpus cyperinus*), broad-leaf cattail (*Typha latifolia*), a sedge (*Carex gynandra/crin-ita*), soft rush (*Juncus effusus*), spotted jewel-weed (*Impatiens capensis*), Virginia bugleweed (*Lycopus virginicus*), slender spikegrass (*Chasmanthium laxum*), a sedge (*Cyperus* sp.), rough barnyard grass (*Echinochloa muricata* var. *muricata*), American groundnut (*Apios americana*), fireweed (*Erechtites hieraciifolius*), and nonnative invasives marsh dewflower (*Murdannia keisak*) and Japanese stilt grass (*Microstegium vimineum*).

**PROTECTION:** This site is under no formal conservation. It is held as community land, apparently primarily for aesthetics and recreation. There is a risk of changing land use and of more construction and larger facilities. The continued spread of exotic plants and potential water pollution by runoff from constructions sites, yards, and effluent discharge represent ongoing threats that could become worse. Ongoing changes can be expected in the floodplain as beavers come and go, and as ponds undergo succession.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Low Elevation Seep (Floodplain Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype)

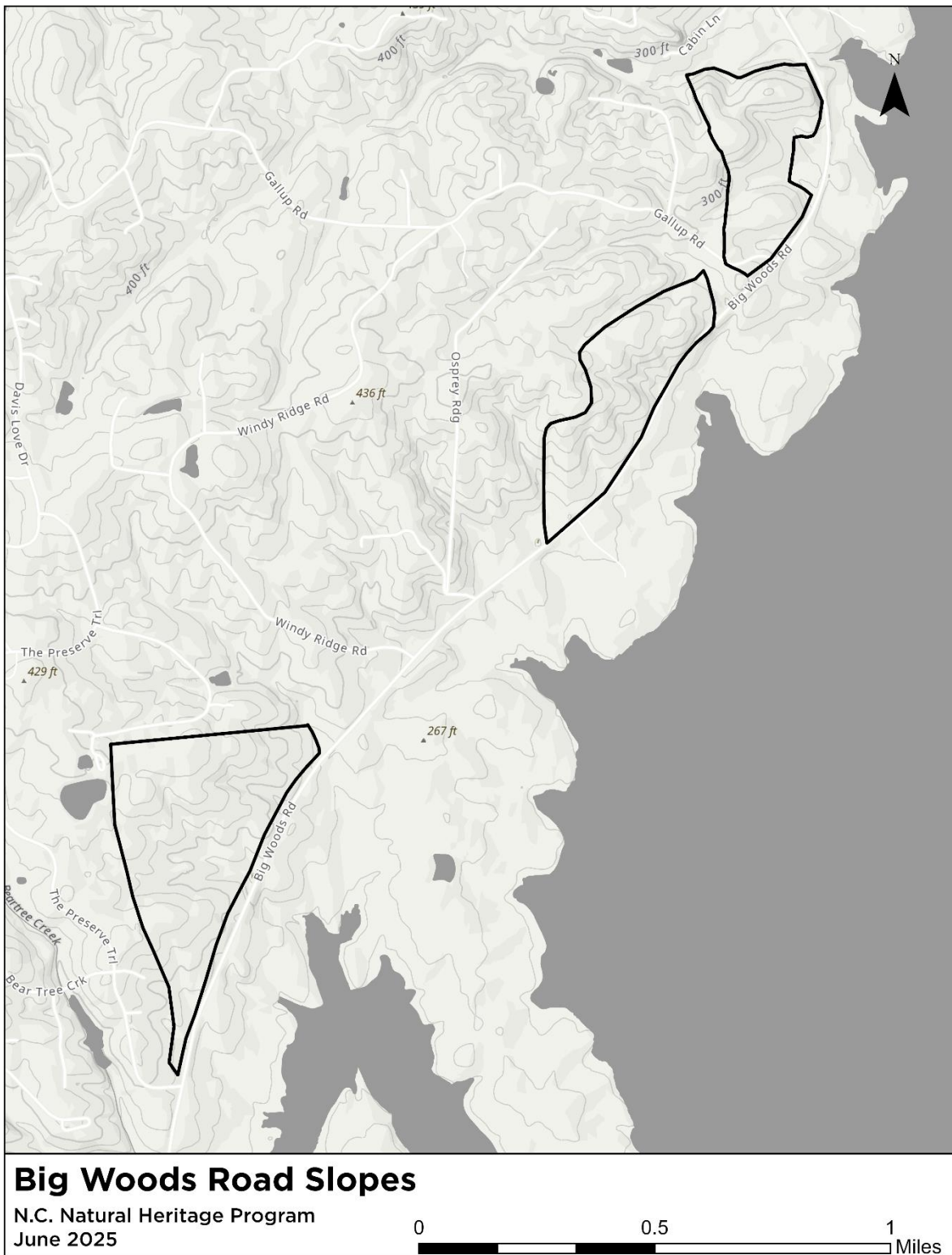
**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

#### **REFERENCES:**

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.

Schafale, M.P. and A.E. (Schwarz) Weakley. 2014. Site Survey Report: Bennett Mountain Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

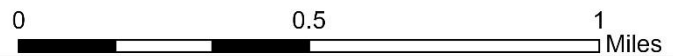






## Big Woods Road Slopes

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Big Woods Road Slopes

<b>Site Significance:</b> General	<b>Size:</b> 200 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers, Jordan Lake Educational State Forest
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** The Big Woods Road Slopes natural area is of General significance for supporting good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and Mesic Mixed Hardwood Forest (Piedmont Subtype)—all common types of natural communities in Chatham County. These good quality, characteristic, Piedmont natural communities provide essential habitat for both common and rare species that live along Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** This site is part of the remnants of a once large Big Woods Road site (Hall and Boyer 1992). The newly split Big Woods Road Upland Forests is 0.6 miles west. Parkers Creek Ridges is 1.5 miles south.

**SITE DESCRIPTION:** This site occurs on the boundary of the Carolina Terrane and the Durham Sub-basin along Jordan Lake. The topography is comprised of largely east- and south-facing slopes dissected by small ravines and good habitat diversity. The majority of the site contains hardwoods including good examples of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) and Dry Oak—Hickory Forest (Piedmont Subtype) along the upper slopes and ridges and Mesic Mixed Hardwood Forest (Piedmont Subtype) along the lower slopes. Interspersed with these communities are patches of successional forest dominated by loblolly pine (*Pinus taeda*).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the mid and lower slopes. This is the most common natural community around Jordan Lake. The canopy is dominated by white oak (*Quercus alba*). Additional common canopy species include northern red oak (*Quercus rubra*), southern red oak (*Quercus falcata*), scarlet oak (*Quercus coccinea*) and sweet pignut hickory (*Carya glabra*). The forest is fairly mature with canopy trees averaging 12 inches diameter in most parts. The understory contains sourwood (*Oxydendrum arboreum*), dogwood (*Benthamidia florida*), red maple (*Acer rubrum*) and black tupelo (*Nyssa sylvatica*). Downy arrowwood (*Viburnum rafinesqueanum*) is common in the shrub layer. Early lowbush blueberry (*Vaccinium pallidum*), black cherry (*Prunus serotina*), maple-leaf viburnum (*Viburnum acerifolium*), and pinxterflower (*Rhododendron periclymenoides*) are present in the shrub layer as well. Herbaceous species are sparse. Spotted wintergreen (*Chimaphila maculata*) and heartleaf species (*Hexastylis* spp.) are most common.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs along the summits and ridge tops. One section of the forest canopy is dominated by chestnut oak (*Quercus montana*), other sections are dominated by white oak (*Quercus alba*). Additional canopy species include post oak (*Quercus stellata*) and various hickories, including southern shagbark hickory (*Carya caroliniae-septentrionalis*), mockernut hickory (*Carya tomentosa*) and sweet pignut hickory (*Carya glabra*). These canopy species are mature, averaging 12–14 inches diameter. The understory contains sourwood (*Oxydendrum arboreum*), eastern red cedar (*Juniperus virginiana*), black tupelo (*Nyssa sylvatica*), southern red oak (*Quercus falcata*) and even some blackjack oak (*Quercus marilandica*). Deerberry (*Vaccinium stamineum*) is a common shrub. Muscadine grape (*Vitis rotundifolia*) provides abundant ground cover.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the lowest slopes and is particularly common on the cooler north facing slopes. The canopy is dominated by American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*). The understory includes red maple (*Acer rubrum*), dogwood (*Benthamidia florida*), black tupelo (*Nyssa sylvatica*), and sourwood (*Oxydendrum arboreum*). Common shrubs are maple-leaf viburnum (*Viburnum acerifolium*), and American witch-hazel (*Hamamelis virginiana*). Herbaceous species are scattered and include spotted wintergreen (*Chimaphila maculata*), trailing arbutus (*Epigaea repens*), downy rattlesnake-plantain (*Goodyera pubescens*), and Christmas fern (*Polystichum acrostichoides*).

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area. Nonnative invasive species are the main threat and should continue to be managed for within the registry.

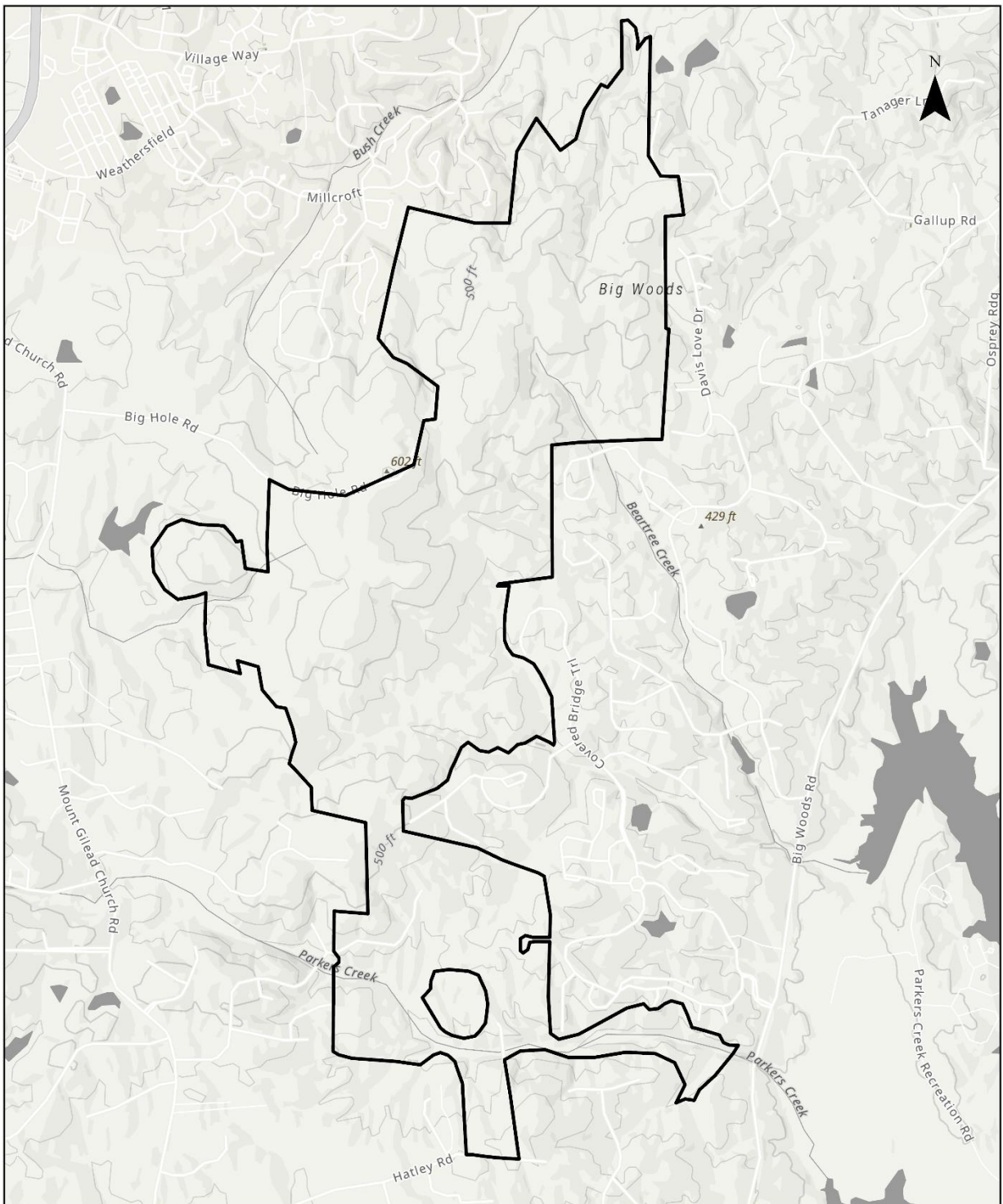
**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype)

**RARE PLANTS:** None observed.

**RARE ANIMALS:** Intermittent streams within the site support the Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

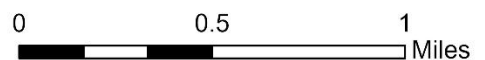
#### **REFERENCES:**

- LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Pohlman, S., and N. Shepard. 2019. Site Note: Big Woods Road Upland Forest Registered Heritage Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

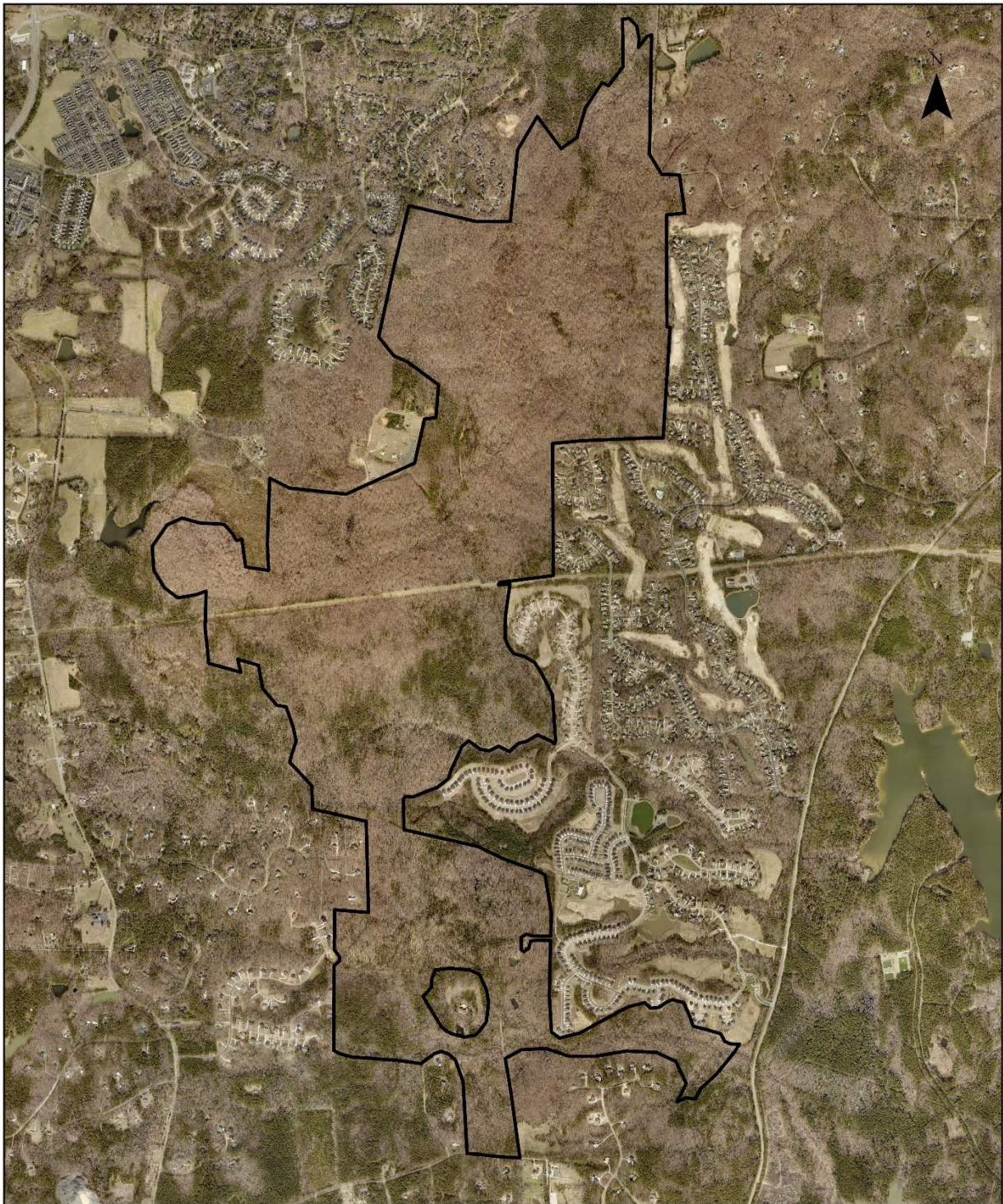


## Big Woods Road Upland Forests

N.C. Natural Heritage Program  
June 2025







## Big Woods Road Upland Forests

N.C. Natural Heritage Program  
June 2025

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Miles



## Chatham County Natural Area Inventory

### Big Woods Road Upland Forests

<b>Site Significance:</b> General	<b>Size:</b> 1,434 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Triangle Land Conservancy Preserve, Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** The Big Woods Road Upland Forest natural area is of General significance for supporting good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and Mesic Mixed Hardwood Forest (Piedmont Subtype). A small patch of the less common Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) is also present. The natural area provides a large expanse of natural habitat for wildlife species that require large habitat patches. Maintaining ecological connectivity with the protected lands at Jordan Lake is especially important for maintaining these wildlife populations.



Dry Oak—Hickory Forest (Piedmont Subtype) in Big Woods Road Upland Forests Natural Area. Photo By: Merry Conlin.

**LANDSCAPE RELATIONSHIPS:** This site is part of the remnants of a once large Big Woods Road site (Hall and Boyer 1992). This site is 0.6 mile west of the newly split Big Woods Road Slopes site, just south of Bush Creek Marshes and 0.5 miles north of Parkers Creek Ridges.

**SITE DESCRIPTION:** This natural area is found along a region of basalt and andesite rock and is comprised of shallow ridges and summits that have resisted weathering. The soil and vegetation reflect the slightly more basic characteristic of these rock formations. These ridges are some of what remains of a formerly extensive forested region bordering Jordan Lake originally described by Hall and Boyer (1992). This natural area provides a habitat corridor from uplands along Beartree and Parkers Creeks, tributaries that drain to Jordan Lake. Much of the forested area in this natural area is largely second- or third-generation hardwood mixed with successional loblolly pine stands. The main natural community on these slopes is Dry-Mesic Oak—Hickory Forest (Piedmont Subtype). Flora affiliated with slightly less acidic soils is present in patches scattered throughout the site and reflects a transitional nature between forest types. Some smaller patches have higher constancy of basic affiliated flora and are best described as Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) and Dry Basic Oak—Hickory Forest. Along the boundaries and ravine slopes of this site are some small regions of Mesic Mixed Hardwood Forest (Piedmont Subtype). Additionally, several small patches of Dry Oak—Hickory Forest (Piedmont Subtype) occur on the knolls.

Dry Oak—Hickory Forest (Piedmont Subtype) patches occur along the shallow ridges and upland knolls. The canopy is closed and dominated by white oak (*Quercus alba*). Scattered post oak (*Quercus stellata*), Spanish oak (*Quercus falcata*), and sweet pignut hickory (*Carya glabra*) are present as well. Past selective timber harvest has likely supported the regeneration of canopy loblolly pine (*Pinus taeda*) and shortleaf pine (*Pinus echinata*). The canopy is in good condition overall and canopy species average 12–14 inches in diameter. Some of the larger oaks and hickories are around 20 inches in diameter. The understory is sparse with regenerating canopy species and flowering dogwood (*Benthamidia florida*), eastern red cedar (*Juniperus virginiana*), and some American beech (*Fagus grandifolia*) in transitional areas. Scattered indi-



Wild Oregano (*Cunila origanoides*) in Flower in Big Woods Road Upland Forests Natural Area. Photo By: Merry Conlin.

viduals of farkleberry (*Vaccinium arboreum*), persimmon (*Diospyros virginiana*), and deciduous holly (*Ilex decidua*) were noted in the shrub layer. The herbaceous layer is very sparse. Muscadine grape (*Vitis rotundifolia*) is the most regular. Small patches of little-headed nutrush (*Scleria oligantha*) and longleaf spikegrass (*Chasmanthium sessiliflorum*) are spread throughout.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs across the shallow ridge and slopes. The canopy is closed and dominated by white oak (*Quercus alba*) with abundant northern red oak (*Quercus rubra*) and tulip tree (*Liriodendron tulipifera*). The canopy is mature, averaging 16–18 inches diameter. Some of the largest white oaks average 22 inches in diameter. The understory is fairly open with abundant eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*) and young tulip tree. Some basic-affiliated species are present in this layer including eastern redbud (*Cercis canadensis*) but with low constancy. There are a few scattered shrubs including deerberry (*Vaccinium stamineum*) and young white ash (*Fraxinus americana*) in this layer. In the herbaceous layer muscadine grape (*Vitis rotundifolia*) is the dominant overall ground-cover. Patches of longleaf spikegrass (*Chasmanthium sessiliflorum*), early lowbush blueberry (*Vaccinium pallidum*),

Christmas fern (*Polystichum acrostichoides*) and witchgrass (*Dichanthelium* sp.) are common. On at least one slope, wild oregano (*Cunila origanoides*) is abundant.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs on a shallow north-facing slope and flat summit. This community was likely more prevalent across the site prior to timber harvests. The closed canopy is dominated by white oak (*Quercus alba*) with frequent white ash (*Fraxinus americana*). The canopy is somewhat successional and averages 12–14 inches in diameter. The understory contains abundant regenerating white oak and some eastern redbud (*Cercis canadensis*), eastern hop-hornbeam (*Ostrya virginiana*) and flowering dogwood (*Benthameidia florida*). There are limited shrubs, regenerating canopy species and winged elm (*Ulmus alata*) are present. The herbaceous layer is also sparse, with scattered Christmas fern (*Polystichum acrostichoides*), wild licorice (*Galium circaezans*), and Bosc's witchgrass (*Dichanthelium boscii*).

Mesic Mixed Hardwood Forest (Piedmont Subtype) is found on the ravine slopes of Parkers Creek and Ward Branch. The canopy is fairly open, and suggestive of historical selective timber harvests. The canopy is dominated by American beech (*Fagus grandifolia*), with frequent tulip tree (*Liriodendron tulipifera*). Northern red oak (*Quercus rubra*) and mockernut hickory (*Carya tomentosa*). The understory is thin, dominated by younger American beech with frequent Florida maple (*Acer floridanum*), and the overall abundant American holly (*Ilex opaca*). Only a few painted buckeye (*Aesculus sylvatica*) were noted in the shrub layer. The herbaceous layer is sparse with common species including Christmas fern (*Polystichum acrostichoides*), little brown jug (*Hexastylis arifolia*), and partridge berry (*Mitchella repens*). Some patches of the nonnative invasive Japanese stilt grass (*Microstegium vimineum*) were noted but not overly dense. This community is in good condition, with canopy averaging 18–20 inches in diameter. Some of the largest American beech are 30 inches in diameter.

**PROTECTION:** Approximately 40 % of the total acreage is protected with a Natural Heritage Program Registered Heritage Area. The most significant threat is continued fragmentation from development. Protecting contiguous habitat with the protected lands at Jordan Lake is especially important for maintaining wildlife populations.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype).

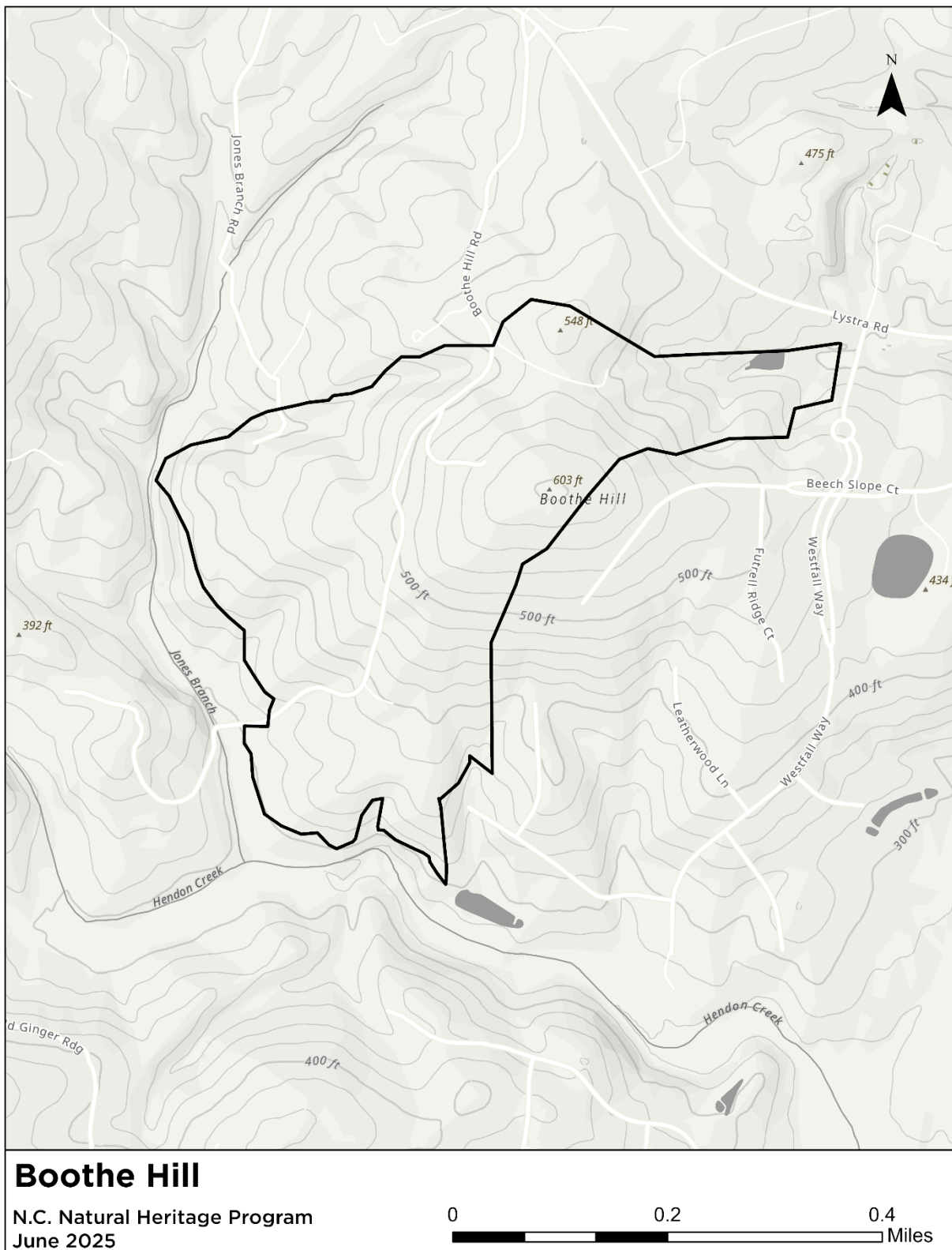
**RARE PLANTS:** None observed.

**RARE ANIMALS:** Streams within the site support the Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Big Woods Road Upland Forest Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- Shepard, N. and B. Wichmann. 2021. Site Survey Report; Various Tracts, Big Woods Road Upland Forest Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Chatham County Natural Area Inventory

### Boothe Hill

<b>Site Significance:</b> Very High	<b>Size:</b> 91 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** The Boothe Hill natural area is of Very High significance for supporting a good quality example of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) as well as habitat for two rare species. Both the Significantly Rare geometrid moth (*Lytrosis permagnaria*) (S2, G3) and Significantly Rare sweet pinesap (*Monotropsis odorata*) (S3, G3) have been observed at the site.

**LANDSCAPE RELATIONSHIPS:** This site shares a south and southwestern boundary with Herndon Creek Ravine. Bennett Mountain lies 1.75 miles west. Cub Creek—Edwards Ridge lies 1.4 miles north.

**SITE DESCRIPTION:** Boothe Hill is a high knob of granite situated along the western rim of the Triassic Basin. Most of the slopes are covered in pines or young stands of hardwoods dominated by tulip tree (*Liriodendron tulipifera*). This natural area has decreased acreage since the original description by Hall and Boyer (1992) due to dense residential development within the eastern portion. The summit contains a stand of mature hardwood forest dominated by a mixture of dry to mesic oaks and hickories. These species are found in the Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) natural community. The intact forested area of this community provides the habitat for a two Significantly Rare species, the geometrid moth (*Lytrosis permagnaria*) and the plant, sweet pinesap (*Monotropsis odorata*). Some scattered houses are embedded within the natural area.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) comprises much of the summit and upper slopes of Boothe Hill and the associated natural area. The canopy contains abundant oaks, including white oak (*Quercus alba*), post oak (*Quercus stellata*), Spanish oak (*Quercus falcata*), black oak (*Quercus velutina*), northern red oak (*Quercus rubra*). Hickories are also common, including sweet pignut hickory (*Carya glabra*), red hickory (*Carya ovalis*) and mockernut hickory (*Carya tomentosa*). The understory is fairly open and contains common species including sourwood (*Oxydendrum arboreum*), dogwood (*Benthamidia florida*), red maple (*Acer rubrum*) and black tupelo (*Nyssa sylvatica*). The shrub and herbaceous layers are sparse and open. Common species include haws (*Viburnum prunifolium* and *V. rufidulum*), New Jersey tea (*Ceanothus americanus*), wild grapes (*Vitis* spp.), spotted wintergreen (*Chimaphila maculata*), and wild ginger (*Hexastylis arifolia*).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement. Landowners should be alerted to the significance of intact forested areas for habitat of both rare and common species.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype)

**RARE PLANTS:** Significantly Rare sweet pinesap (*Monotropsis odorata*).

**RARE ANIMALS:** Significantly Rare geometrid moth (*Lytrosis permagnaria*).

#### REFERENCES:

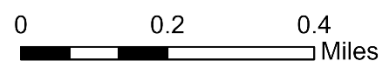
Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.





## Bush Creek Marshes

N.C. Natural Heritage Program  
June 2025







## Bush Creek Marshes

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Bush Creek Marshes

<b>Site Significance:</b> General	<b>Size:</b> 221 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers, Triangle Land Conservancy, Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** The Bush Creek Marshes natural area is of General significance for supporting Piedmont/Mountain Semipermanent Impoundment wetland communities of all three subtypes and bordering a forested area. These features and their proximity to Jordan Lake support breeding populations of bald eagles (*Haliaeetus leucocephalus*).

**LANDSCAPE RELATIONSHIPS:** Big Woods Road Upland Forests lies 500 feet to the south at the closest point. Herndon Creek Ravine lies 0.5 miles to the north.

**SITE DESCRIPTION:** Bush Creek is a tributary of Jordan Lake that originates just west of the Big Woods Road Upland Forest. The majority of this site is mostly open water and marsh along Bush Creek from beaver-created impoundments. All three subtypes of Piedmont/Mountain Semipermanent Impoundment — Open Water, Piedmont Marsh, and Shrub—occur in a matrix at this site.

Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) is the main subtype found at the site. These portions are characterized by open water with little or no emergent vegetation. The Marsh subtype is the other common subtype found at this site. Abundant herbaceous species include broadleaf cattail (*Typha latifolia*), various sedges including spikerushes (*Eleocharis* sp.), and soft rush (*Juncus effusus*) as well as lizard's-tail (*Saururus cernuus*). The Shrub Subtype is distinguished by the dominance and high cover of shrubs and small trees. Shrubs common within the marshes and ponds are swamp rose (*Rosa palustris*), buttonbush (*Cephalanthus occidentalis*), and silky dogwood (*Swida amomum*). Clumps of live trees include green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), and red maple (*Acer rubrum*). Some nonnative invasive species have been observed in the floodplain, including Japanese stilt grass (*Microstegium vimineum*) and Japanese Honeysuckle (*Lonicera japonica*).

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area. Any nonnative invasives present at the site should continue to be managed and monitored.

**NATURAL COMMUNITIES:** Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype), Piedmont/Mountain Semipermanent Impoundment (Shrub Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*), Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

#### REFERENCES:

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers -

Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Pohlman, S., and M. Franklin. 2021. Site Note: Bush Creek Marshes Natural Heritage Area, Chatham County. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Bynum Forest

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Bynum Forest

<b>Site Significance:</b> General	<b>Size:</b> 203 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Bynum Forest natural area is of General significance for exemplary occurrences of several characteristic Piedmont natural communities, some of them remarkably mature. Communities include Dry Oak—Hickory Forest, Dry-Mesic Oak—Hickory Forest, Mesic Mixed Hardwood Forest, and a smaller area of Dry-Mesic Basic Oak—Hickory Forest.

**LANDSCAPE RELATIONSHIPS:** Rock Rest Mafic Islands and Slopes lies a short distance to the northeast, within 100 meters at one point. The Haw River Aquatic Habitat lies a short distance to the northeast and downhill.

**SITE DESCRIPTION:** This portion of the Haw River corridor and the surrounding uplands are underlain by andesitic to dacitic lavas and tuffs, which produced areas of intermediate to slightly less acidic soils. This site also contains some of the slightly steeper slopes found along the Haw. This has likely aided in protecting the forested communities at this site, which are some of the most mature observed during this inventory outside of the Jordan Lake area. This site lies along the western bank of the Haw River just northwest of Bynum. Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) comprises the majority of the site and is found on most of the upland slopes. The ridges and summits grade into remarkably mature Dry Oak—Hickory Forests (Piedmont Subtype). Additional upland communities Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) and Mesic Mixed Hardwood Forest (Piedmont Subtype) occur as well.

Dry Oak—Hickory Forest (Piedmont Subtype) is found along the rocky ridge summits and south-facing ridges of the site. The canopy is dominated by white oak (*Quercus alba*) with abundant Spanish oak (*Quercus falcata*), frequent scarlet oak (*Quercus coccinea*), and black oak (*Quercus velutina*). This community is remarkably mature, with canopy species averaging 22–24 inches in diameter. Some of the largest oaks measure 30 and 32 inches in diameter. The understory is open and contains frequent sourwood (*Oxydendrum arboreum*), sweet pignut hickory (*Carya glabra*), and some post oak (*Quercus stellata*). Very few plants occur in the shrub layer. The herbaceous layer is likewise sparse with occasional dominance by muscadine grape (*Vitis rotundifolia*). Scattered blueberries such as early lowbush (*Vaccinium pallidum*) and small black blueberry (*Vaccinium tenellum*) are fairly regular, and a few distinct ridgetop patches of dangle-berry (*Gaylussacia frondosa*) occur as well.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) is the main community that occurs at the site along the mid slopes and shallow ravines. The canopy is dominated by white oak (*Quercus alba*), sometimes codominated by tulip tree (*Liriodendron tulipifera*), and contains frequent northern red oak (*Quercus rubra*). The understory contains regenerating canopy species along with abundant red maple (*Acer rubrum*), American holly (*Ilex opaca*) and frequent mockernut hickory (*Carya tomentosa*). The shrub layer is dominated by the abundant nonnative invasive autumn olive (*Elaeagnus umbellata*). Overall, the herbaceous layer is sparse but diverse across the property. The most common species are frequent across the property including muscadine grape (*Vitis rotundifolia*), little brown jug (*Hexastylis arifolia*), Christmas fern (*Polystichum acrostichoides*), crane fly orchid (*Tipularia discolor*), and nonnative invasive Japanese stilt grass (*Microstegium vimineum*). Orchid species uncommon in the county occur in this community, including puttyroot (*Aplectrum hyemale*) and large twayblade (*Liparis liliifolia*).

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) patches are found along some east facing slopes that likely correspond to diabase dikes. The canopy is dominated by white oak (*Quercus alba*) with sporadic white ash (*Fraxinus americana*) and abundant tulip tree (*Liriodendron tulipifera*). This is not a large patch, but it is mature; canopy species average 18–20 inches in diameter. Many of the larger trees are in the 25–30 inches diameter range. The understory contains abundant Florida maple (*Acer floridanum*), eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), and patches with eastern redbud (*Cercis canadensis*). The shrub layer is dominated by the nonnative invasive autumn olive (*Elaeagnus umbellata*). Painted buckeye (*Aesculus sylvatica*) is present as well. The herbaceous layer is sparse. Patches of coral-berry (*Symphoricarpos orbiculatus*), muscadine grape (*Vitis rotundifolia*), and Christmas fern (*Polystichum acrostichoides*) are common.

Mesic Mixed Hardwood Forest (Piedmont Subtype) is found along some Haw River tributaries that drain the site. The canopy is dominated by American beech (*Fagus grandifolia*) and tulip tree (*Liriodendron tulipifera*). This community is in good condition with canopy species averaging 16–18 inches in diameter. The understory contains abundant American beech and American holly (*Ilex opaca*). The shrub layer is dominated by the nonnative invasive autumn olive (*Elaeagnus umbellata*) but it is not as dense in this community. The herbaceous layer is sparse with only Christmas fern (*Polystichum acrostichoides*) abundant, patches of common jack-in-the-pulpit (*Arisaema triphyllum*) are present as well.



Puttyroot (*Aplectrum hyemale*) Flowering at Bynum Forest Natural Area. Photo By: Merry Conlin.

**PROTECTION:** This site is under no formal conservation and would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Dry Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype)

**RARE PLANTS:** None observed.

**RARE ANIMALS:** The Significantly Rare dragonfly Septima’s clubtail (*Gomphurus septima*) occurs in the adjacent Haw River and uplands.

## REFERENCES:

Conlin, M.R. 2024. Site Survey Report: Bynum Forest Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Cape Fear River/ Buckhorn Levees

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Cape Fear River/ Buckhorn Levees

<b>Site Significance:</b> Very High	<b>Size:</b> 408 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private, NC WRC
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Cokesbury, Moncure

**SIGNIFICANT FEATURES:** Cape Fear River/ Buckhorn Levees natural area is of Very High importance due to its support of nine elements of biodiversity. The forested area comprises mature Piedmont Levee Forest (Typic Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype) and Rocky Bar and Shore natural communities. Additionally, this site supports Special Concern James's sedge (*Carex jamesii*), Significantly Rare buttercup phacelia (*Phacelia covillei*), Watch List Fringed Heartwort (*Ricciocarpos natans*), and several rare animals. Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Cape Fear River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Upper Cape Fear Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Upper Cape Fear River Aquatic Habitat flows through the site. The southern end of Cape Fear River/ McKay Island Floodplain is 1,000 feet upstream.



Rocky Bar and Shore Natural Community along the Cape Fear River/  
Buckhorn Levees Natural Area. Photo by: Merry Conlin

**SITE DESCRIPTION:** This site is located near the head of the Cape Fear River, just below the confluence of the Deep and Haw Rivers and south near the Chatham and Harnett County Line. This initial reach of the Cape Fear River is relatively wide even below the impounded Buckhorn Dam. This site encompasses several large areas of alluvial bottomland. The forested portions include an unusually extensive, mature, and very rich Piedmont Levee Forest (Typic Subtype) along the riverbanks and on some small islands. These have been largely undisturbed except for the construction of canals and levees sometime prior to 1955. The site supports a large population of James's sedge (*Carex jamesii*), buttercup phacelia (*Phacelia covillei*) and Fringed Heartwort (*Ricciocarpos natans*). The levee has unusually rich, possibly slightly closer to circumneutral soils. A series of bluffs with Mesic Mixed Hardwood Forest occur in Lee County intermixed with successional forest. In the south, the Cape Fear supports Rocky Bar and Shore natural communities.

Piedmont Levee Forest (Type Subtype) occurs on deposits along the Cape Fear River, extending several hundred yards back and broken by small sloughs. Some areas are isolated as islands. The canopy is closed and variable and is at times dominated by sugarberry (*Celtis laevigata*). Many mixed alluvial hardwoods occur in the canopy including florida maple (*Acer floridanum*), sycamore (*Platanus occidentalis*), sweet gum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), swamp chestnut oak (*Quercus michauxii*), cherry-bark oak (*Quercus pagoda*), box-elder (*Acer negundo*), and a little eastern cottonwood (*Populus deltoides*). The forest is strikingly mature for this community type in Chatham County with canopy trees averaging 16–18 inches diameter or larger in most parts. Canopy trees of several species exceed 30 inches in diameter, with the largest measured as a swamp chestnut oak at 49 inches in diameter. The understory includes canopy species, American holly (*Ilex opaca*), pawpaw (*Asimina triloba*), painted buckeye (*Aesculus sylvatica*) and in places the nonnative invasive Chinese privet (*Ligustrum sinense*). The shrub layer also contains regenerating canopy species as well as American bladdernut (*Staphylea trifolia*), spicebush (*Lindera benzoin*), giant cane (*Arundinaria gigantea*) and nonnative invasive Chinese privet. The herbaceous layer is diverse but, in many places, dominated by the rare Special Concern James's sedge (*Carex jamesii*). An abundance of other herbs are common including smoother sweet-cicely (*Osmorhiza longistylis*), bedstraw species (*Galium* spp.), may apple (*Podophyllum peltatum*), narrowleaf sedge (*Carex amphibola*), wood nettle (*Laportea canadensis*), and some patches of river oats (*Chasmanthium latifolium*) and Virginia wild-rye (*Elymus virginicus*). Nonnative invasive Japanese stilt grass (*Microstegium vimineum*) and in wet microsites marsh dewflower (*Murdannia keisak*) are abundant primarily along the roads and trails that cross the site. The vine layer is likewise diverse with crossvine (*Bignonia capreolata*), trumpet-creeper (*Campsis radicans*), Canada moonseed (*Menispermum canadense*), eastern anglepod (*Gonolobus suberosus*) and others. Nonnative invasives Japanese honeysuckle (*Lonicera japonica*) and, along the road, kudzu (*Pueraria montana*) are common.

Rocky Bar and Shore (Water Willow and Southern Wild Rice Subtypes) occurs in the Cape Fear River, towards the southern part of the reach bordering the site. Both subtypes occur in patches along the shore and out along rocky outcrops inside the river. The subtypes are densely intergraded but marked zones are dominated by either southern wildrice (*Zizaniopsis miliacea*) or common water-willow (*Justicia americana*). Along the shore there is some pickerel weed (*Pontederia cordata*).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Lee County: Mesic Mixed Hardwood Forest (Piedmont Subtype). Chatham County: Piedmont Levee Forest (Typic Subtype), Rocky Bar and Shore (Water Willow Subtype), Rocky Bar and Shore (Southern Wild Rice Subtypes).

**RARE PLANTS:** Special Concern James's sedge (*Carex jamesii*), Watch List liverwort, Fringed Heartwort (*Ricciocarpos natans*) and Significantly Rare buttercup phacelia (*Phacelia covillei*) has been noted in prior surveys.

**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*), Watch List chimney swift (*Chaetura pelagica*), and other sensitive species are present within the site. Seven aquatic species have been documented in the adjacent Cape Fear River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and five species state-listed as Endangered, Threatened or Special Concern including, the Carolina redhorse (*Moxostoma* sp. 3), eastern lampmussel (*Lampsilis radiata*), Roanoke slabshell (*Elptio roanokensis*), and the yellow lampmussel (*Lampsilis cariosa*). The Significantly Rare dragonflies Septima's clubtail (*Gomphurus septima*) and the historical coppery emerald (*Somatochlora georgiana*) have been documented as well.

## **REFERENCES:**

Conlin, M.R. 2025. Site Survey Report: Cape Fear/Buckhorn Levees Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.







## Cape Fear River/McKay Island Floodplain

N.C. Natural Heritage Program  
June 2025

0 0.5 1  
Miles

## Chatham County Natural Area Inventory

### Cape Fear River/ McKay Island Floodplain

<b>Site Significance:</b> Moderate	<b>Size:</b> 1141 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Triangle Land Conservancy, Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Moncure

**SIGNIFICANT FEATURES:** The Cape Fear River/ McKay Island Floodplain natural area is of moderate significance due to its support of Significantly Rare buttercup phacelia (*Phacelia covillei*) and six elements of biodiversity. Several alluvial natural communities occur at the site, including the uncommon Piedmont Bottomland Forest (Typic Low Subtype) and all three subtypes of Piedmont/Mountain Semipermanent Impoundment, and mature Piedmont Levee Forest (Typic Subtype). Rare aquatic species occur within the Cape Fear River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Upper Cape Fear Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Upper Cape Fear River Aquatic Habitat flows through the site. The northern end of the Cape Fear River/ Buckhorn Levees is 1,000 feet downstream.

**SITE DESCRIPTION:** This site is a broad floodplain, with natural levees, bottomlands, and a large island in the Cape Fear River. Many of the natural communities are described south of the river in the Lee County portion of the site. This description is limited to elements that occur within Chatham County and the river. Piedmont Levee Forest is the most extensive intact community, occurring on the island and the banks of the river. The areas between these intact natural communities are recently clearcut areas, young forests, and lower areas altered by the impoundment of Buckhorn Dam downstream.

Piedmont Levee Forest (Typic Subtype) occurs along the natural levees and islands within the Cape Fear River. The canopy is dominated by green ash (*Fraxinus pennsylvanica*) and sugarberry (*Celtis laevigata*) is abundant. Sycamore (*Platanus occidentalis*) and river birch (*Betula nigra*) are less common. The canopy is mature in these patches with trees averaging well over 12 inches in diameter. The understory is dominated by the same species, along with box-elder (*Acer negundo*). The shrub layer is dense in many parts. Some areas have giant cane (*Arundinaria gigantea*), others have spicebush (*Lindera benzoin*), and substantial portions are dense with the nonnative invasive Chinese privet (*Ligustrum sinense*). The nonnative invasives Japanese honeysuckle (*Lonicera japonica*) and Japanese stilt grass (*Microstegium vimineum*) are present and are dense in places but not everywhere. The upstream patch has areas with dense grass, apparently Virginia wild-rye (*Elymus virginicus*).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Piedmont Bottomland Forest (Typic Low Subtype), Piedmont Levee Forest (Typic Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype), Piedmont/Mountain Semipermanent Impoundment (Shrub Subtype)

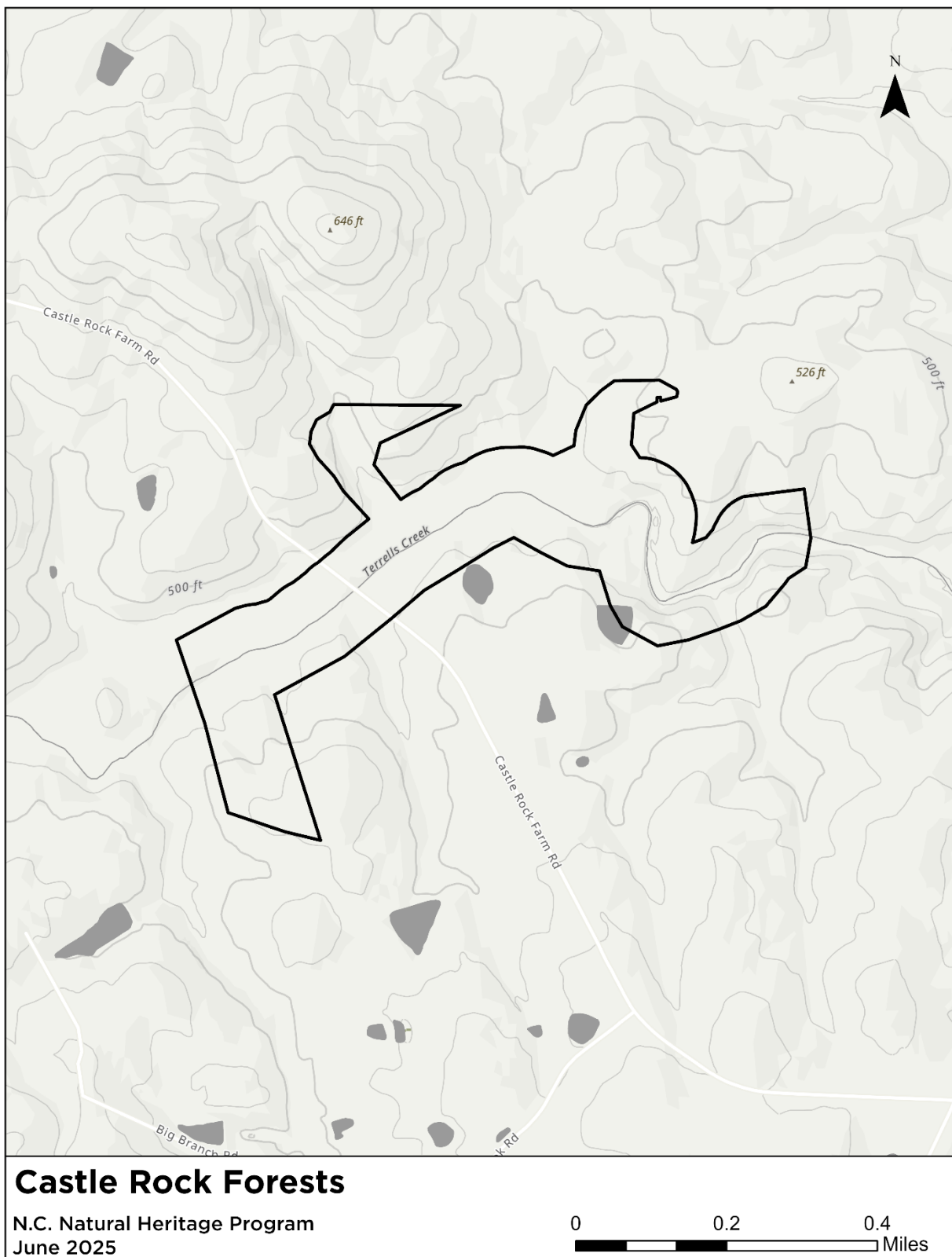
**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*).

**RARE ANIMALS:** Waterbird colonies are present. In the adjacent Cape Fear River, the State Endangered Carolina redhorse (*Moxostoma* sp. 3) has been documented.

**REFERENCES:**

- Schafale, M P. 2009. Site Note: Cape Fear River Above NC 42. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Swab, E.C., and L.M. Cotterman. 1996. A Preliminary Inventory of the Natural Areas of Lee County, North Carolina.











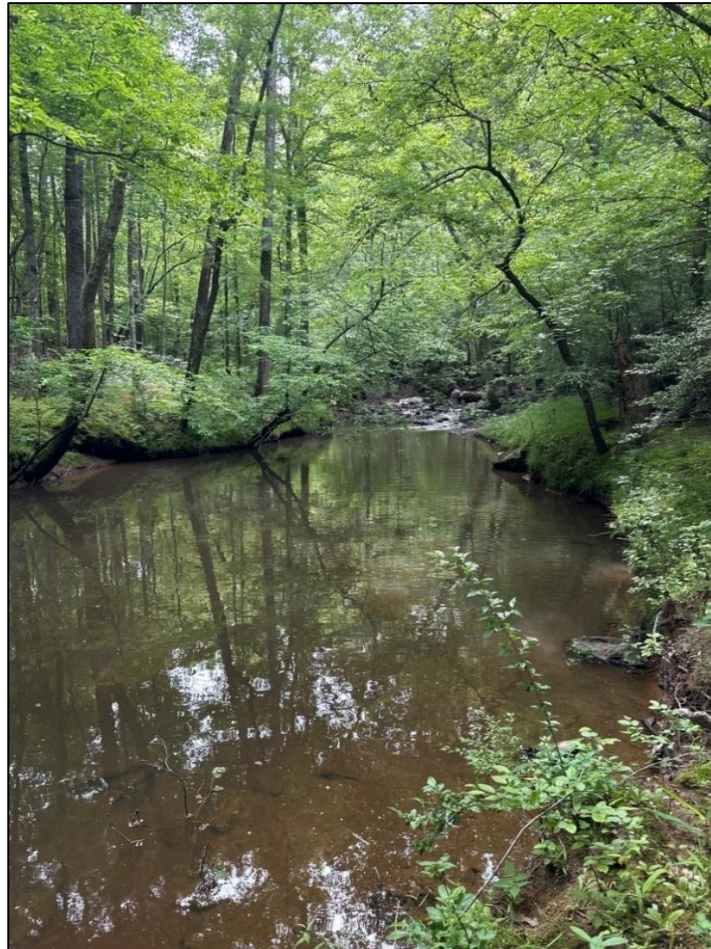
## Chatham County Natural Area Inventory

### Castle Rock Forests

<b>Site Significance:</b> General	<b>Size:</b> 104 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Silk Hope

**SIGNIFICANT FEATURES:** Castle Rock Forests supports three natural communities, one of which, the Low Elevation Seep (Typic Subtype) is uncommon in the county. Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) and Piedmont Alluvial Forest natural communities are present as well. Many rare aquatic species, including the species of Special Concern Carolina darter (*Etheostoma collis*), occur within Terrells Creek and the Very High rated Haw River Aquatic Habitat adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Haw River Aquatic Habitat bisects the site. Terrells Hardpan natural area is approximately 3.5 air miles east.



Large Pool in Terrells Creek and Castle Rock Forests Natural Area. Photo by: Merry Conlin.

**SITE DESCRIPTION:** The Castle Rock natural area is a gently sloping region of dacitic lavas and tuffs in the Carolina Terrane. This site contains approximately one mile of Terrells Creek frontage. This creek is recognized with a Very High significance Aquatic Habitat that drains to the Haw River. Along Terrells Creek some Piedmont Alluvial Forest is found in patches where the riparian zone is intact. Gently sloping uplands which retain some natural characters are mostly Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) that grade to either successional forest or Dry Oak–Hickory Forest (Piedmont Subtype). A small Low Elevation Seep borders a Piedmont Headwater Stream Forest that drains directly to Terrells Creek. Small sections within and bordering the natural area are regions maintained as farm, pastureland, and developed areas. The maintenance and restoration of a riparian zone along Terrells Creek is important for the protection of aquatic species both within the creek and the downstream Haw River.

Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) is found on the mildly sloping uplands and small bluffs above Terrells Creek. The canopy is variable patches dominated by white oak (*Quercus alba*) or in some spots northern red oak (*Quercus rubra*). Scarlet oak (*Quercus coccinea*) is common along with tulip tree (*Liriodendron tulipifera*). Some willow oak (*Quercus phellos*) is present as well. The understory contains abundant red maple (*Acer rubrum*), American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*) and immature canopy species. A strikingly mature sourwood was measured 17.5 inches in diameter. The shrub layer is likewise variable, a few spots are dominated with the nonnative invasive autumn olive (*Elaeagnus umbellata*). American beech (*Fagus grandifolia*) is regular and spicebush (*Lindera benzoin*) intergrades from the more alluvial areas. Other patches are sparse in both shrubs and herbaceous species. Muscadine grape (*Vitis rotundifolia*) is overall the most abundant in the herbaceous layer. A few species affiliated with less acidic soils were observed scattered across the site but were not regular enough to be mapped within a distinct community. These include coral-berry (*Symphoricarpos orbiculatus*) and lopseed (*Phryma leptostachya*) among others. Small dense patches of broad beech fern (*Phegopteris hexagonoptera*) occur in several places in this community. Christmas fern (*Polystichum acrostichoides*), American strawberry-bush (*Euonymus americanus*), and little brown jug (*Hexastylis arifolia*) are common. This community is in good condition and appears in aerial imagery to have been selectively cut at various points prior to the 1960s. The average canopy species is 16–18 inches in diameter. Some of the larger oaks are 27–29 inches in diameter. Past land use and ground disturbance have led to some spots highly invaded by nonnative invasives and successional species and an overall patchiness in the canopy maturity.

Low Elevation Seep (Typic Subtype) occurs on the floodplains of a small Piedmont Headwater Stream Forest. This is a small almost linear feature before it drains into the stream. There are no canopy species within the community, but it is completely shaded by bordering species. The seep is lined by abundant soft rush (*Juncus effusus*) and netted chainfern (*Lorinseria areolata*). Atamasco lily (*Zephyranthes atamasco*), trumpet-creeper (*Campsis radicans*), and common greenbrier (*Smilax rotundifolia*) are present as well. The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) was observed with low cover. This community is in good condition with obvious moisture present at the time of the survey.

Piedmont Alluvial Forest borders Terrells Creek where the riparian zone is intact. The canopy is codominated by tulip tree (*Liriodendron tulipifera*) and sweet gum (*Liquidambar styraciflua*). Sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*), and black walnut (*Juglans nigra*) are frequent as well. The understory is moderately dense with a mixture of species. American hornbeam (*Carpinus caroliniana*), box-elder (*Acer negundo*), and in some spots American beech (*Fagus grandifolia*) are frequent. A few nonnative invasive tree-of-heaven (*Ailanthus altissima*) occur as well. The shrub layer is dense with the overall dominant spicebush (*Lindera benzoin*) and commonly painted buckeye (*Aesculus sylvatica*). Pinxterflower (*Rhododendron periclymenoides*) is present as well. Nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*) are common. The herbaceous layer contains a mixture of alluvial and rich soil affiliated species with no clear dominant. Ferns are regular, including Christmas fern (*Polystichum acrostichoides*), sensitive fern (*Onoclea sensibilis*), and southern lady fern (*Athyrium asplenoides*). The banks of the creek are often lined with yellow crownbeard (*Verbesina occidentalis*),

river oats (*Chasmanthium latifolium*), and shrubby yellow-root (*Xanthorhiza simplicissima*). Patches of coral-berry (*Symphoricarpos orbiculatus*) and common jack-in-the-pulpit (*Arisaema triphyllum*) are scattered throughout. This community is in fair-to-good condition. It would have historically been more extensive at the site, but past land use has reduced the riparian zone significantly in some areas, with few to no canopy species bordering the creek. These openings have also allowed for high levels of invasion by nonnative species. The canopy averages 12–14 inches in diameter. Some of the largest trees average 22–24 inches in diameter. At one spot the floodplain is large enough to support a very small pool, a feature important for breeding amphibians.

**PROTECTION:** This site is under no formal conservation. The riparian zone and associated uplands are worthy of a conservation agreement. There is a risk of changes in land use and continued spread of exotic plants and potential water pollution by runoff from construction sites, yards, and effluent discharge into the high-quality habitat of Terrells Creek.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Low Elevation Seep (Typic Subtype), Piedmont Alluvial Forest.

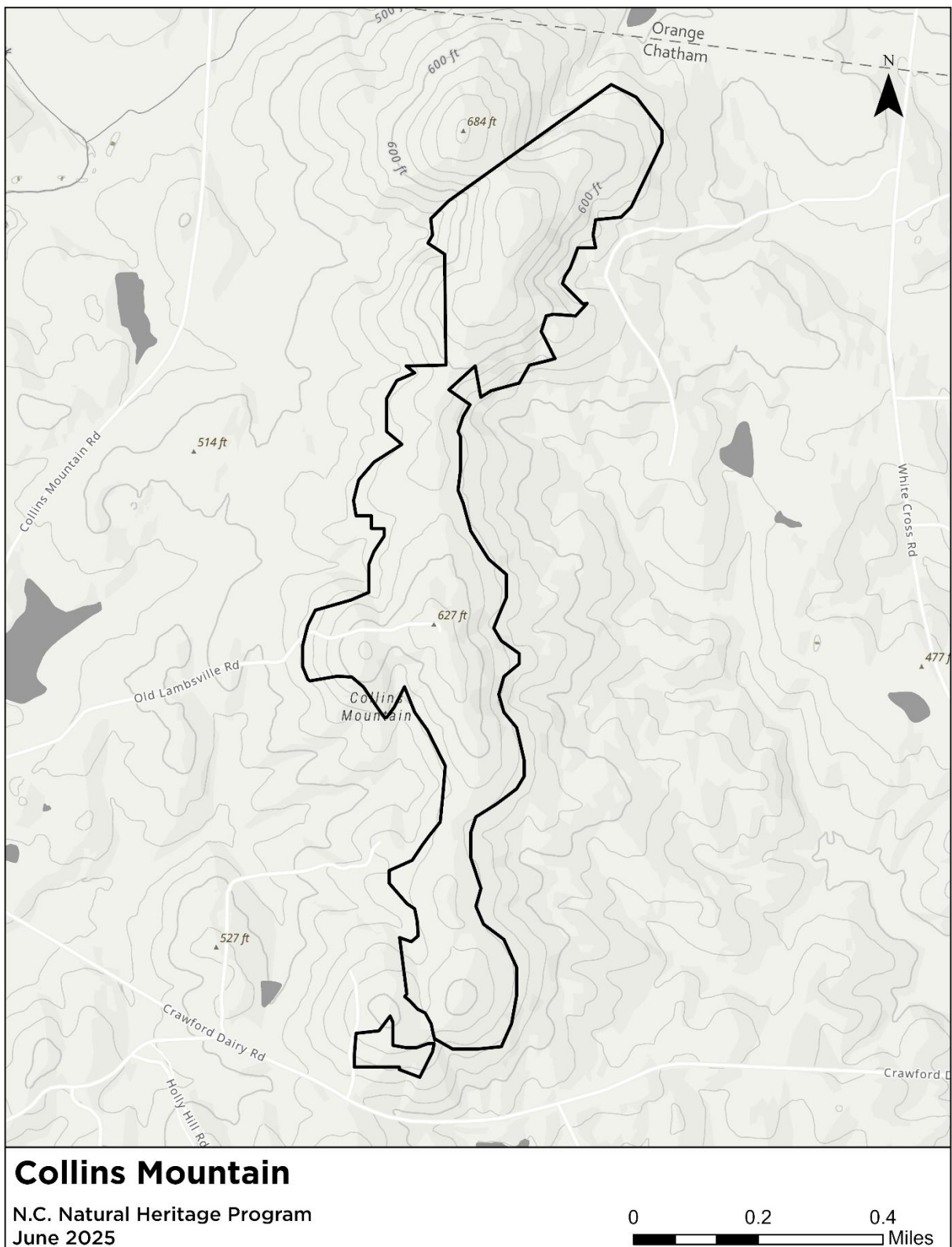
**RARE PLANTS:** None observed.

**RARE ANIMALS:** One rare aquatic species has been documented in the adjacent Terrells Creek portion of the Haw River Aquatic Habitat: State Special Concern Carolina darter (*Etheostoma collis*).

#### **REFERENCES:**

Conlin, M R. 2024. Site Survey Report: Castle Rock Forests Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Collins Mountain

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Collins Mountain

<b>Site Significance:</b> General	<b>Size:</b> 176 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Collins Mountain natural area is of General significance as it contains upland forested area, some of which is classified as Dry-Mesic Oak—Hickory Forest (Piedmont Subtype). Intact forested areas are essential wildlife habitats.

**LANDSCAPE RELATIONSHIPS:** Haw River Aquatic Habitat lies 0.4 miles to the west. Terrells Mountain lies 1.7 miles to the east. Little Terrells Creek Bottomland Forest lies 0.6 miles to the southeast at the closest point.

**SITE DESCRIPTION:** Collins Mountain natural area is one of the several prominent ridges observed in the county where the underlying felsic rock has weathered more slowly than the surrounding landscape. This site was originally described by Hall and Boyer (1992) and has not been accessed on the ground by NCNHP biologists since their survey. Updates to the natural area boundary have been made based on satellite imagery where recent timber harvests have visibly reduced hardwood forested acres. This long north-south facing ridge supports Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) natural community rather than the drier oak hickory or monadnock communities observed in the neighboring Terrells Mountain.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the ridge and upper slopes of Collins Mountain that are not successional pine and hardwood forests. The dominant trees are white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and mockernut hickory (*Carya tomentosa*). In the cooler ravines, red oak (*Quercus rubra*) is also a conspicuous member of the canopy. The understory and shrub layers likewise contain such expected species as red maple (*Acer rubrum*), dogwood (*Benthamidia florida*), sourwood (*Oxydendrum arboreum*), blueberries (*Vaccinium* spp.), and viburnums (*Viburnum* spp.). As is typical of drier upland sites, the herb layer is quite sparse; the most common species were spotted wintergreen (*Chimaphila maculata*), bracken fern (*Pteridium aquilinum*), Christmas fern (*Polystichum acrostichoides*), and arrowleaf heartleaf (*Hexastylis arifolia*) (Hall and Boyer 1992).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

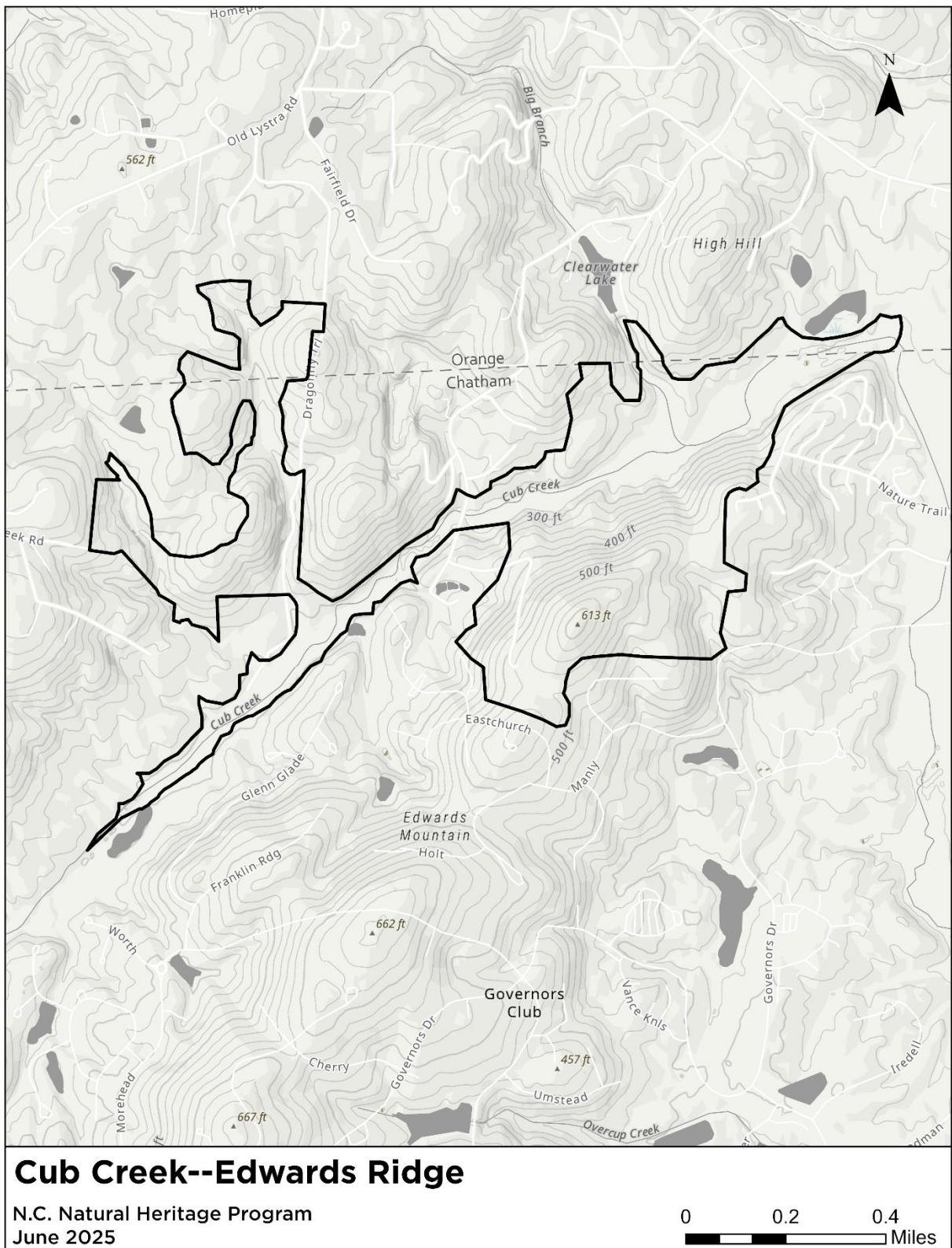
**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

#### REFERENCES:

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.







## Cub Creek--Edwards Ridge

N.C. Natural Heritage Program  
June 2025

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Miles



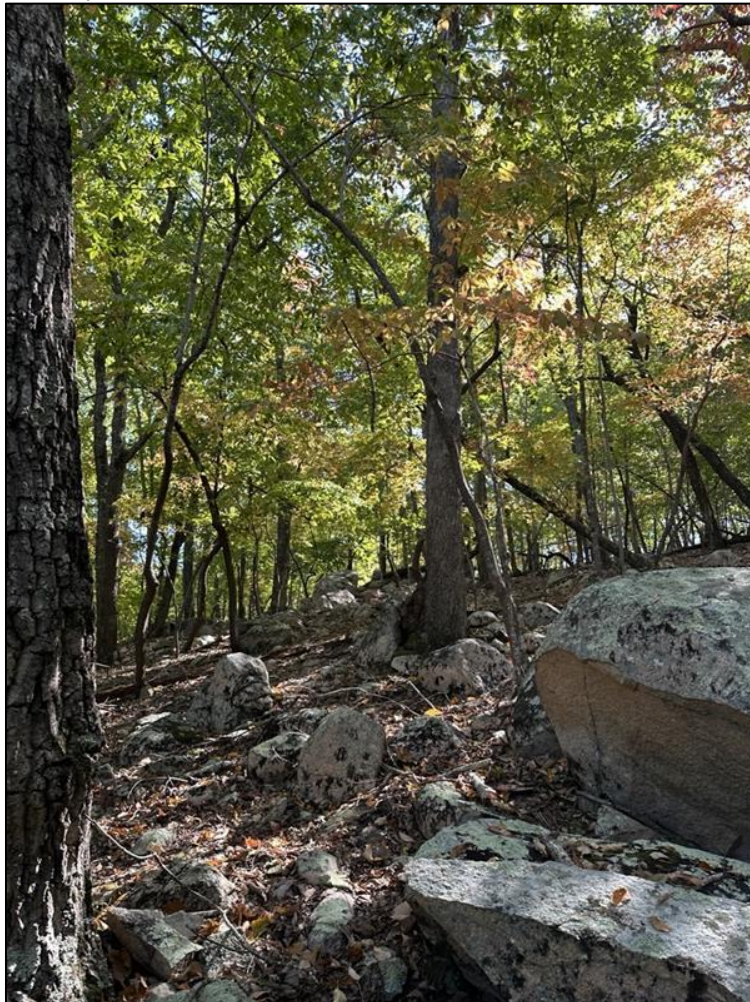
## Chatham County Natural Area Inventory

### Cub Creek–Edwards Ridge

<b>Site Significance:</b> Moderate	<b>Size:</b> 324 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** Cub Creek–Edwards Ridge natural area is of Moderate significance as it supports a collection of seven high-quality natural communities typical of the Piedmont Region. The rarest natural communities at the site are two Floodplain Pools. Additional communities in the floodplain include Piedmont Alluvial Forest. The uplands support Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Headwater Stream Forest (Typic Subtype), and remarkably mature Piedmont Monadnock Forest (Typic Subtype).

**LANDSCAPE RELATIONSHIPS:** Morgan Creek Floodplain Forest is approximately 1.5 air miles east. Boothe Hill is approximately 2 miles to the southwest.



Piedmont Monadnock Forest (Typic Subtype) within Cub Creek–Edwards Ridge Natural Area. Photo by: Merry Conlin.

**SITE DESCRIPTION:** Edwards Mountain rises up distinctly a few hundred feet above the surrounding terrain. Only the northern portion of the ridge remains undeveloped. This is another inselberg, or erosional remnant, known from the northern portion of the county. This formation results from the slow weathering of the underlying granite that remains exposed after surrounding rock has eroded away, which has led to exposed boulders and outcrops along the ridge and generally acidic and dry soils. This has also resulted in the regionally uncommon Piedmont Monadnock Forest (Typic Subtype) that is found along the northern summit and slopes of the ridge. The forests in this area, noted as old growth in the original inventory (Hall and Boyer 1992), have largely only increased in maturity since then. The midslopes are lined with similarly mature Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) that grades to Mesic Mixed Hardwood Forest downslope. The bottomland was historically a beaver impoundment and rich Piedmont Alluvial Forest described in the original inventory; part of it is now a successional forest with two small Floodplain Pools and intact forested communities that occur only in the western portion. The Watch List species leatherwood (*Dirca palustris*) is found along a mesic ravine.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs on the upper slopes north of Cub Creek. The canopy is dominated by white oak (*Quercus alba*), with chestnut oak (*Quercus montana*) abundant in some areas. Other canopy trees include shortleaf pine (*Pinus echinata*), post oak (*Quercus stellata*), and mockernut hickory (*Carya tomentosa*). The understory includes sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), winged elm (*Ulmus alata*), and black tupelo (*Nyssa sylvatica*). Shrubs are primarily early lowbush blueberry (*Vaccinium pallidum*) and deerberry (*Vaccinium stamineum*). Herbaceous species are sparse. In the mature areas, canopy trees average 12–14 inches in diameter, with trees 18 inches in diameter or more common. Canopy gaps are also common. Local areas have extensive wind throw, so that the canopy is broken, and young saplings are dense throughout the area, but large trees remain abundant.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the midslope and ridges of Edwards Mountain and neighboring hills. The canopy is closed and mature with a diverse group of species in the canopy. White oak (*Quercus alba*), northern red oak (*Quercus rubra*), and sweet pignut hickory (*Carya glabra*) are common. Some chestnut oak (*Quercus montana*), tulip tree (*Liriodendron tulipifera*), Spanish oak (*Quercus falcata*), and shortleaf pine (*Pinus echinata*) occur as well. The canopy is mature, averaging 18–20 inches in diameter along Edwards Ridge, and younger north of Cub Creek averaging 10–12 inches in diameter. Some of the largest oaks measure 27 and 28.2 inches in diameter. The understory is sparse and variable with black tupelo (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), and white oak (*Quercus alba*). There is virtually no shrub layer, some scattered downy arrowwood (*Viburnum rafinesqueanum*) and rusty blackhaw (*Viburnum rufidulum*) are present. Herbaceous species are likewise sparse, with scattered little brown jug (*Hexastylis arifolia*), American strawberry-bush (*Euonymus americanus*), ebony spleenwort (*Asplenium platyneuron*), and the overall abundant muscadine grape (*Vitis rotundifolia*).



Floodplain Pools occur on the terraces of the Cub Creek Floodplain. Two pools are mapped from this survey. One pool has no obvious connection to the creek and is presumably rain fed. The other borders the uplands of Edwards Ridge and represents an abandoned channel of Cub Creek with natural levees that have left it



separated. These pools have no canopy but are surrounded by mostly successional canopy species including red maple (*Acer rubrum*) and sweet gum (*Liquidambar styraciflua*). Some species normally found in the understory are also in the surrounding canopy here because of large canopy gaps. This includes winged elm (*Ulmus alata*) and the nonnative invasive Chinese privet (*Ligustrum sinense*). Shrubs are fairly common along the border, including tag alder (*Alnus serrulata*) and beautyberry (*Callicarpa americana*), as well as immature sweetgum and Chinese privet. Herbaceous species are restricted to pool margins and are primarily various sedges (*Carex* spp.), three-way sedge (*Dulichium arundinaceum*), and bottomland species such as stout wood reed-grass (*Cinna arundinacea*), soft rush (*Juncus effusus*), lizard's tail (*Saururus cernuus*), and longbeak arrowhead (*Sagittaria australis*). These pools are all that remains of a former beaver impoundment last observed during the original inventory (Hall and Boyer 1992).

Mesic Mixed Hardwood Forest (Piedmont Subtype) is found on the lower slopes and ravines of Edwards Mountain, and sloping uplands adjacent to Cub Creek. The canopy is mature, closed, and dominated by American beech (*Fagus grandifolia*). Tulip tree (*Liriodendron tulipifera*) is likewise abundant. Other canopy species include northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and white oak (*Quercus alba*). The canopy averages 14–16 inches in diameter. Trees 20 inches in diameter or more are present. The understory is open with scattered species including some locally uncommon umbrella



Watch List Shrub Leatherwood (*Dirca palustris*) at Cub Creek—Edwards Ridge Natural Area. Photo by: Merry Conlin.

magnolia (*Magnolia tripetala*), along with red mulberry (*Morus rubra*), red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and regenerating canopy species. Occasionally eastern redbud (*Cercis canadensis*) and fringe tree (*Chionanthus virginicus*) are present. Common shrubs include early low-bush blueberry (*Vaccinium pallidum*), deerberry (*Vaccinium stamineum*), maple-leaf viburnum (*Viburnum acerifolium*), and American strawberry-bush (*Euonymus americanus*). Near the bottomland, shrubs such as spicebush (*Lindera benzoin*), American witch-hazel (*Hamamelis virginiana*), and in one instance American hazelnut (*Corylus americana*) occur. The NC Watch List leatherwood (*Dirca palustris*) occurs in this community following a rocky ravine upslope. Herbaceous species are fairly sparse but diverse. Common species include Christmas fern (*Polystichum acrostichoides*), crane fly orchid (*Tipularia discolor*), and beechdrops (*Epifagus virginiana*). Less common are herbaceous species associated with fairly rich habitats including broad beech fern (*Phegopteris hexagonoptera*), bearded shorthusk (*Brachyelytrum erectum*), heart-leaved foam-flower (*Tiarella cordifolia*), and round-lobed hepatica (*Hepatica americana*).



In the ravines wetland associates such as cinnamon fern (*Osmundastrum cinnamomeum*) and royal fern (*Osmunda spectabilis*) are found.

Piedmont Alluvial Forest occurs along Cub Creek south of Edwards Ridge. This community was more extensive and included a beaver dam complex during the original inventory (Hall and Boyer 1992). The area that was formerly impounded now comprises a successional and nonnative invasive-filled bottomland. Outside of this area the community is described with a fairly rich assemblage of species, including canopy species of black walnut (*Juglans nigra*), swamp chestnut oak (*Quercus michauxii*), American elm (*Ulmus americana*), sycamore (*Platanus occidentalis*), and sweet gum (*Liquidambar styraciflua*). Umbrella magnolia (*Magnolia tripetala*), eastern redbud (*Cercis canadensis*), American bladdernut (*Staphylea trifolia*), and spicebush (*Lindera benzoin*) are in the understory and shrub layer. The bottomland is open with cardinal flower (*Lobelia cardinalis*), sensitive fern (*Onoclea sensibilis*), netted chain fern (*Woodwardia areolata*), lovage (*Ligusticum canadense*), and common jack-in-the-pulpit (*Arisaema triphyllum*).

Piedmont Headwater Stream Forest (Typic Subtype) occurs along a narrow floodplain of a small Cub Creek tributary. The canopy is dominated by a varying mix of tulip tree (*Liriodendron tulipifera*), white oak (*Quercus alba*), and American beech (*Fagus grandifolia*), with smaller numbers of shortleaf pine (*Pinus echinata*) and ash (*Fraxinus* sp.). The understory includes American hornbeam (*Carpinus caroliniana*), red maple (*Acer rubrum*), and a few umbrella magnolia (*Magnolia tripetala*), as well as canopy species. Shrubs include deciduous holly (*Ilex decidua*) and maple-leaf viburnum (*Viburnum acerifolium*), as well as a few American witch-hazel (*Hamamelis virginiana*) and bigleaf snowbell (*Styrax grandifolius*). Herbs include Christmas fern (*Polystichum acrostichoides*), sedges (*Carex* sp.), rattlesnake-fern (*Botrypus virginianus*), and Bosc's witchgrass (*Dichanthelium boscii*). Japanese stilt grass (*Microstegium vimineum*) is patchy but not extensive. Canopy trees average 12–14 inches in diameter or more, and trees up to 24 inches in diameter are present. The champion shortleaf pine in this community is 33 inches in diameter.

Piedmont Monadnock Forest (Typic Subtype) occurs on the northern ridge and slopes of Edwards Mountain. The canopy is closed and dominated by chestnut oak (*Quercus montana*). Sweet pignut hickory (*Carya glabra*), mockernut hickory (*Carya tomentosa*), white oak (*Quercus alba*), and scarlet oak (*Quercus coccinea*) are common. Canopy species are remarkably mature, averaging 19–21 inches in diameter. Some of the largest chestnut oaks measure 28.8 and 32.5 inches in diameter. The understory is sparse with some sourwood (*Oxydendrum arboreum*), eastern red cedar (*Juniperus virginiana*), and black tupelo (*Nyssa sylvatica*). There are only a few shrubs, scattered individuals of smooth black-haw (*Viburnum prunifolium*), downy arrowwood (*Viburnum rafinesqueanum*), and persimmon (*Diospyros virginiana*) are present. Few herbaceous species occur. Scattered oatgrass (*Danthonia* sp.) is the most common. One slope near a developed boundary is dominated by the nonnative invasive oriental bitter-sweet (*Celastrus orbiculatus*).

**PROTECTION:** Approximately 19% of the total acreage is protected with a Natural Heritage Program Registered Heritage Area. The majority of the site is under no formal conservation agreement and remains threatened by development of the uplands and heavy nonnative invasion in the bottomlands.

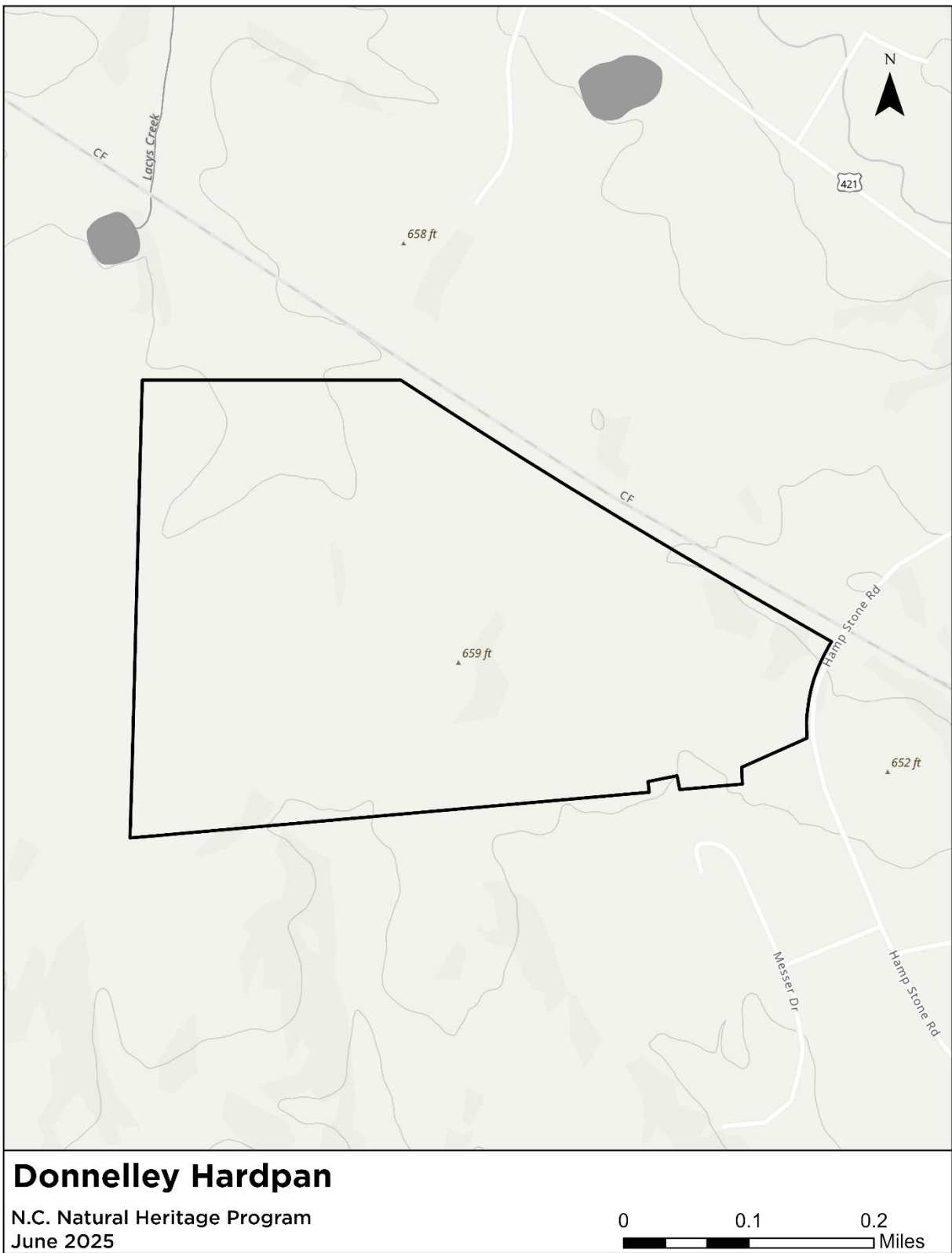
**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Headwater Stream Forest (Typic Subtype), Piedmont Monadnock Forest (Typic Subtype)

**RARE PLANTS:** Watch List leatherwood (*Dirca palustris*).

**RARE ANIMALS:** None observed.

**REFERENCES:**

- Conlin, M.R. 2024. Site Survey Report: Cub Creek–Edwards Ridge Natural Area, northeastern tracts. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. 2015. Site Survey Report: Cub Creek–Edwards Ridge Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Donnelley Hardpan

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Donnelley Hardpan

<b>Site Significance:</b> Exceptional	<b>Size:</b> 95 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> North Carolina Herpetological Society
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Siler City

**SIGNIFICANT FEATURES:** The Donnelly Hardpan natural area is rated Exceptional for the presence of the best-known example of the very rare Upland Pool (Typic Piedmont Subtype) natural community. The site protects four different elements of biodiversity; in addition to the natural community mentioned above, Upland Depression Swamp Forest, Mixed Moisture Hardpan Forest, and animals of interest to the Herpetological Society are present.

**LANDSCAPE RELATIONSHIPS:** This site is approximately 3 miles southwest of the northern end of the Rocky River Subbasin Aquatic Habitat.



Mixed Moisture Hardpan Forest at Donnelly Hardpan Natural Area. Photo by: Merry Conlin.

**SITE DESCRIPTION:** Donnelly Hardpan is a mostly flat site located within a region of geologic diversity where a narrow band of the Aaron formation is met by Albermarle Arc to the southwest and the Hyco Formation to the northeast. The soils in the site produce a hardpan, which results in localized pools and challenging terrain for plant growth. These unique features give rise to a somewhat uncommon combination of communities, the main one being a Mixed Moisture Hardpan Forest, which occupies the majority of the flats on the site. A small Upland Depression Swamp Forest is embedded within that community. At the lowest point in the site is a very rare small Upland Pool (Typic Piedmont Subtype), which appears to retain water for much of the year.

Mixed Moisture Hardpan Forest is the predominant community at the site, found along the flats. The forest is generally in second-growth condition after recovering from disturbance in the last century. The canopy is slightly open with abundant willow oak (*Quercus phellos*), Spanish oak (*Quercus falcata*), sweet gum (*Liquidambar styraciflua*), and, along the margins, loblolly pine (*Pinus taeda*). In the eastern portion, post oak (*Quercus stellata*) and some blackjack oak (*Quercus marilandica*) are more abundant. Southern shagbark hickory (*Carya carolinae-septentrionalis*) is present. Canopy trees present in smaller numbers include shortleaf pine (*Pinus echinata*), white oak (*Quercus alba*), and scarlet oak (*Quercus coccinea*). This canopy is mature and somewhat stunted from the underlying soils, averaging 14–16 inches in diameter. Willow oaks comprise some of the largest canopy species measuring 20–22 inches in diameter. The understory is open and sparse with sweet gum most abundant. A few white ash (*Fraxinus americana*) and eastern red cedar (*Juniperus virginiana*) are present as well. Species in the shrub layer are also sparse. Hairy highbush blueberry (*Vaccinium fuscatum*), deerberry (*Vaccinium stamineum*), and tangles of common greenbrier (*Smilax rotundifolia*) are common in this layer. A few patches of dangle-berry (*Gaylussacia frondosa*) are present as well. Many of the sparse herbaceous species are concentrated around the low root mounds of the hardwoods while the flats are clear, likely a result of longer hydroperiods and the shrink-swell properties of the clay soil. Muscadine grape (*Vitis rotundifolia*) is the most abundant overall. Patches of moss (*Sphagnum* sp.), small black blueberry (*Vaccinium tenellum*), American strawberry-bush (*Euonymus americanus*), and slender spikegrass (*Chasmanthium laxum*) are common. This community was originally classified as Xeric Hardpan Forest (Basic Hardpan Subtype), but the original source of the basic attribution is unclear. No strong indicators either in geological mapping or flora remain. It is possible this is a successional Xeric Hardpan with the more mesophytic species increasing in abundance over time.

Upland Depression Swamp Forest occurs on the flats and in a very shallow basin that is intermixed with the Mixed Moisture Hardpan Forest. Within the canopy there is an increase in willow oak (*Quercus phellos*) and sweet gum (*Liquidambar styraciflua*) and decreased abundance of the more xeric associated species. Some loblolly pine (*Pinus taeda*) is scattered throughout. This community is in good condition with canopy trees averaging 14–16 inches in diameter like the surrounding Mixed Moisture Hardpan. The understory is mostly open with regenerating canopy species. Patches of hairy highbush blueberry (*Vaccinium fuscatum*) and buttonbush (*Cephalanthus occidentalis*) are scattered throughout. Small hummocks surround tree roots and support some dangle-berry (*Gaylussacia frondosa*) and herbaceous species such as cypress-swamp sedge (*Carex jorii*). Dense tangles of common greenbrier (*Smilax rotundifolia*) are abundant. Some patches of moss (*Sphagnum* sp.) are present as well.

Upland Pool (Typic Piedmont Subtype) is embedded near the center of the Upland Depression Swamp Forest at the lowest point in the flat. The surrounding forest makes up the species composition, as the pool lacks any vegetation. During this late summer survey, this pool was still full, while the rest of the site was very dry. There is no obvious drain for this pool.

**PROTECTION:** This site is under no formal conservation protection though the site is owned by a conservation organization. This site would be a worthy target for a registry, easement, or similar conservation agreement.



**NATURAL COMMUNITIES:** Mixed Moisture Hardpan Forest, Upland Depression Swamp Forest, Upland Pool (Typic Piedmont Subtype).

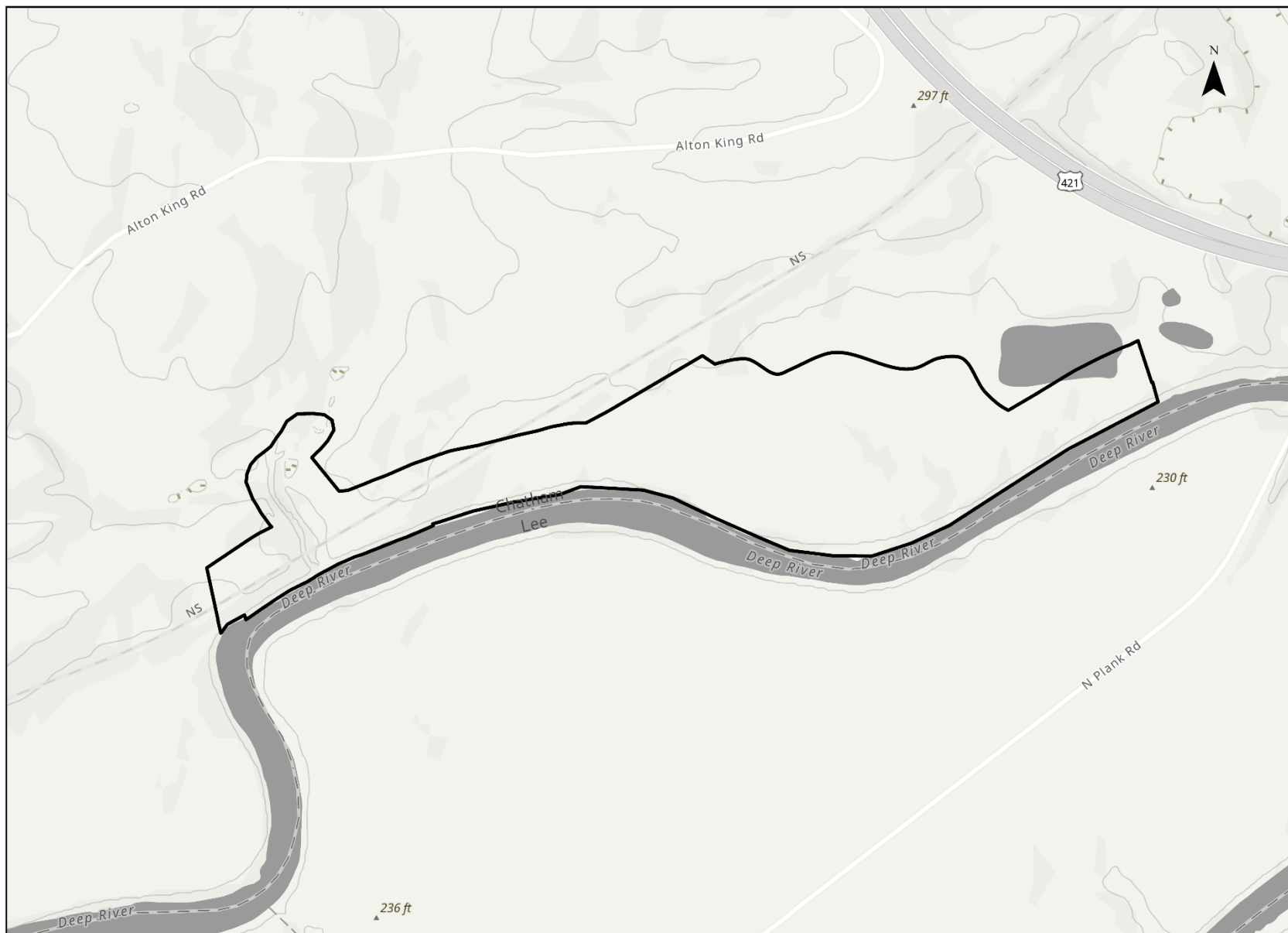
**RARE PLANTS:** None observed.

**RARE ANIMALS:** Animals of interest to the Herpetological Society are present.

**REFERENCES:**

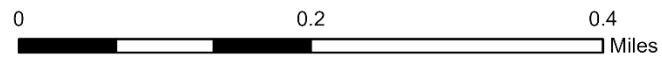
Conlin, M.R. 2024. Site Survey Report: Donnelley Hardpan Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.



## Gulf Diabase Forest

N.C. Natural Heritage Program  
June 2025







## Gulf Diabase Forest

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Gulf Diabase Forest

<b>Site Significance:</b> High	<b>Size:</b> 54 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Goldston

**SIGNIFICANT FEATURES:** The Gulf Diabase Forest receives a High significance rating due to the occurrence of two Significantly Rare plant species, Piedmont horsebalm (*Collinsonia tuberosa*) and buttercup phacelia (*Phacelia covillei*). This site also supports three natural communities: Basic Mesic Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), and strikingly mature Piedmont Levee Forest (Typic Subtype). Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Deep River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Deep River-Rocky River Aquatic Habitat is adjacent to the site. LaGrange Slopes and Bottomlands are approximately 1.8 air miles to the southwest; Carbondon Diabase Sill is about 4.1 air miles to southwest.

**SITE DESCRIPTION:** Gulf Diabase Forest is an area of bluffs and floodplain along the Deep River. Several intermittent, and one perennial, stream drain from the site into the Deep River, which remains entrenched throughout this reach. This portion of the Deep River and the terraces on the Chatham County side are underlain by diabase dikes, resulting in less acidic soils and rich plant communities. Mature Piedmont Levee Forest borders the river and grades into Piedmont Bottomland Forest (Typic Low Subtype). A small patch of Basic Mesic Forest (Piedmont Subtype) is found on the slopes of the Deep and a tributary. All communities contain heavy invasion by nonnative invasive plants. Mixed-age successional forest covers much of the rest of the area. Significantly Rare buttercup phacelia (*Phacelia covillei*) is found over much of this site. Piedmont horsebalm (*Collinsonia tuberosa*) has been observed in the past.

Basic Mesic Forest (Piedmont Subtype) occurs on the terraced slopes of a Deep River tributary. The closed canopy is dominated by Florida maple (*Acer floridanum*), with some tulip tree (*Liriodendron tulipifera*), mockernut hickory (*Carya tomentosa*), black walnut (*Juglans nigra*), sugarberry (*Celtis laevigata*), and abundant swamp chestnut oak (*Quercus michauxii*). The understory is moderately dense. It is dominated by American hornbeam (*Carpinus caroliniana*), Florida maple, and swamp chestnut oak. Some eastern hop-hornbeam (*Ostrya virginiana*), slippery elm (*Ulmus rubra*), bitter-nut hickory (*Carya cordiformis*), river birch (*Betula nigra*), ash (*Fraxinus* sp.), and American beech (*Fagus grandifolia*) are present. The shrub layer is sparse except where it is moderately dense with coral-berry (*Symphoricarpos orbiculatus*) and, in one area, pawpaw (*Asimina triloba*). The herbaceous layer is sparse. Common herbaceous species are wingstem (*Verbesina alternifolia*), bedstraw (*Galium* sp.), sparse-lobed grape-fern (*Sceptridium bitermatum*), and nonnative invasive Japanese honeysuckle (*Lonicera japonica*). Some Significantly Rare Piedmont horsebalm (*Collinsonia tuberosa*) is known from this community but has not been recently observed.



Mature Swamp Chestnut Oak (*Quercus michauxii*) on Deep River in Gulf Diabase Forest Natural Area. Photo by: Merry Conlin.

Piedmont Bottomland Forest (Typic Low Subtype) occurs on the interior floodplains of the site and intergrades with the Piedmont Levee Forest. The canopy is dominated by cherry-bark oak (*Quercus pagoda*) with sweet gum (*Liquidambar styraciflua*) common as well. The canopy contains some mixed age classes, the majority of the community averages of 18–20 inches in diameter, some sections are younger particularly near the adjacent successional forest with averages of 15–17 inches in diameter. The largest oaks were observed at 29–30 inches in diameter. The understory is varied and mostly open with no clear dominants. Box-elder (*Acer negundo*), American hornbeam (*Carpinus caroliniana*), and slippery elm (*Ulmus rubra*) are common. The shrub layer is dense and dominated by the nonnative invasive Chinese privet (*Ligustrum sinense*), though much of it seems stunted averaging one meter tall. The herbaceous layer is also varied with no clear dominants other than Chinese privet. Sections of this community contain abundant Significantly Rare buttercup phacelia (*Phacelia covillei*). This spring ephemeral wildflower is likely the dominant herb early in spring, disappearing by early summer. Patches of Canada wild-ginger (*Asarum canadense*), coral-berry (*Symphoricarpos orbiculatus*), green dragon (*Arisaema dracontium*), and sedges (*Carex* spp.) are common. Nonnative species are common as well including, Kentucky bluegrass (*Poa pratensis*), Japanese stilt grass (*Microstegium vimineum*), creeping Jennie (*Lysimachia nummularia*), and seedlings of Chinese privet. Though this is not a large patch of bottomland, it supports terrestrial wildlife. An eastern box turtle was observed. Both red-eyed and white-eyed vireos were heard during this survey.

Piedmont Levee Forest (Typic Subtype) occurs on a floodplain levee that is approximately 15 feet above the Deep River at its highest point. The canopy contains abundant sycamore (*Platanus occidentalis*) and sugarberry (*Celtis laevigata*) with the most mature individuals found directly on the riverbanks. In the west, tulip tree (*Liriodendron tulipifera*) becomes a more significant canopy component as the community grades to Basic Mesic Forest. The canopy averages 22–24 inches in diameter. Though infrequent in this community, the largest individual observed from this site was a swamp chestnut oak (*Quercus michauxii*) found at 53.5 inches in diameter. The canopy is closed to open with frequent gaps, particularly along the mouths of the drainages. The understory is likewise patchy, with younger green ash (*Fraxinus pennsylvanica*) and sweet gum (*Liquidambar styraciflua*) being most frequent, along with sections containing abundant Florida maple (*Acer floridanum*). The shrub layer is dominated by Chinese privet (*Ligustrum sinense*), so dense that in many cases the river cannot be seen nor accessed from mere feet away. There are no distinct herbaceous layer dominants. Both native and nonnative species are common, for example, swathes of river oats (*Chasmanthium latifolium*) and ground ivy (*Glechoma hederacea*) are both present.

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), Piedmont Levee Forest (Typic Subtype).

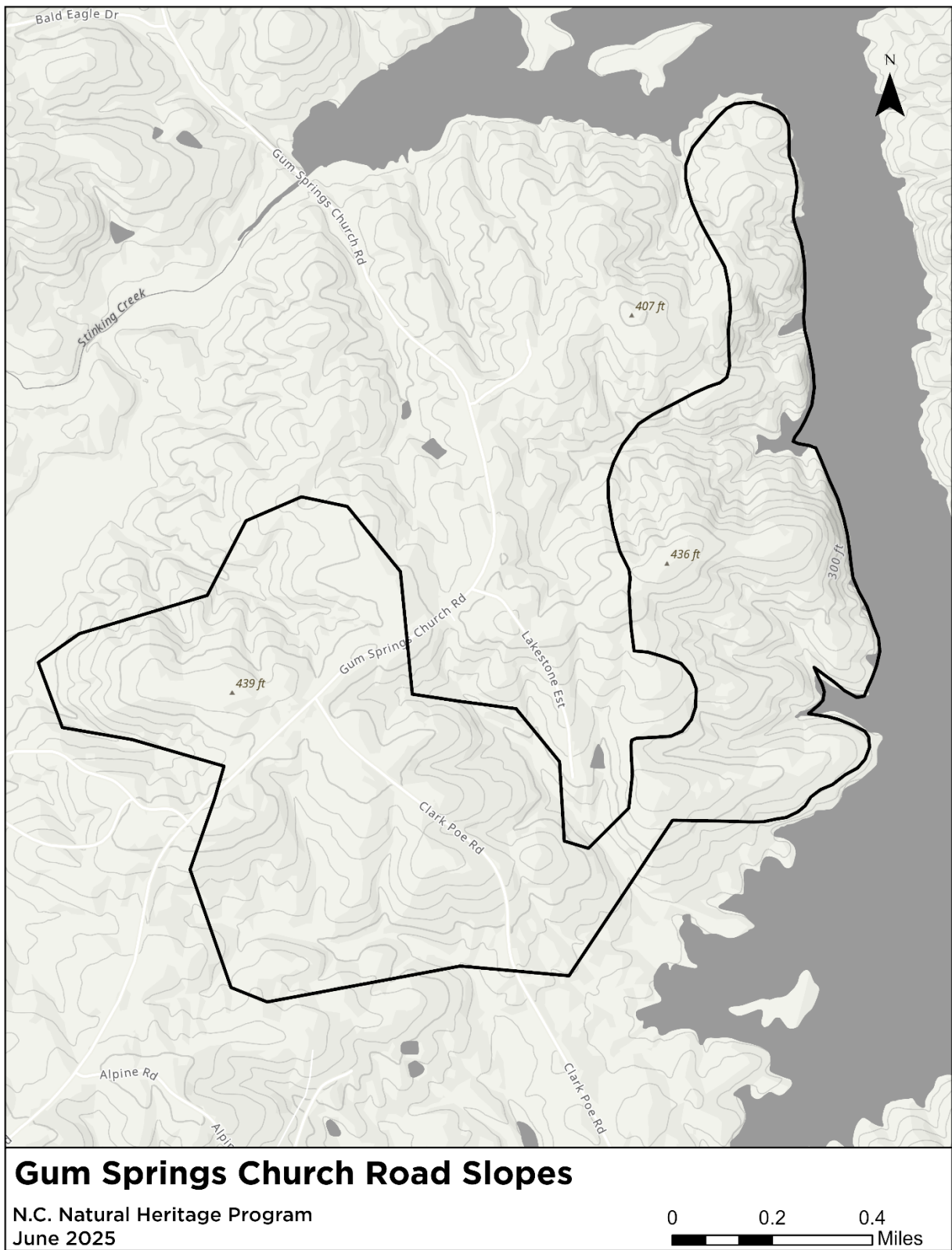
**RARE PLANTS:** Two Significantly Rare species, buttercup phacelia (*Phacelia covillei*) and Piedmont horsebalm (*Collinsonia tuberosa*), not observed in 2024.

**RARE ANIMALS:** Eight rare aquatic species have been documented in the adjacent Deep River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and six species state listed as Endangered, Threatened, or Special Concern including: Carolina creekshell (*Sagittunio vaghanianus*), notched rainbow (*Venustaconcha constricta*), Roanoke slabshell (*Elliptio roanokensis*), Savannah lilliput (*Toxolasma pullus*), triangle floater (*Alasmidonta undulata*), and yellow lampmussel (*Lampsilis cariosa*). The eastern creekshell (*Villosa delumbis*) is Significantly Rare.

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Gulf Diabase Forest Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Oakley, S.C., H.E. LeGrand, Jr., and M.P. Schafale. 1995. An inventory of mafic natural areas in the North Carolina Piedmont. NC Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## **Gum Springs Church Road Slopes**

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Gum Springs Church Road Slopes

<b>Site Significance:</b> General	<b>Size:</b> 693 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Private, US Army Corps of Engineers
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Gum Springs Church Road Slopes natural area is of Moderate significance as it contains a considerable extent of mature upland hardwood forests. This includes good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and Dry Basic Oak—Hickory Forest. These characteristic Piedmont natural communities provide essential habitat for both common and rare species that live along Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** Poes Ridge/Dam Road Upland Forests are approximately 0.7 miles south. New Hope Overlook Bluff and Slopes is 0.8 miles to the east across the lake.



Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) at Gum Springs Church Road Slopes Natural Area. Photo by: Merry Conlin.

**SITE DESCRIPTION:** This site occurs on the boundary of the Carolina Terrane and the Durham Sub-basin as it bounds Jordan Lake. The topography is comprised of largely east- and south-facing slopes dissected by small ravines along the lake and fairly broad ridge summits. The majority of the site contains



hardwoods including good examples of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) and Dry Oak—Hickory Forest (Piedmont Subtype) along the upper slopes and ridges. A small patch of Dry Basic Oak—Hickory Forest is present as well. Parts of the site are more successional in nature. The portion around Jordan Lake contains some of the most intact and mature forested areas.

Dry Basic Oak—Hickory Forest occurs in patches along several ridges. The canopy is fairly open and dominated by white oak (*Quercus alba*). Scarlet oak (*Quercus coccinea*) and post oak (*Quercus stellata*) are common. Loblolly pine (*Pinus taeda*) is dominant in places. Shag-bark hickory (*Carya ovata*) and mockernut hickory (*Carya tomentosa*) are also common in the canopy. Canopy species average 16–18 inches in diameter. The understory contains abundant eastern red cedar (*Juniperus virginiana*), mockernut hickory (*Carya tomentosa*), sweet pignut hickory (*Carya glabra*), and American holly (*Ilex opaca*). In the southern extent of this community, Florida maple (*Acer floridanum*) and eastern redbud (*Cercis canadensis*) are more common. The shrub layer is patchy, consisting primarily of regenerating canopy and understory species. Herbaceous species are patchy and sparse. Muscadine grape (*Vitis rotundifolia*) is dominant in this layer.

Dry Oak—Hickory Forest (Piedmont Subtype) is marginal but intergrades with the Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) along two ridge tops. The dominant canopy species is white oak (*Quercus alba*). The largest individual measures 43.7 inches in diameter. Overall, the canopy averages 18–20 inches in diameter. Scarlet oak (*Quercus coccinea*) and shortleaf pine (*Pinus echinata*) are frequent as well. In the understory mockernut hickory (*Carya tomentosa*), Spanish oak (*Quercus falcata*), and black oak (*Quercus velutina*) are more common with some flowering dogwood (*Benthamidia florida*) and eastern hop-hornbeam (*Ostrya virginiana*) present. Regenerating oaks and hickories comprise the sparse shrub layer. There are scattered patches of early lowbush blueberry (*Vaccinium pallidum*), the herbaceous layer dominant.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) is the prevalent community found at this site. It occurs along the mid slopes and grades into the slightly drier ridges and some of the slightly more basic slopes. White oak (*Quercus alba*) is the dominant canopy species with mockernut hickory (*Carya tomentosa*) abundant. Scarlet oak (*Quercus coccinea*) is common and some northern red oak (*Quercus rubra*) is present. The oak in the canopy averages 20–22 inches in diameter along the lake, though there are younger patches elsewhere. The largest individual observed at 27 inches in diameter. All layers in this community are open. The understory layer is full of regenerating hickories, younger American holly (*Ilex opaca*), and in places, American beech (*Fagus grandifolia*). The shrub layer is patchy and contains abundant eastern hop-hornbeam (*Ostrya virginiana*) on the lower slopes with oak saplings on mid slopes. Species in the herbaceous layer are sparse and patchy with early lowbush blueberry (*Vaccinium pallidum*) dominant. Little brown jug (*Hexastylis arifolia*) and muscadine grape (*Vitis rotundifolia*) are also frequent. A few individuals of common black-cohosh (*Actaea racemosa*) are found along a particularly mature slope. Some of the lower slopes bordering Lake Jordan are more successional, with canopies containing more tulip tree, but overall are mature. Autumn olive (*Elaeagnus umbellata*) has started to appear in the shrub layer scattered throughout the community.

**PROTECTION:** Approximately 43% of the total acreage is protected as a Natural Heritage Program Registered Heritage Area. The most significant threats are continued fragmentation from development and continued encroachment from nonnative invasives. Protecting contiguous habitat with the protected lands at Jordan Lake is especially important for maintaining wildlife populations.

**NATURAL COMMUNITIES:** Dry Basic Oak—Hickory Forest, Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype)

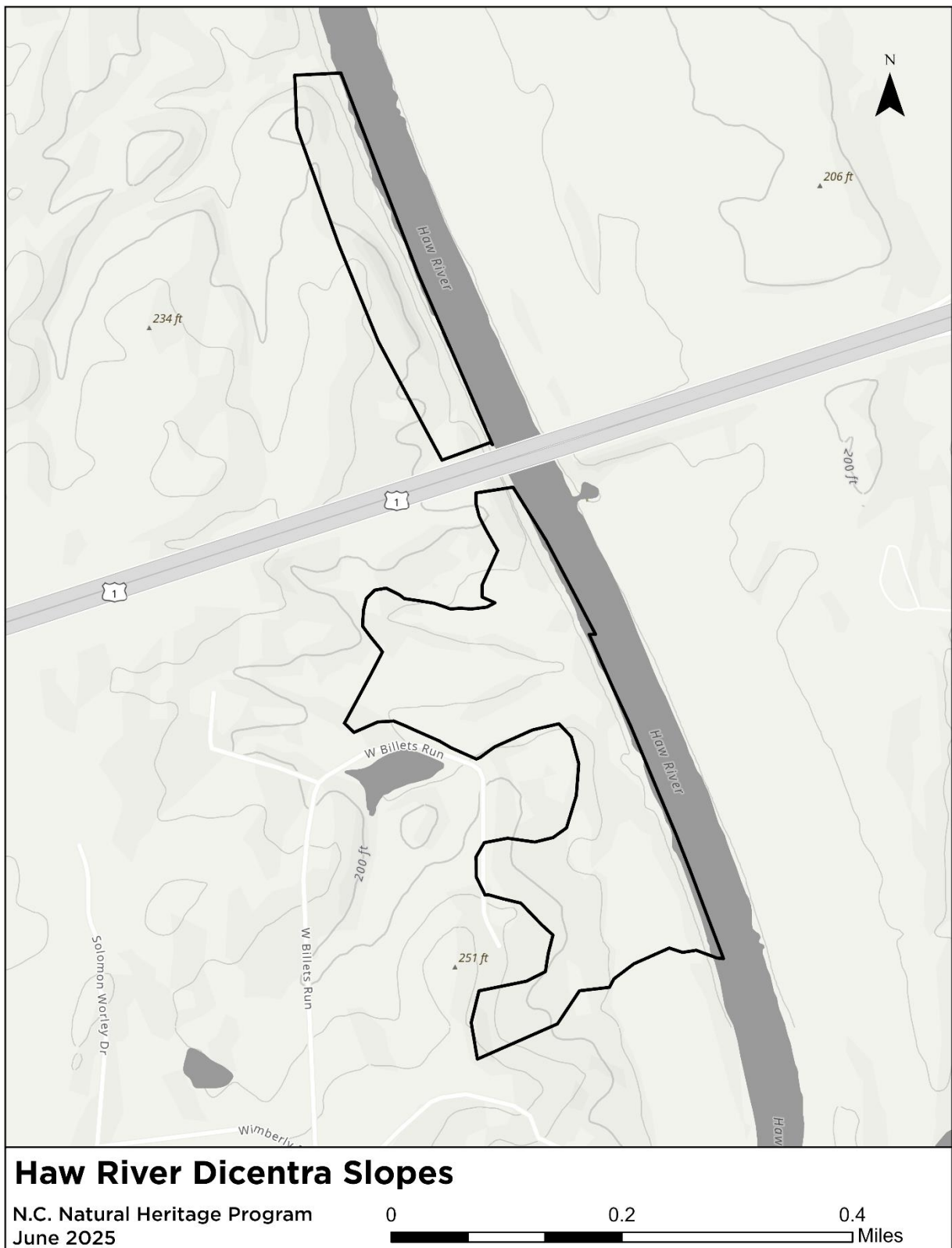
**RARE PLANTS:** None Observed.

**RARE ANIMALS:** None Observed.

**REFERENCES:**

Conlin, M.R. 2024. Site Survey Report: Gum Springs Church Road Slopes Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

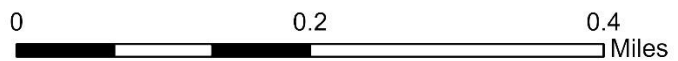






## Haw River Dicentra Slopes

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Haw River Dicentra Slopes

<b>Site Significance:</b> High	<b>Size:</b> 49 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Private, US Army Corps of Engineers
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Merry Oaks, Moncure

**SIGNIFICANT FEATURES:** Haw River Dicentra Slopes natural area is of High significance as it supports one of the top five occurrences in the state of Significantly Rare buttercup phacelia (*Phacelia covillei*). This site also contains mature Piedmont Bottomland Forest (High Subtype) and Dry-Mesic Oak—Hickory Forest (Piedmont Subtype)—intact forested areas in the riparian zone of the Haw River and the downstream Upper Cape Fear River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Poe’s Ridge/Dam Road Upland Forests lies about 1 mile to the north. The northern end of the Upper Cape Fear River Aquatic Habitat is approximately 700 feet downstream.

#### SITE DESCRIPTION:



Dutchman’s Britches (*Dicentra cucullaria*).  
Photo by: Stephanie Horton.

Haw River Dicentra Slopes consists of moderate upland slopes that drop to a floodplain of the Haw River. The floodplain has 8–10 feet of relief between the higher ridges or terrace segments and the lower sloughs. Several deep, steep-sided sloughs or tributary creek channels meander through the floodplain, forming barriers to travel. They sometimes hold water that is blocked or backed up into them from the river. The site supports a large population of the rare buttercup phacelia (*Phacelia covillei*), spread over much of the floodplain. Several regionally rare plant species are also present, including Dutchman’s britches (*Dicentra cucullaria*), disjunct from the mountains. The site contains mature forest communities of a diversity of types. Piedmont Bottomland Forest (High Subtype) and Dry-Mesic Oak—Hickory Forest are the most extensive and significant. Other communities present in small amounts that do not qualify as NCNHP element occurrences include Piedmont Levee Forest, Piedmont Bottomland Forest (Low Subtype), and Dry Oak—Hickory Forest. The site contributes to protection of the Haw River by providing intact forests along the riverbanks, which help maintain water quality and habitat integrity for the aquatic species found in the Haw River.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the upland slopes. The canopy is dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*). The condition of this community varies. Large parts are mature but show the effects of a thinning just a few years ago. Canopy trees average 12–14 inches in diameter, with many up to 16 inches in diameter. The understory includes red maple (*Acer rubrum*), dogwood (*Benthameidia florida*), and black oak (*Quercus velutina*), as well as canopy species. Shrubs include deerberry (*Vaccinium*

*stamineum*), downy arrowwood (*Viburnum rafinesqueanum*), and smooth black-haw (*Viburnum prunifolium*). Herbaceous species are sparse.

Piedmont Bottomland Forest (High Subtype) occupies the higher parts of the floodplain, back from the river. This area includes terraces or ridges that are more than 10 feet above the river. The canopy includes abundant cherry-bark oak (*Quercus pagoda*), sweet gum (*Liquidambar styraciflua*), and lesser amounts of shumard oak (*Quercus shumardii*), northern red oak (*Quercus rubra*), black walnut (*Juglans nigra*), and sugarberry (*Celtis laevigata*). One large honey-locust (*Gleditsia triacanthos*) was seen. The canopy is mature, with trees averaging 12–14 inches in diameter and some 18 inches in diameter or larger. The understory includes Florida maple (*Acer floridanum*) as well as canopy species. The shrub layer is moderate in density, with nonnative invasives Chinese privet (*Ligustrum sinense*) and autumn olive (*Elaeagnus umbellata*) abundant in places. Native species spicebush (*Lindera benzoin*) and painted buckeye (*Aesculus sylvatica*) are common. The herb layer is dense. The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is abundant in much of this natural community, though not as dense as in the Levee Forest, and other herbs are correspondingly more abundant. Species include small-flower baby-blue-eyes (*Nemophila aphylla*), buttercup phacelia (*Phacelia covillei*), Christmas fern (*Polystichum acrostichoides*), meadow grass species (*Poa* sp.), white avens (*Geum canadense*), catchweed bedstraw (*Galium aparine*), ebony spleenwort (*Asplenium platyneuron*), lopseed (*Phryma leptostachya*), may apple (*Podophyllum peltatum*), narrow melic grass (*Melica mutica*), and Asa Gray sedge (*Carex grayi*). The nonnative invasive Japanese honeysuckle (*Lonicera japonica*) is fairly dense in places. A number of native vines are present. The timber thinning that was done in the upland appears not to have occurred in the floodplain.

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Piedmont Bottomland Forest (High Subtype).

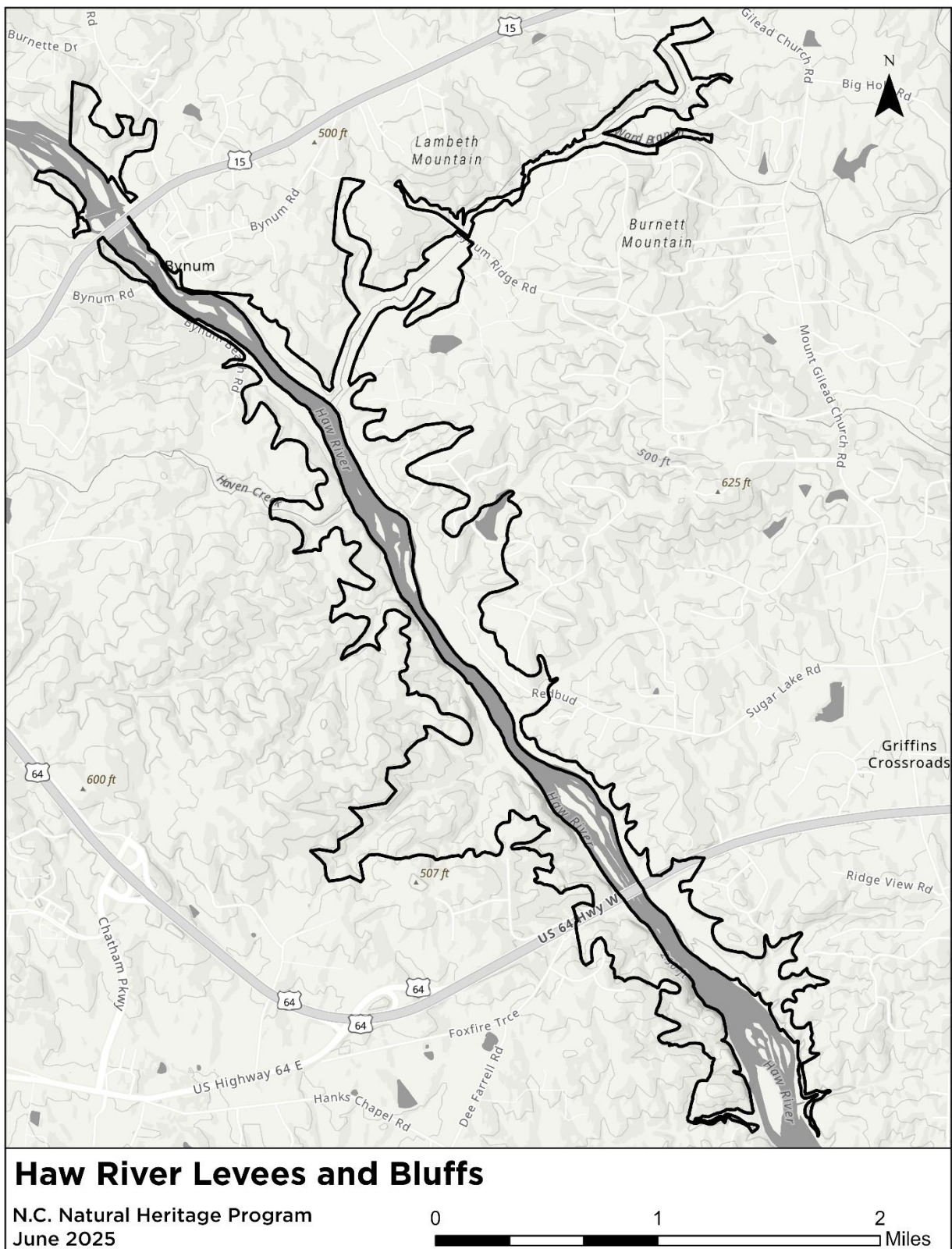
**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*).

**RARE ANIMALS:** None observed.

#### REFERENCES:

- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. 2014. Site Survey Report: Haw River Dicentra Slopes Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.











## Chatham County Natural Area Inventory

### Haw River Levees and Bluffs

<b>Site Significance:</b> Very High	<b>Size:</b> 1,380 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private, US Army Corps of Engineers, NC DNCR Parks and Recreation, Chatham County, Town of Pittsboro, NC Division of Mitigation Services
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Merry Oaks, Bynum, Farrington, Pittsboro

**SIGNIFICANT FEATURES:** Haw River Levees and Bluffs natural area is of High significance as it supports several occurrences of the Significantly Rare buttercup phacelia (*Phacelia covillei*). This site also contains mature Piedmont Levee Forest (Typic Subtype), Piedmont Alluvial Forest, Mesic Mixed Hardwood Forest (Piedmont Subtype), and Floodplain Pool natural communities. Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Haw River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Haw River Aquatic Habitat flows through the site. Roberson Creek Depression and Hardpan is 1 mile to the south. Lambeth Mountain natural area is adjacent to the northeastern spur. Rock Rest Mafic Islands and Shore natural area is approximately 5,000 feet upstream.



American Mink along the Haw River in the Lower Haw River State Natural Area. Photo By: John Amoroso. Used with Permission.



**SITE DESCRIPTION:** This site features a several-mile stretch of the Haw River, with rocky channels and numerous islands and the mouths of a few tributaries. Patches of high-quality floodplain forest, with scattered Floodplain Pool communities, occur along the river. The bluffs above the river on both sides contain good quality Mesic Mixed Hardwood Forest (Piedmont Subtype) communities. Piedmont Levee Forest (Typic Subtype), Mesic Mixed Hardwood Forest, and Floodplain Pool communities are all among the best in the region. The natural area also supports populations of the locally abundant but Significantly Rare buttercup phacelia (*Phacelia covillei*), Watch List eastern agave (*Manfreda virginica*), and wafer-ash (*Ptelea trifoliata*); though not rare statewide, the latter two species are very rare in the general area. The Haw River Levees and Slopes natural area also contributes to the protection of the Haw River Aquatic Habitat, which flows through this natural area.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on steep and often rocky slopes above the Haw River and Pokeberry Creek. The canopy is dominated by American beech (*Fagus grandifolia*) and co-dominated by tulip tree (*Liriodendron tulipifera*) in sections. Northern red oak (*Quercus rubra*), sweet pignut hickory (*Carya glabra*), black tupelo (*Nyssa sylvatica*), and sourwood (*Oxydendrum arboreum*) are common. The canopy is fairly mature along Pokeberry Creek, with trees averaging 16–18 inches in diameter. The understory commonly contains red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), and tulip tree. Parts of the community, particularly along Pokeberry Creek have a shrub layer dominated by the nonnative autumn olive (*Elaeagnus umbellata*). Common native shrubs include bigleaf snowbell (*Styrax grandifolius*), painted buckeye (*Aesculus sylvatica*), American strawberry-bush (*Euonymus americanus*), and haw species (*Viburnum* spp.). In the heavily invaded areas, the herbaceous layer is sparse and dominated by Japanese stilt grass (*Microstegium vimineum*). Other portions include diverse herbaceous species such as wild geranium (*Geranium maculatum*), Christmas fern (*Polystichum acrostichoides*), wind-flower (*Thalictrum thalictroides*), star chickweed (*Stellaria pubera*), common Solomon's-seal (*Polygonatum biflorum*), Canada sanicle (*Sanicula canadensis*), and others.

Piedmont Alluvial Forest occurs along the bottomland floodplain of Pokeberry Creek. The canopy contains a mixture of species. Sycamore (*Platanus occidentalis*), sweet gum (*Liquidambar styraciflua*), and river birch (*Betula nigra*) are common. The average diameter for dominant canopy trees is 15–17 inches. The understory is fairly open with Florida maple (*Acer floridanum*), sugarberry (*Celtis laevigata*), American hornbeam (*Carpinus caroliniana*), and sweet gum (*Liquidambar styraciflua*) common. Some of the largest species measure 25 inches in diameter. The nonnative invasive tree-of-heaven (*Ailanthus altissima*) occurs in the understory here and on some parts of the bordering uplands. The shrub layer is dominated by the nonnative autumn olive (*Elaeagnus umbellata*). Grass and sedge species are prominent in the herbaceous layer commonly including giant cane (*Arundinaria gigantea*), bottlebrush grass (*Elymus hystrix*), some stellate sedge (*Carex radiata*), and the nonnative invasive Japanese stilt grass (*Microstegium vimineum*). Parts of the floodplain are large enough to support small pools and depressions. Collectively these features are not large and defined enough to fit NCNHP classification as distinct communities. The maturity and quality of the community increases with increased proximity to Pokeberry Creek. Other portions of the floodplain have been subject to past timber harvests as reflected in a mixed age canopy.

Piedmont Levee Forest (Typic Subtype) occurs along the Haw River. The canopy is primarily composed of swamp chestnut oak (*Quercus michauxii*), sugarberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), box-elder (*Acer negundo*), and American elm (*Ulmus americana*). Some sycamore (*Platanus occidentalis*), sweet gum (*Liquidambar styraciflua*), tulip tree (*Liriodendron tulipifera*), and river birch (*Betula nigra*) are present. The understory includes pawpaw (*Asimina triloba*), eastern hop-hornbeam (*Ostrya virginiana*), American hornbeam (*Carpinus caroliniana*), and American holly (*Ilex opaca*).

Floodplain Pool natural communities are scattered throughout the site. Associated species are noted as common buttonbush (*Cephalanthus occidentalis*), lizard's tail (*Saururus cernuus*), and rough horsetail (*Equisetum praealtum*), the latter unusually abundant (Hall and Boyer 1992).

**PROTECTION:** Approximately 52% of the total acreage of this natural area is protected. Much of this site is a Dedicated Nature Preserve managed by NC State Parks as the Lower Haw River State Natural Area.

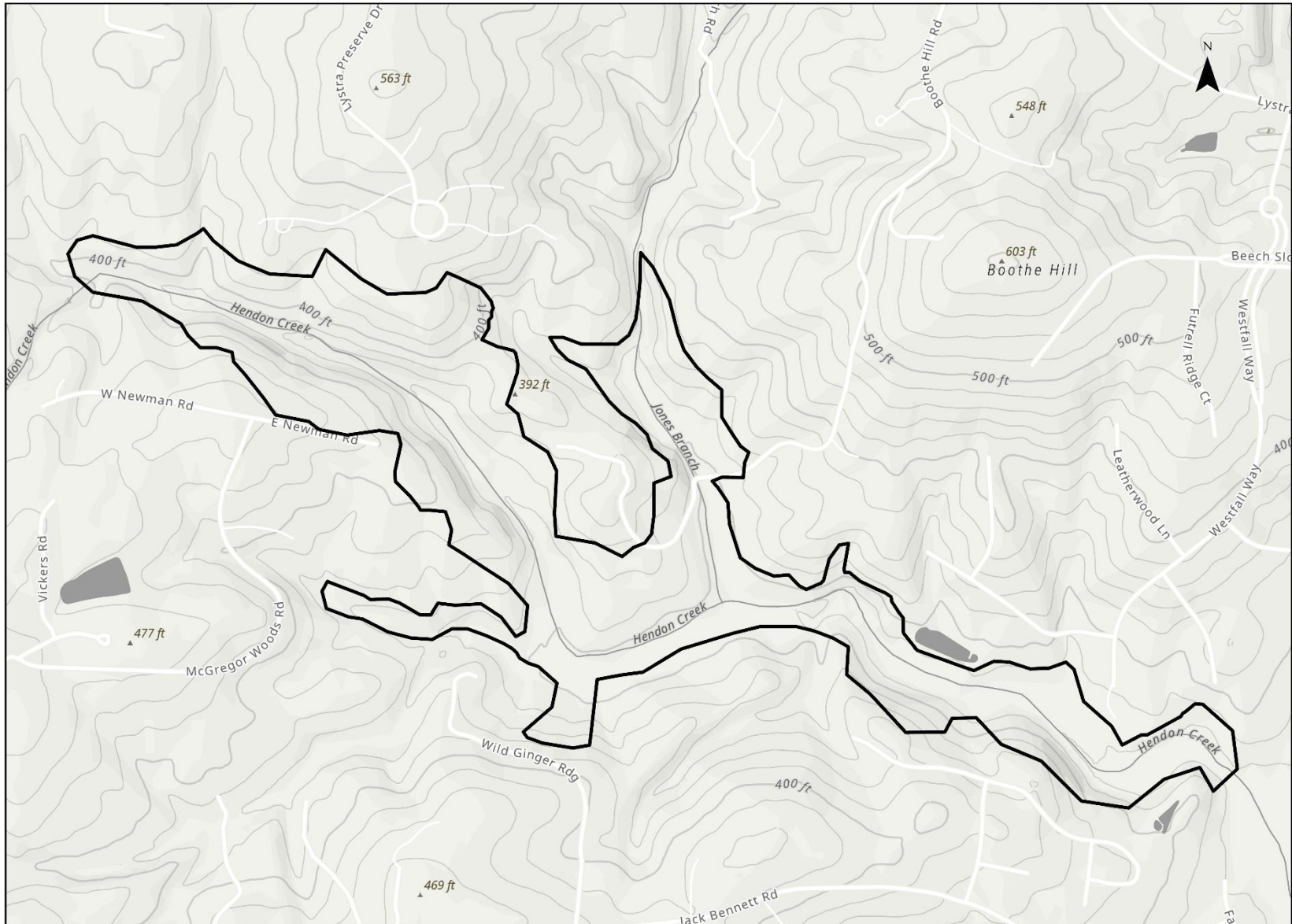
**NATURAL COMMUNITIES:** Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Levee Forest (Typic Subtype).

**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*).

**RARE ANIMALS:** Significantly Rare Septima's clubtail (*Gomphurus septima*) and Watch List spine-crowned clubtail (*Hylogomphus abbreviatus*) occur at the site. Bald Eagles (*Haliaeetus leucocephalus*) forage in this stretch of river and have been known to nest upstream. Five rare aquatic species have been documented in the adjacent Haw River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), two State Endangered mussels—brook floater (*Alasmidonta varicosa*) and yellow lampmussel (*Lampsilis cariosa*)—as well as the Significantly Rare eastern creekshell (*Villosa delumbis*) and chameleon lampmussel (*Lampsilis* sp. 2).

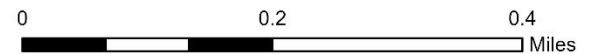
#### REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Haw River Levees and Bluffs, Pokeberry Creek. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.



## Herndon Creek Ravine

N.C. Natural Heritage Program  
June 2025

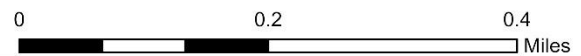






## Herndon Creek Ravine

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Herndon Creek Ravine

<b>Site Significance:</b> General	<b>Size:</b> 107 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private, Chatham County
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Farrington

**SIGNIFICANT FEATURES:** Herndon Creek Ravine natural area is of General significance as it contains mature upland hardwood forests within the riparian zone of Herndon Creek, a tributary that flows to Jordan Lake. This forested area is largely classified as Mesic Mixed Hardwood Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Boothe Hill lies directly to the north. Bush Creek Marshes is approximately 0.5 miles south.

**SITE DESCRIPTION:** This site comprises a steep ravine that follows Herndon Creek as it drains towards Jordan Lake. This area is on the eastern boundary of the Carolina Terrane where the elevation drops towards the Deep River Triassic Basin. This trajectory helps explain the steepness of the ravine, generally uncommon in the Piedmont. This has resulted in a relatively sheltered Mixed Mesic Hardwood Forest (Piedmont Subtype). On the neighboring uplands that have not been developed patches of Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) remain, part of what was likely a much more extensive assemblage.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs within the ravine, lower slopes, and floodplain following Herndon Creek. This remains the primary community even where the floodplain starts to broaden slightly. The closed canopy is dominated by American beech (*Fagus grandifolia*), with abundant tulip tree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), red maple (*Acer rubrum*), and some white oak (*Quercus alba*). The canopy is fairly mature averaging 14–16 inches in diameter with the largest canopy species measuring in the 29–30 inches in diameter range. The understory is variable, and fairly open, with no overall abundant species. Mockernut hickory (*Carya tomentosa*), red maple (*Acer rubrum*), fringe tree (*Chionanthus virginicus*), some eastern redbud (*Cercis canadensis*), and the locally uncommon umbrella magnolia (*Magnolia tripetala*) are present. The shrub layer is also variable. Maple-leaf viburnum (*Viburnum acerifolium*), immature American beech, and umbrella magnolia are fairly common. Even within the floodplain, spicebush (*Lindera benzoin*), and American witch-hazel (*Hamamelis virginiana*) are uncommon. The herbaceous layer is sparse and open. Mesic affiliated species including little heartleaf (*Hexastylis minor*), crested dwarf iris (*Iris cristata*), wild licorice (*Galium circaezans*), and Christmas fern (*Polystichum acrostichoides*) are fairly common. In one section of the floodplain, swamp chestnut oak (*Quercus michauxii*) seedlings are common, but no mature individuals were observed.

Herndon Creek appears to be in good condition within much of this natural area. Within the western portion of the site Herndon Creek is scoured with exposed bedrock and approximately 3–5 feet wide. It is completely shaded by both the canopy and steep terrain, with some silt. As the floodplain broadens there are some natural canopy gaps and larger pools that contain fish. The creek also becomes more entrenched at this point, approximately 8 feet from the ground to stream bottom. This creek is known to support the Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Mesic Mixed Hardwood Forest (Piedmont Subtype).

**RARE PLANTS:** Historical record of Appalachian Golden-banner (*Thermopsis mollis*).

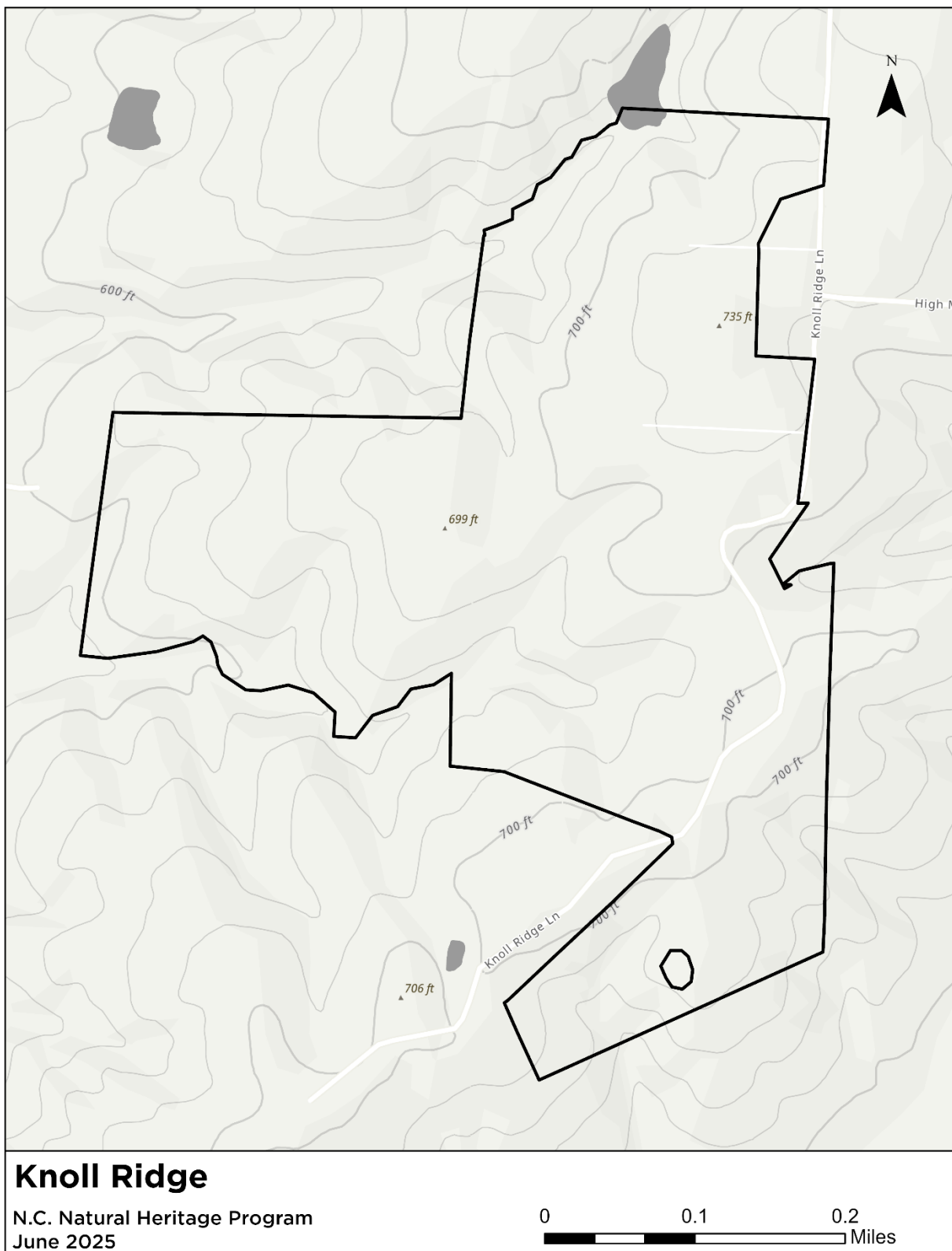
**RARE ANIMALS:** Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

**REFERENCES:**

Conlin, M.R. 2024. Site Survey Report: Herndon Creek Ravine Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.









## Knoll Ridge

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Knoll Ridge

<b>Site Significance:</b> Moderate	<b>Size:</b> 104 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Siler City, Coleridge

**SIGNIFICANT FEATURES:** The Knoll Ridge natural area is of Moderate significance for supporting three natural communities including good quality examples of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), and Dry Basic Oak—Hickory Forest. This site contains some of the better examples of typical natural communities in Chatham County.

**LANDSCAPE RELATIONSHIPS:** Ore Hill is approximately 3.6 air miles to the east.

**SITE DESCRIPTION:** Knoll Ridge is a series of upland knobs, ridges, and slopes on a region of mafic metavolcanic rock. Parts of the site have vegetation with slightly more basic affiliation. This site supports good mature examples of three characteristic Piedmont hardwood forested communities. Dry-Mesic Oak—Hickory Forest—dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*)—is the most abundant. Dry-Mesic Basic Oak—Hickory Forest is present in areas that apparently differ in geology. It is dominated by the same species but has additional canopy and understory species that indicate less acidic soils. Dry Basic Oak—Hickory Forest—dominated by white oak and southern red oak (*Quercus falcata*)—is present on some of the higher knobs. Small areas of mature Piedmont Headwater Stream Forest and Piedmont Alluvial Forest are also present.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the sites lower to upper slopes, particularly in the southern portion of the site. The canopy is dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*), with mockernut hickory (*Carya tomentosa*) and some shortleaf pine (*Pinus echinata*) and Virginia pine (*Pinus virginiana*). The forest is quite mature in some areas, with canopy trees averaging 14 inches in diameter. Trees up to 24 inches in diameter are present. In other areas, trees average 12 inches in diameter. The understory consists primarily of sourwood (*Oxydendrum arboreum*) and canopy species. Shrubs are sparse to moderate, and include deerberry (*Vaccinium stamineum*) and, locally, dangleberry (*Gaylussacia frondosa*). Herbaceous species are sparse.

Dry-Mesic Basic Oak—Hickory Forest occurs along upper slopes and spur ridges. The canopy is dominated by southern red oak (*Quercus falcata*) and white oak (*Quercus alba*). Tulip tree (*Liriodendron tulipifera*) is abundant. Some white ash (*Fraxinus americana*) and black oak (*Quercus velutina*) are present in the canopy. This community is generally quite mature, with canopy trees averaging 14 inches in diameter, locally even 16 inches in diameter. Trees up to 24 inches in diameter are present. There are, however, excessive numbers of tulip trees in the canopy (indicating recovery from a past disturbance), which detracts from the natural condition. The understory includes abundant eastern redbud (*Cercis canadensis*), along with flowering dogwood (*Benthameidia florida*), wild black cherry (*Prunus serotina*), eastern red cedar (*Juniperus virginiana*), and a few other species. Shrubs are sparse, consisting primarily of tree saplings. The herb layer is sparse. Species include little-headed nutrush (*Scleria oligantha*), wild licorice (*Galium circaeazans*), and rattlesnake-fern (*Botrypus virginianus*). Plants indicating slightly basic communities are generally in the northern section of the site. Acidic species in the southern part. There is an area in the middle that seems to be transitional, so that some areas are classified as basic, some as acidic, but both are marginal and have very few indicators of either.

Dry Basic Oak—Hickory Forest occurs along the lower to upper slopes, in the northwestern part of the site. The canopy is dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*), with some



white ash (*Fraxinus americana*) and mockernut hickory (*Carya tomentosa*). The understory includes abundant eastern redbud (*Cercis canadensis*), along with flowering dogwood (*Benthamidia florida*) and other species. Shrubs and herbs are sparse. Herbaceous species include rattlesnake-fern (*Botrypus virginianus*), common Solomon's-seal (*Polygonatum biflorum*), windflower (*Thalictrum thalictroides*), and palmate-leaved violet (*Viola palmata*). Canopy maturity is comparable to the other oak communities, with trees averaging 14 inches in diameter and larger trees common, but with more tulip trees in the canopy.

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry Basic Oak—Hickory Forest, Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

**REFERENCES:**

Schafale, M.P. 2014. Site Survey Report: Knoll Ridge Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## LaGrange Slopes and Bottomlands

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### LaGrange Slopes and Bottomlands

<b>Site Significance:</b> High	<b>Size:</b> 330 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Private, Triangle Land Conservancy
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Goldston

**SIGNIFICANT FEATURES:** The LaGrange Slopes and Bottomlands natural area is of High significance due to the Piedmont Boggy Streamhead natural community occurrence, one of the 10 best examples known to remain in North Carolina. The natural area also has seven elements of biodiversity documented: four natural communities, two Significantly Rare plant species, Piedmont horsebalm (*Collinsonia tuberosa*), and buttercup phacelia (*Phacelia covillei*) and Watch List Ozark Tassel-rue (*Trautvetteria applanata*). Many rare aquatic species, including the Federally Endangered Cape Fear shiner, occur within the Deep River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Deep River- Rocky River Aquatic Habitat flows through the site.



LaGrange Slopes and Bottomlands Natural Area Tangle of Laurel-leaf Greenbrier (*Smilax laurifolia*). Photo by: Merry Conlin.

Little Indian Creek Galax Bluff is 1.2 miles west. Gulf Diabase Forest is 1.3 miles northeast, downstream.

**SITE DESCRIPTION:** This site consists of the floodplains of the Deep River and Indian Creek, along with upland bluffs underlain by a diabase sill and mudstone of the Cumnock and Pekin Formations. This unique geology has resulted in a distinctive flora, uncommon in the county and state. The shallow slopes along the eastern edge of the sill stay continuously wet and form a series of seepages. This small but distinctive wetland community was formerly called the LaGrange Diabase Bog (Hall and Boyer 1992). Under the current natural community classification system, it appears to best fit a Piedmont Boggy Streamhead natural community, but with aspects of Low Elevation Seep and Hillside Seepage Bog. The largest proportion of the site is alluvial with a terraced floodplain. Piedmont Levee Forest (Typic Subtype) in good condition intergrades with Piedmont Bottomland Forest (Typic Low Subtype) along the Deep River and Indian Creek. Bluffs on the south side of the Deep River and on the slopes above Indian Creek support good



examples of Basic Mesic Forest communities. Parts of the floodplain are more successional where they border the high-quality communities.

Piedmont Boggy Streamhead is found in a series of patches along the gentle slopes in the northern portion of the site. Several separate seepages on the slope feed wetlands that run downhill into the edge of the flatter bottomland, where they give way to better drained soils with more entrenched stream channels. Fingers of upland vegetation extend downhill between wetter areas. The canopy is mostly closed with some small patches more open in the wettest areas. Common species include tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), and green ash (*Fraxinus pennsylvanica*). A few swamp black gum (*Nyssa biflora*) are scattered in the eastern portion of the community along with some sweetbay magnolia (*Magnolia virginiana*) that reach canopy heights. Canopy trees average 14–16 inches in diameter. The largest swamp black gum is 28.1 inches in diameter. The fairly sparse understory includes American hornbeam (*Carpinus caroliniana*) and red maple (*Acer rubrum*) along with sweetgum, tulip tree, and sweetbay magnolia. On the community edges some Piedmont Bottomland Forest and successional species are found, including swamp chestnut oak (*Quercus michauxii*), American beech (*Fagus grandifolia*), and pawpaw (*Asimina triloba*). Shrubs are patchy and commonly consist of tag alder (*Alnus serrulata*), possum-haw viburnum (*Viburnum nudum*), black holly (*Ilex verticillata*), and spicebush (*Lindera benzoin*). Where this community borders successional or Piedmont Bottomland Forest, sweetgum and nonnative invasive Chinese privet (*Ligustrum sinense*) are more abundant. Interestingly, a patch of yaupon holly (*Ilex vomitoria*) was observed, but is believed to be an escapee from the neighboring historical nursery trade.

The herbaceous layer is diverse with each patch of the seepage containing different dominants and general characteristics. Cinnamon fern (*Osmundastrum cinnamomeum*) is abundant overall, and royal fern (*Osmunda spectabilis*) is common. The two seepage patches on the outer edges of the complex contain a richer assemblage of species with smaller patches of moss (*Sphagnum* sp.). These regions have abundant lizard's tail (*Saururus cernuus*). Additional species include fowl manna-grass (*Glyceria striata*), common jack-in-the-pulpit (*Arisaema triphyllum*), and in the northern portions, regionally uncommon Virginia bunchflower (*Melanthium virginicum*) and the recently discovered Watch List Ozark tassel-rue (*Trautvetteria applanata*). Some nonnative invasive Japanese stilt grass (*Microstegium vimineum*) occurs in this community but not at high levels. Vines are common, including laurel-leaf greenbrier (*Smilax laurifolia*), Walter greenbrier (*Smilax walteri*), common greenbrier (*Smilax rotundifolia*), American groundnut (*Apios americana*), and Virginia creeper (*Parthenocissus quinquefolia*).

This community has been difficult to classify since its first discovery by Hall and Boyer (1992), because its configuration and mix of flora are different from typical examples. It



LaGrange Slopes and Bottomlands Natural Area Wet Portion of Piedmont Boggy Streamhead with Abundant Lizard's Tail (*Saururus cernuus*). Photo by: Merry Conlin.

has been classified in the past as both a Low Elevation Seep and as a Hillside Seepage Bog. Here it is treated as a Piedmont Boggy Streamhead. The presence of woody Coastal Plain species and herbs of saturated wetlands, while lacking the more specialized bog species such as pitcher plants, fits this classification. However, species more typical of Low Elevation Seep (Floodplain Subtype), such as lizard's-tail (*Saururus cernuus*) and bottomland trees, suggest the downhill edge is at least transitional to that community. It is also possible that at least the uphill portion was a Hillside Seepage Bog that was degraded by grazing.

Piedmont Bottomland Forest (Typic Low Subtype) occurs in large patches of the Deep River floodplain where it intergrades with Piedmont Levee Forest (Typic Low Subtype). The interior boundary follows a region of successional forest where historical land disturbance and agriculture are prevalent. The canopy is closed and variable with no single dominant. Sweet gum (*Liquidambar styraciflua*), shag-bark hickory (*Carya ovata*), green ash (*Fraxinus pennsylvanica*), and slippery elm (*Ulmus rubra*) are common. Bottomland oaks including willow oak (*Quercus phellos*), Shumard oak (*Quercus shumardii*), and cherry-bark oak (*Quercus pagoda*) are scattered throughout. Some American beech (*Fagus grandifolia*) is present as well. Canopy trees average 15–17 inches in diameter. The largest Shumard oak is 40.3 inches in diameter. Many of the larger canopy oaks are 23–25 inches in diameter. The understory is fairly dense and diverse. Florida maple (*Acer floridanum*), American hornbeam (*Carpinus caroliniana*), bitter-nut hickory (*Carya cordiformis*), tulip tree (*Liriodendron tulipifera*), and sweetgum are common. Some additional regenerating canopy species occur in this stratum as well. The shrub layer is dense in places and shares many of the same species of the Piedmont Levee Forest, including spicebush (*Lindera benzoin*), deciduous holly (*Ilex decidua*), small cane (*Arundinaria tecta*), and nonnative invasive Chinese privet (*Ligustrum sinense*). The herbaceous layer is variable in density and contains no clear dominant species. Christmas fern (*Polystichum acrostichoides*), coral-berry (*Symphoricarpos orbiculatus*), Virginia wild-rye (*Elymus virginicus*), and numerous sedges (*Carex* spp.) are common. Some species associated with wetter micro depressions, such as lizard's tail (*Saururus cernuus*) and spotted jewel-weed (*Impatiens capensis*), occur in this community as no pools were large enough to map. Vines, including common greenbrier (*Smilax rotundifolia*), cross-vine (*Bignonia capreolata*), and muscadine grape (*Vitis rotundifolia*) are present as well.

Piedmont Levee Forest (Typic Subtype) occurs in narrow to broad bands along the banks of the Deep River and floodplain as well as on the small peninsula near the mouth of Indian Creek. The boundaries between this community and the intergrading Piedmont Bottomland Forest (Typic Low Subtype) are often subtle as levee species often remain scattered throughout the floodplain. The canopy is closed and contains abundant sweet gum (*Liquidambar styraciflua*) and sugarberry (*Celtis laevigata*). Scattered throughout are bitter-nut hickory (*Carya cordiformis*) and green ash (*Fraxinus pennsylvanica*). Sycamore (*Platanus occidentalis*) is not abundant, particularly in the northern peninsula, but occurs more regularly on the banks of the Deep River. At least one large nonnative invasive tree-of-heaven (*Ailanthus altissima*) occurs in the canopy. The maturity of the canopy is variable. Along the Deep River canopy trees average 14–16 inches in diameter. North of Indian Creek the canopy averages 10–12 inches in diameter. The understory is fairly sparse with box-elder (*Acer negundo*) and green ash (*Fraxinus pennsylvanica*) most common. Pawpaw (*Asimina triloba*), Florida maple (*Acer floridanum*), and tulip tree (*Liriodendron tulipifera*) are regular. The shrub layer is dense in spots with spicebush (*Lindera benzoin*) the most abundant overall. Painted buckeye (*Aesculus sylvatica*), deciduous holly (*Ilex decidua*), patches of small cane (*Arundinaria tecta*), and nonnative invasive Chinese privet (*Ligustrum sinense*) are regular. A few American bladdernut (*Staphylea trifolia*) and common elderberry (*Sambucus canadensis*) occur as well. The herbaceous layer is variably sparse to dense. A clumping sedge (*Carex* sp.) provides a dominant groundcover in the northern portion. Wood nettle (*Laportea canadensis*), river oats (*Chasmanthium latifolium*), yellow crownbeard (*Verbesina occidentalis*), and Virginia wild-rye (*Elymus virginicus*) are common. Nonnative invasives are frequent and fairly abundant, including ground ivy (*Glechoma hederacea*), creeping Jennie (*Lysimachia nummularia*), and Japanese stilt grass (*Microstegium vimineum*). Vines are regular and diverse. Common greenbrier (*Smilax rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), and trumpet-creeper (*Campsis radicans*) are the most common.



Basic Mesic Forest (Piedmont Subtype) in Chatham County occurs on the northwest facing slopes along Indian Creek. The canopy contains abundant Florida maple (*Acer floridanum*), American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), sweet pignut hickory (*Carya glabra*), and other mesic species. The understory and shrub layer are likewise composed of species characteristic of rich circumneutral soils, including pawpaw (*Asimina triloba*), eastern redbud (*Cercis canadensis*), painted buckeye (*Aesculus sylvatica*), and Carolina broomwood (*Tilia americana* var. *caroliniana*). Besides the rich assemblage of wildflowers typical of mesic Piedmont forests, select herbs that reflect the richness of this site include less common species such as northern maidenhair-fern (*Adiantum pedatum*), broad beech fern (*Phegopteris hexagonoptera*), Canada wild-ginger (*Asarum canadense*), and Significantly Rare Piedmont horsebalm (*Collinsonia tuberosa*) (Hall and Boyer 1992).

**PROTECTION:** Much of this natural area is currently protected as a Triangle Land Conservancy preserve and should be maintained. Private lands that are not currently protected would be a high priority for conservation agreements. Nonnative invasive species remain a large threat to the Bottomland and have the potential to encroach more heavily within the rare Piedmont Boggy Streamhead community.

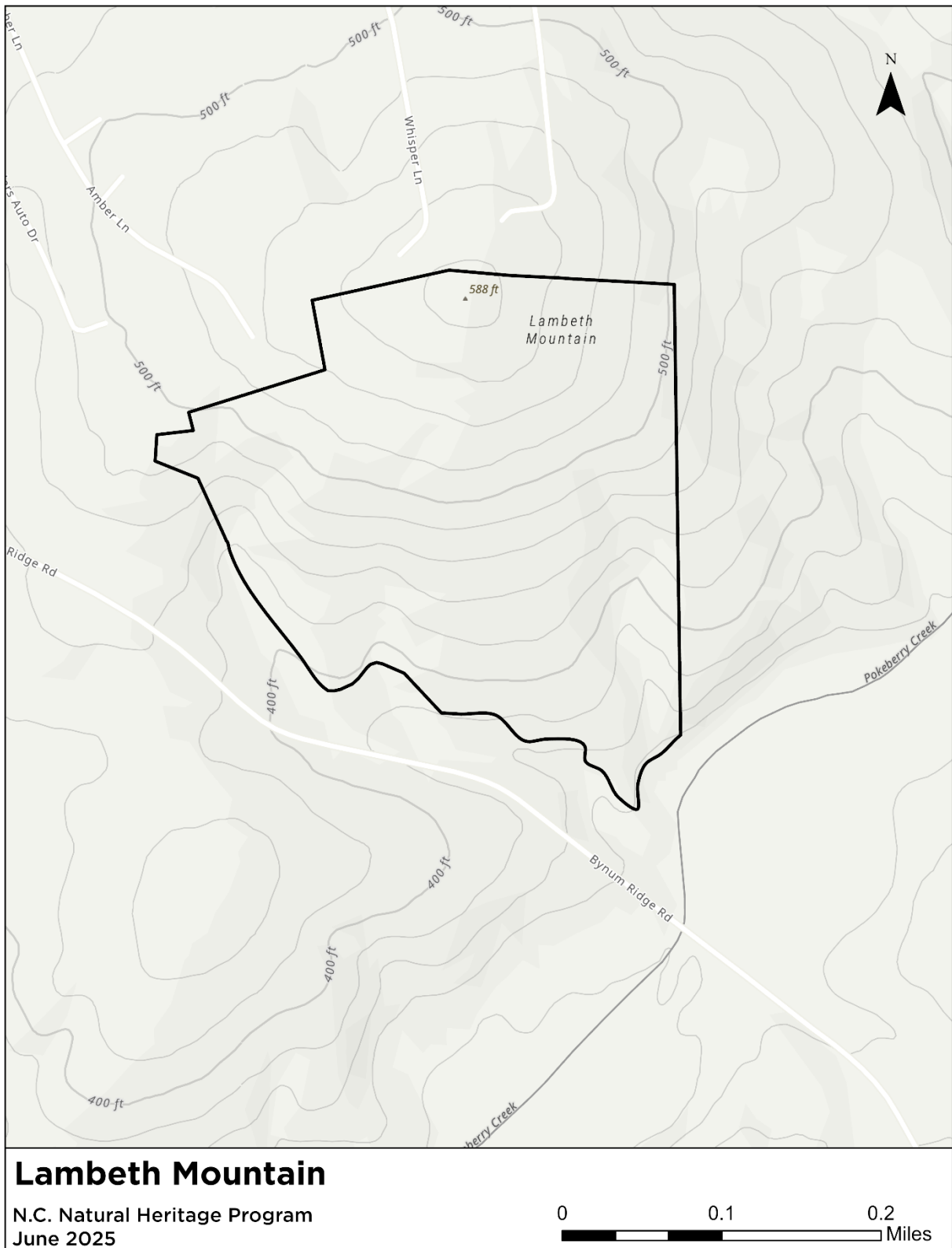
**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Piedmont Boggy Streamhead, Piedmont Bottomland Forest (Typic Low Subtype), Piedmont Levee Forest (Typic Subtype).

**RARE PLANTS:** Piedmont horsebalm (*Collinsonia tuberosa*) not observed in 2024, buttercup phacelia (*Phacelia covillei*), Watch List Ozark tassel-rue (*Trautvetteria applanata*).

**RARE ANIMALS:** Nine rare aquatic species have been documented in the adjacent Deep River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and six species state listed as Endangered, Threatened or Special Concern, including brook floater (*Alasmidonta varicosa*), Carolina redhorse (*Moxostoma* sp. 3), creeper (*Strophitus undulatus*), Roanoke slabshell (*Elliptio roanokensis*), triangle floater (*Alasmidonta undulata*), and yellow lampmussel (*Lampsilis cariosa*). Both the eastern creek-shell (*Villosa delumbis*) and historical coppery emerald dragonfly (*Somatochlora georgiana*) are Significantly Rare.

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: LaGrange Slopes and Bottomlands Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Culatta, K.E. 2025. Site Survey Report: LaGrange Slopes and Bottomlands Natural Area, Duck Head Bottomlands Tract. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.







## Lambeth Mountain

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Lambeth Mountain

<b>Site Significance:</b> Moderate	<b>Size:</b> 47 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Lambeth Mountain is of Moderate significance as it supports mature Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) and Dry Basic Oak—Hickory Forest with abundant white ash. The maturity and extent of the upland oak forests place these natural communities among the better examples remaining on private land in the county.

**LANDSCAPE RELATIONSHIPS:** A branch of Haw River Levees and Bluffs is adjacent. Big Woods Road Upland Forests is approximately 1.8 miles east.



Dry-Mesic Basic Oak—Hickory Forest (Typic Subtype) at Lambeth Mountain Natural Area with a Mature White Ash Canopy.  
Photo by: Merry Conlin.

**SITE DESCRIPTION:** The Lambeth Mountain natural area covers much of the south-facing slope it is named for. The prevalent vegetation suggests much of the site is underlain by mafic rock such as the metabasalt or by a diabase dike. Large surface boulders are abundant on the summit and subtle ridges. The majority of the site is comprised of varieties of mature Basic Oak—Hickory Forest. These are notable for the abundant mature white ash (*Fraxinus americana*) surviving in the canopy throughout the site. This species is declining throughout the region as a result of invasion by the emerald ash borer. These oak—

hickory forests grade to an alluvial forest found along the riparian zone around Pokeberry Creek and associated tributaries. Much the site, however, has been disturbed in the past and supports a dense layer of nonnative invasive species that impact the native shrub and herb communities.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) is the principal forest type found at the summit and the moderate slopes of the site. Dominant species include white ash (*Fraxinus americana*), white oak (*Quercus alba*), and hickories. Some black walnut (*Juglans nigra*) and northern red oak (*Quercus rubra*) can be found scattered throughout the canopy as well. The canopy is mature, averaging 21–23 inches in diameter. Some of the largest oaks measure 31 inches in diameter. Eastern redbud (*Cercis canadensis*), mockernut hickory (*Carya tomentosa*), and young white oak are common in the understory. The shrub layer is dense and dominated by invasive nonnative autumn olive (*Elaeagnus umbellata*). However, the summit and some slopes of the site contain abundant painted buckeye (*Aesculus sylvatica*). The herb layer is sparse under such dense shrubs, but openings commonly contain ebony spleenwort (*Asplenium platyneuron*), coral-berry (*Symphoricarpos orbiculatus*), and sedges (*Carex* spp.). Small patches of blue hound's-tongue (*Andersonglossum virginianum*) and some individuals of yellow corydalis (*Corydalis flavula*) are found as well.

Dry Basic Oak—Hickory Forest covers several slight ridges. The canopy is dominated by white oak (*Quercus alba*) with frequent post oak (*Quercus stellata*) and some southern red oak (*Quercus falcata*) and white ash (*Fraxinus americana*). A few exceptionally mature post oaks were found. The largest measures 25 inches in diameter. The understory contains a mixture of species, most commonly young white oak, mockernut hickory (*Carya tomentosa*), and some Florida maple (*Acer floridanum*). The shrub layer is dominated by nonnative invasive autumn olive (*Elaeagnus umbellata*), but it is less dense in this drier community than the surrounding forest. The herbaceous layer is sparse with some scattered ebony spleenwort (*Asplenium platyneuron*), Bosc's witchgrass (*Dichanthelium boscii*), and little-headed nutrush (*Scleria oligantha*).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement. Nonnative invasive species and fragmentation from proposed development are the primary threats.

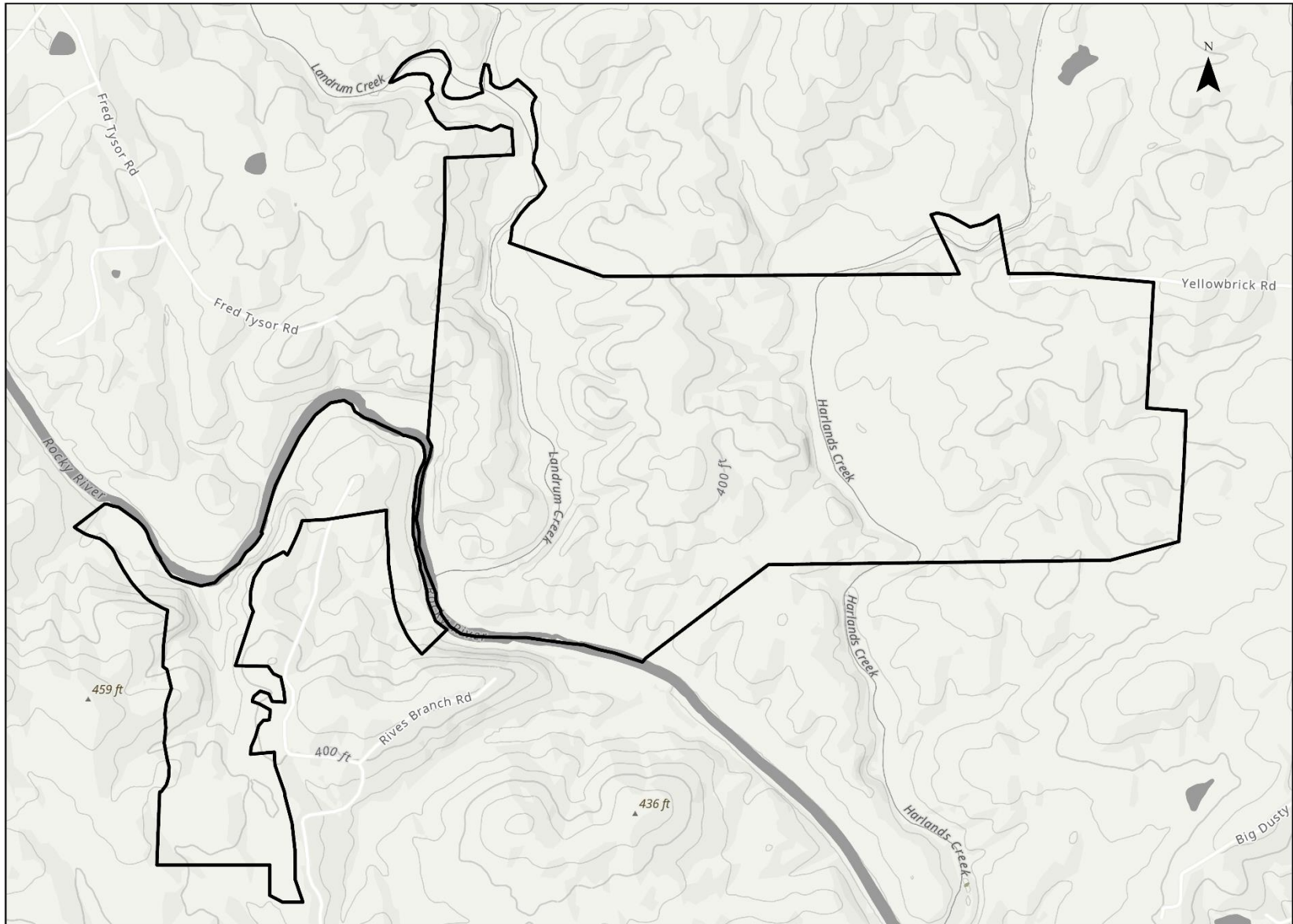
**NATURAL COMMUNITIES:** Dry-Mesic Basic Oak–Hickory Forest (Piedmont Subtype), Dry Basic Oak–Hickory Forest, Piedmont Alluvial Forest.

**RARE PLANTS:** None noted.

**RARE ANIMALS:** None noted.

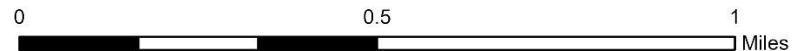
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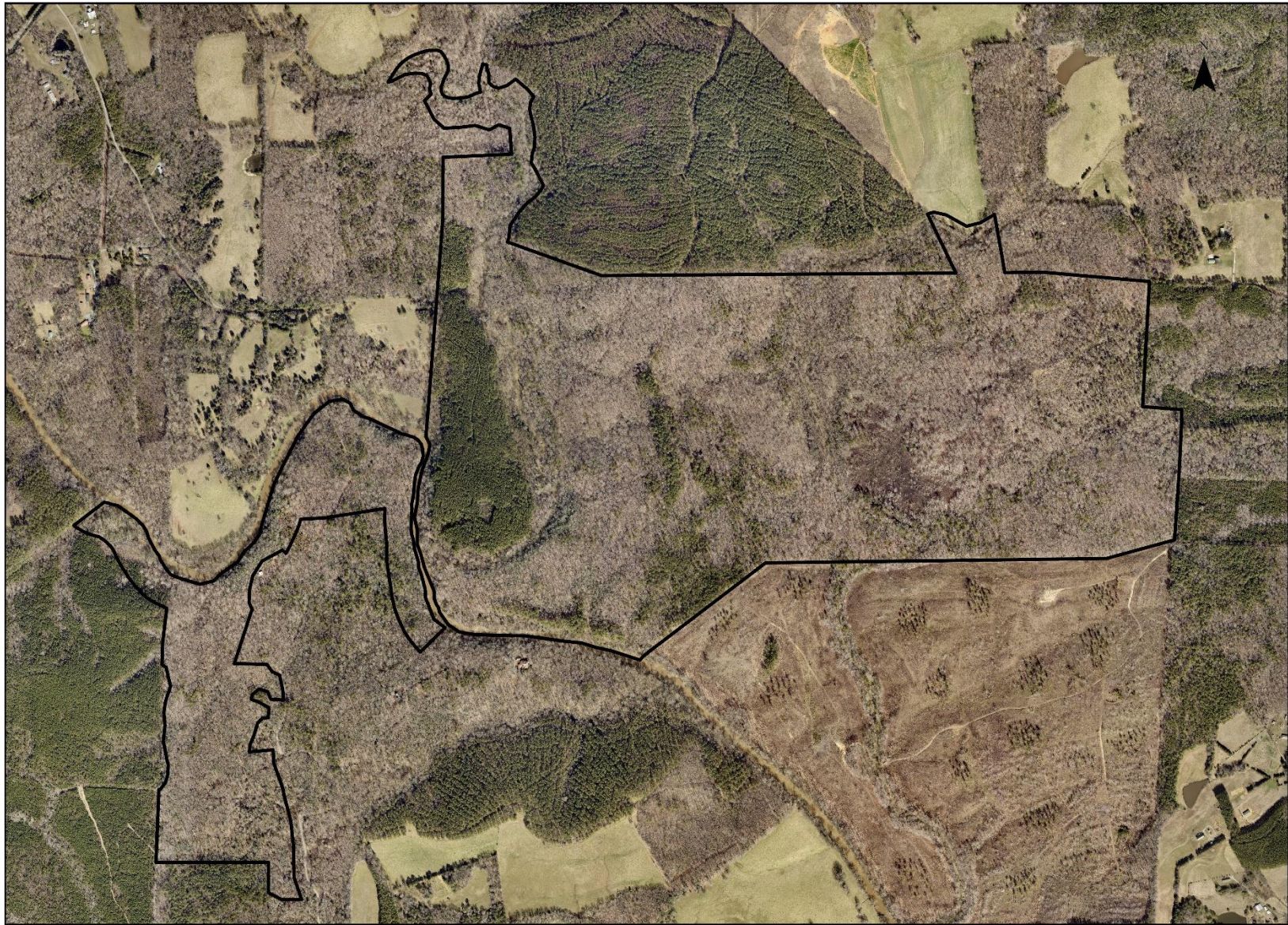


## Landrum Creek Forests

N.C. Natural Heritage Program  
June 2025

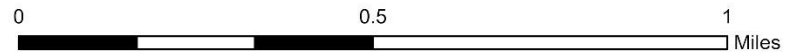






## Landrum Creek Forests

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Landrum Creek Forests

<b>Site Significance:</b> Very High	<b>Size:</b> 623 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Siler City NE

**SIGNIFICANT FEATURES:** Landrum Creek Forests is of Very High significance as it is very diverse, supporting nine unique upland and alluvial Piedmont natural communities. The most significant is an extensive and mature region of Dry Oak—Hickory Forest (Piedmont Subtype), rare at this size in the Piedmont and one of the top 15 examples known in the state. The defining element is the rare, imperiled (G2), Xeric Hardpan Forest (Acidic Hardpan Subtype). Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat flows through the site. NC 902 Laurel Bluffs lies a short distance upstream. Lower Bear Creek Slopes is several miles downstream.

**SITE DESCRIPTION:** Landrum Creek Forests consists of a segment of the Rocky River valley, including narrow to moderate floodplain areas, steep bluffs, dissected uplands, and tributary creek floodplains. It supports an excellent mosaic of characteristic Piedmont natural communities, all unusually mature, in good to excellent condition. Remarkably extensive Dry Oak—Hickory Forest is present, along with Dry-Mesic Oak—Hickory Forest, Mesic Mixed Hardwood Forest, Piedmont Alluvial Forest, and Piedmont Headwater Stream Forest. Small patches of several rarer natural communities are also present, including an Upland Depression Swamp Forest, Xeric Hardpan Forest, and several Piedmont/Coastal Plain Heath Bluff patches. Patches of successional pine and hardwood forest are interspersed. The Rocky River, which flows through the middle of the site, contains good examples of Rocky Bar and Shore (Water Willow Subtype), and is home for rare fish, mussel, and dragonfly species. The site forms part of the riparian corridor for the Deep River- Rocky River Aquatic Habitat.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs in several patches on the upland ridges and extending well down the slopes in many places. The successional forests in the uplands were undoubtedly this community as well. The forest is dominated by white oak (*Quercus alba*), with abundant southern red oak (*Quercus falcata*), shortleaf pine (*Pinus echinata*), mockernut hickory (*Carya tomentosa*), sweet pignut hickory (*Carya glabra*), red maple (*Acer rubrum*), and smaller numbers of post oak (*Quercus stellata*) and scarlet oak (*Quercus coccinea*). Canopy trees average 12–14 inches in diameter in most places, and trees 16–18 inches in diameter are common. The largest trees are up to 24 inches in diameter. Loblolly pines (*Pinus taeda*) are present in some areas. The understory is dominated by red maple and sourwood (*Oxydendrum arboreum*), with winged elm (*Ulmus alata*) or eastern red cedar (*Juniperus virginiana*) in some places. The shrub layer is generally sparse, and consists primarily of deerberry (*Vaccinium stamineum*), small black blueberry (*Vaccinium tenellum*), early lowbush blueberry (*Vaccinium pallidum*), and muscadine grape (*Vitis rotundifolia*) dominating in different patches. The herb layer is sparse.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs in a mosaic of hardwood forest communities at the site. The canopy is dominated by white oak (*Quercus alba*), with abundant northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and sweet pignut hickory (*Carya glabra*). Shortleaf pine (*Pinus echinata*), Loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), and tulip tree (*Liriodendron tulipifera*), are present in some places; all but possibly shortleaf pine are probably increased as a result of past logging or fire exclusion. The understory is primarily sourwood (*Oxydendrum arboreum*), red maple (*Acer*

*rubrum*), and flowering dogwood (*Benthamidia florida*). The shrub layer is patchy and fairly sparse overall. Abundant species include deerberry (*Vaccinium stamineum*), small black blueberry (*Vaccinium tenellum*), early lowbush blueberry (*Vaccinium pallidum*), and, locally, dangle-berry (*Gaylussacia frondosa*). Herbs are sparse. A few places appear to transition to slightly less acidic soil conditions, lacking blueberries and having more herbaceous species such as perfoliate bellwort (*Uvularia perfoliata*), common Solomon's-seal (*Polygonatum biflorum*), and Virginia snakeroot (*Endodeca serpentaria*), but lacking definitive indicators of Basic Oak—Hickory Forest.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs within a hardwood mosaic on lower to mid slopes, along a tributary stream, and in small patches elsewhere. The forest is dominated by a varying mix of American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), white oak (*Quercus alba*), and tulip tree (*Liriodendron tulipifera*). Patches of this community have experienced different timber harvest timelines and with the youngest section 10 inches in diameter and the most mature averaging 16 inches in diameter. The understory includes red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Benthamidia florida*), and Florida maple (*Acer floridanum*), as well as canopy species. Shrubs are scarce, though there are some nonnative invasive autumn olive (*Elaeagnus umbellata*). Herbs range from sparse to dense. Beds of Christmas fern (*Polystichum acrostichoides*) are present in places. Other species include beechdrops (*Epifagus virginiana*) and little brown jug (*Hexastylis arifolia*).

Piedmont Alluvial Forest occurs in a band along the Rocky River, with branches along the major tributary creeks, nearly contiguous along the river. Along Landrum and Harlands Creeks the floodplains are as wide or wider than along the Rocky River, approximately 50–150 meters. These floodplains appear to be lower gradient and, although flooded, to have less scouring. Their gradient increases and their valleys narrow as they approach the Rocky River. The creek channels are deeply entrenched, with vertical banks rising to a floodplain without a levee but with some microtopography. The forest canopy comprises a characteristic mix of species including tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), sugarberry (*Celtis laevigata*), and loblolly pine (*Pinus taeda*). Other notable species include black walnut (*Juglans nigra*), river birch (*Betula nigra*), shag-bark hickory (*Carya ovata*), willow oak (*Quercus phellos*), northern red oak (*Quercus rubra*), and a few swamp chestnut oak (*Quercus michauxii*). The understory includes American hornbeam (*Carpinus caroliniana*), American holly (*Ilex opaca*), flowering dogwood (*Benthamidia florida*), box-elder (*Acer negundo*), and winged elm (*Ulmus alata*), as well as canopy species. Shrubs are not dense, other than the nonnative invasive autumn olive (*Elaeagnus umbellata*) that had been cut out of most parts. Coral-berry (*Symphoricarpos orbiculatus*) is common in some areas. The herb layer is generally dense. Patches are dominated by the nonnative invasive Japanese stilt grass (*Microstegium vimineum*). Elsewhere, abundant species include American hog-peanut (*Amphicarpaea bracteata*), river oats (*Chasmanthium latifolium*), common bottlebrush grass (*Elymus hystrix*), Virginia wild-rye (*Elymus virginicus*), Virginia cutgrass (*Leersia virginica*), yellow crownbeard (*Verbesina occidentalis*), and wingstem (*Verbesina alternifolia*). Other species include green dragon (*Arisaema dracontium*), common jack-in-the-pulpit (*Arisaema triphyllum*), southern lady fern (*Athyrium asplenoides*), false nettle (*Boehmeria cylindrica*), rattlesnake-fern (*Botrypus virginianus*), sensitive fern (*Onoclea sensibilis*), lopseed (*Phryma leptostachya*), early wood lousewort (*Pedicularis canadensis*), and violet species (*Viola* sp.).

Piedmont Headwater Stream Forest (Typic Subtype) occurs in narrow bands along a number of small creeks in the site. The widths range from 5 meters to 50 meters or more, have visible but sometimes poorly developed stream channels that may contain plants, and show evidence of flooding and flowing water as well as vegetation that is distinct from the adjacent uplands. Other ravines show evidence of flow on small intermittent streams, but didn't flood adjacent lands and do not have distinct vegetation and so are not included here. The forest is a characteristic mix that consists primarily of sweet gum (*Liquidambar styraciflua*), white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), and smaller numbers of other species that



include shag-bark hickory (*Carya ovata*), willow oak (*Quercus phellos*), southern red oak (*Quercus falcata*), shortleaf pine (*Pinus echinata*), loblolly pine (*Pinus taeda*), winged elm (*Ulmus alata*), and ash (*Fraxinus* sp.). The understory consists primarily of American hornbeam (*Carpinus caroliniana*) and American holly (*Ilex opaca*), and includes black tupelo (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), and flowering dogwood (*Benthamidia florida*). Shrubs are sparse and include some patches of small cane (*Arundinaria tecta*), scattered deciduous holly (*Ilex decidua*), nonnative invasive autumn olive (*Elaeagnus umbellata*), small black blueberry (*Vaccinium tenellum*), and other species. Herbs are moderate to dense and include a wide variety of species that reflect fine-scale variation in wetness, such as Christmas fern (*Polystichum acrostichoides*), hairy woodrush (*Luzula acuminata*), lyre-leaf sage (*Salvia lyrata*), common Solomon's-seal (*Polygonatum biflorum*), little brown jug (*Hexastylis arifolia*), smooth elephant-foot (*Elephantopus nudatus*), poverty oat-grass (*Danthonia spicata*), Virginia cutgrass (*Leersia virginica*), lizard's tail (*Saururus cernuus*), common jack-in-the-pulpit (*Arisaema triphyllum*), cardinal flower (*Lobelia cardinalis*), bugleweed (*Lycopus* sp.), and a little nonnative invasive Japanese stilt grass (*Microstegium vimineum*).

Piedmont/Coastal Plain Heath Bluff occurs along steep bluffs adjacent to the Rocky River or Landrum Creek, generally those with north aspect but one faces west as well. The community in the northern patches has a nearly closed canopy of American beech (*Fagus grandifolia*) and white oak (*Quercus alba*), with some mockernut hickory (*Carya tomentosa*) and tulip tree (*Liriodendron tulipifera*). The understory includes sourwood (*Oxydendrum arboreum*), American holly (*Ilex opaca*), and flowering dogwood (*Benthamidia florida*). The shrub layer is a dense to moderate thicket of mountain laurel (*Kalmia latifolia*). Herbs are sparse.

Rocky Bar and Shore (Water Willow Subtype) occurs along riffles in the Rocky River, with cobble, boulder, and bedrock substrate. The vegetation consists of sparse to moderate stands of common water-willow (*Jussiaea americana*) rooted in shallow flowing water or on edges of cobble bars.

Upland Depression Swamp Forest occurs on an upland flat or a very gentle saddle on an upland ridge. The swamp has outlet creeks on both sides, draining north and south, though both soon flowing to Harlands Creek. There is evidence of water flow near the outlet creeks, but not over most of the area. The canopy is dominated by willow oak (*Quercus phellos*), with a few sweet gum (*Liquidambar styraciflua*). The understory includes American hornbeam (*Carpinus caroliniana*), red maple (*Acer rubrum*), and some black tupelo (*Nyssa sylvatica*). There is little shrub layer, but a few dangle-berry (*Gaylussacia frondosa*), maleberry (*Lyonia ligustrina*), and St. John's-wort (*Hypericum* sp.) are present. Herbs are sparse, and include a rush (*Juncus* sp.), Virginia cutgrass (*Leersia virginica*), a spikerush (*Eleocharis* sp.), poverty oat-grass (*Danthonia spicata*), false nettle (*Boehmeria cylindrica*), and bugleweed (*Lycopus* sp.).

Xeric Hardpan Forest (Acidic Hardpan Subtype) occurs within an upland flat or very gentle saddle. The canopy is dominated by post oak (*Quercus stellata*), with a few southern red oak (*Quercus falcata*) and shortleaf pine (*Pinus echinata*) and is just slightly more open than typical forest. There were a few Virginia pine (*Pinus virginiana*), which was not noted anywhere else on the site. The understory includes winged elm (*Ulmus alata*), along with some young sweet gum (*Liquidambar styraciflua*) and willow oak (*Quercus phellos*). A patchy shrub layer consists primarily of small black blueberry (*Vaccinium tenellum*) and dangle-berry (*Gaylussacia frondosa*) but also includes a few maleberry (*Lyonia ligustrina*) and fetter-bush (*Eubotrys racemosus*). The herb layer is sparse and consists primarily of poverty oat-grass (*Danthonia spicata*) and a witchgrass (*Dichanthelium* sp.), and a few hairy nutrush (*Scleria* cf. *ciliata* var. *ciliata*) are present. The boundary demarking natural communities is generally clear of vegetation, but there are some patches where water obviously stands on the forest floor, and there are a few stray wetland plants in the community.

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area.

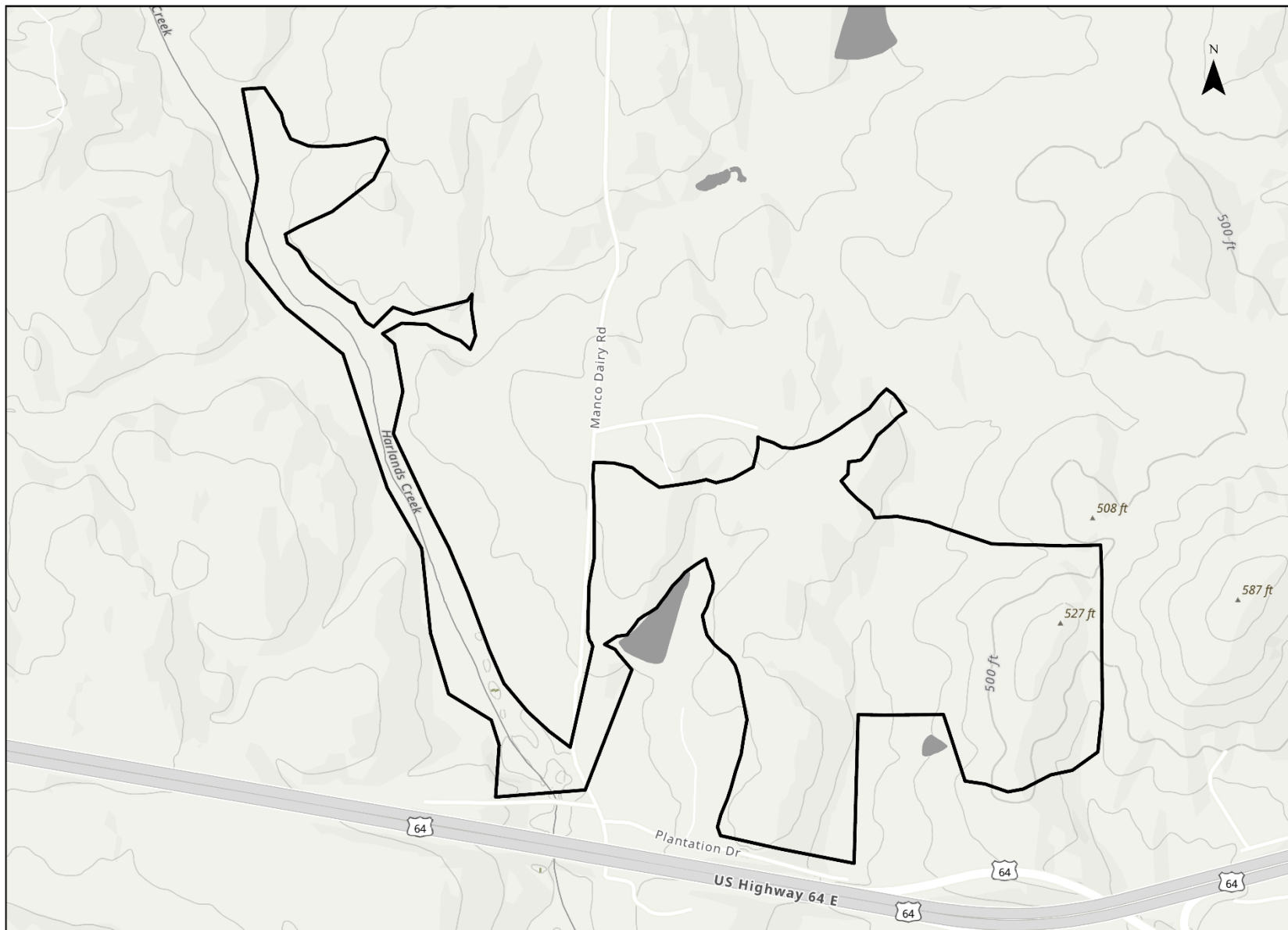
**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Headwater Stream Forest (Typic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Water Willow Subtype), Upland Depression Swamp Forest, Xeric Hardpan Forest (Acidic Hardpan Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** Nine rare aquatic species have been documented in the adjacent Rocky River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and six species state listed as Endangered, Threatened, or Special Concern, including brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vaughanians*), creeper (*Strophitus undulatus*), Savannah lilliput (*Toxolasma pullus*), triangle floater (*Alasmidonta undulata*), and notched rainbow (*Venusta concha constricta*). Two species are Significantly Rare: a mussel, eastern creekshell (*Villosa delumbis*) and dragonfly, Septima's clubtail (*Gomphurus septima*).

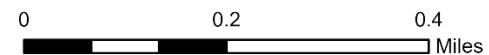
#### **REFERENCES:**

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## Lessler Montmorillonite Forest

N.C. Natural Heritage Program  
June 2025







## Lessler Montmorillonite Forest

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Lessler Montmorillonite Forest

<b>Site Significance:</b> High	<b>Size:</b> 173 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Triangle Land Conservancy, Easement, Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Pittsboro, Siler City NE

**SIGNIFICANT FEATURES:** Lessler Montmorillonite Forest natural is of High significance due to its support of one of the best examples known of a globally imperiled natural community, Xeric Hardpan Forest (Acidic Hardpan Subtype). The site protects four different elements of biodiversity; in addition to the natural community mentioned above, Basic Mesic Forest (Piedmont Subtype), Dry Oak—Hickory Forest (Piedmont Subtype), Piedmont Alluvial Forest, and animals of interest to the Herpetological Society have been observed.

**LANDSCAPE RELATIONSHIPS:** Landrum Creek Forests is approximately 3.5 miles south. Bynum Forest is 4.5 miles to the northeast.

**SITE DESCRIPTION:** Lessler Montmorillonite Forest consists of rolling Piedmont terrain and alluvial floodplain of Harlands Creek, a tributary of the Rocky River. The term montmorillonite refers to clay minerals found in hardpan soils that shrink and swell in response to changes in water content. Mature forest communities are present over a substantial area, including the rare Xeric Hardpan Forest (Acidic Subtype) and moderate size patches of Basic Mesic Forest (Piedmont Subtype) and Dry Oak—Hickory Forest (Piedmont Subtype), and Piedmont Alluvial Forest. Smaller areas of Mixed Moisture Hardpan Forest and Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) increase the diversity of the site but are not included here as NCNHP elements as they are too small to qualify. The high-quality natural communities found at the site are interspersed with successional pine and hardwood forests.

Basic Mesic Forest (Piedmont Subtype) occurs on a low upland ridge rather than a sheltered slope where this community is usually found. The canopy has abundant large American beech (*Fagus grandifolia*) along with white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), shag-bark hickory (*Carya ovata*), southern shagbark hickory (*Carya carolinae-septentrionalis*), and other species. This forest is quite mature, with canopy trees averaging 16 inches in diameter and some reaching 20 inches in diameter. The understory is generally dominated by Florida maple (*Acer floridanum*) but also includes flowering dogwood (*Benthamea florida*), eastern redbud (*Cercis canadensis*), winged elm (*Ulmus alata*), and other species. Spicebush (*Lindera benzoin*) and coral-berry (*Symphoricarpos orbiculatus*) are abundant, and there is a substantial presence of nonnative invasive autumn olive (*Elaeagnus umbellata*). Herbaceous species are limited.

Dry Oak—Hickory Forest (Piedmont Subtype) is extensive in the site, on ridge tops and upper slopes. The canopy is a mix of white oak (*Quercus alba*), southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), shortleaf pine (*Pinus echinata*), and some southern shagbark hickory (*Carya carolinae-septentrionalis*). The understory includes red maple (*Acer rubrum*), eastern red cedar (*Juniperus virginiana*), sourwood (*Oxydendrum arboreum*), and black tupelo (*Nyssa sylvatica*), as well as canopy species. Shrubs are patchy. They include early lowbush blueberry (*Vaccinium pallidum*), small black blueberry (*Vaccinium tenellum*), and deerberry (*Vaccinium stamineum*). Herbaceous species are sparse.

Piedmont Alluvial Forest occurs in the floodplains of small creeks and Harlands Creek. Parts of this community are more intermediate with upland hardwood communities. The canopy is closed and dominated by tulip tree (*Liriodendron tulipifera*) with sugarberry (*Celtis laevigata*), sweet gum (*Liquidambar styraciflua*), and green ash (*Fraxinus pennsylvanica*) common. In one section, red maple (*Acer rubrum*),

northern red oak (*Quercus rubra*), and willow oak (*Quercus phellos*) are more abundant. The canopy is moderately mature averaging 14–16 inches in diameter. The understory commonly contains red maple (*Acer rubrum*) and American hornbeam (*Carpinus caroliniana*) along with a few swamp chestnut oak (*Quercus michauxii*). The shrub layer is fairly dense with the nonnative invasive autumn olive (*Elaeagnus umbellata*). Spicebush (*Lindera benzoin*) is fairly common throughout. Additional nonnative invasive species are present in lower abundance, including Chinese privet (*Ligustrum sinense*) and hardy orange (*Citrus trifoliata*). The herbaceous layer is well developed with a variety of native and nonnative species. Christmas fern (*Polystichum acrostichoides*), wingstem (*Verbesina alternifolia*), and common greenbrier (*Smilax rotundifolia*) are abundant. Patches of stout wood reed-grass (*Cinna arundinacea*), common bottlebrush grass (*Elymus hystrix*), and scattered coral-berry (*Symphoricarpos orbiculatus*) are common. Nonnative invasive species include Japanese stilt grass (*Microstegium vimineum*), beef-steak plant (*Perilla frutescens*), joint-head arthraxon (*Arthraxon hispidus*), and Asiatic dayflower (*Commelina communis*).

Xeric Hardpan Forest (Acidic Hardpan Subtype) occurs on upland ridges and gentle slopes. The canopy is dominated by post oak (*Quercus stellata*) with varying amounts of shortleaf pine (*Pinus echinata*) and southern red oak (*Quercus falcata*). The condition of the community varies. One area has widely spaced post oak 16 inches in diameter and larger, but associated trees of other species are only 10 inches in diameter. Other areas have smaller trees. Eastern red cedar (*Juniperus virginiana*) is abundant in the understory. Parts have a substantial shrub layer of small black blueberry (*Vaccinium tenellum*). Muscadine grape (*Vitis rotundifolia*) dominates the ground cover in some parts, and the most abundant herb is poverty oat-grass (*Danthonia spicata*).

**PROTECTION:** Much of this natural area is protected with a Triangle Land Conservancy Easement. Those areas of the site outside of the current easement boundaries would be a worthy target for a similar agreement.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry Oak—Hickory Forest (Piedmont Subtype), Piedmont Alluvial Forest, Xeric Hardpan Forest (Acidic Hardpan Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** Animals of interest to the Herpetological Society have been observed in the past.

## **REFERENCES:**

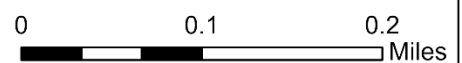
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## Little Indian Creek Galax Bluff

N.C. Natural Heritage Program  
June 2025







## Little Indian Creek Galax Bluff

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles

## Chatham County Natural Area Inventory

### Little Indian Creek Galax Bluff

<b>Site Significance:</b> General	<b>Size:</b> 37 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (R5)	<b>Quadrangle:</b> Goldston

**SIGNIFICANT FEATURES:** Little Indian Creek Galax Bluff natural area is of General significance as it contains upland forested area, some of which is classified as Dry-Mesic Oak—Hickory Forest (Piedmont Subtype). This community supports several plant species that are uncommon to the region. Additionally, intact forested areas provide essential wildlife habitat.

**LANDSCAPE RELATIONSHIPS:** LaGrange Slopes and Bottomlands is 1.2 miles to the east.

**SITE DESCRIPTION:** Little Indian Creek Galax Bluff is a steep north-facing slope in an area of mixed to intermediate mafic rocks. This site was originally described by Hall and Boyer (1992) and has not been accessed on the ground by NCNHP biologists since their survey. Updates to the natural area are based on satellite imagery where recent land use changes have visibly reduced forested acres. This site is uniquely distinguished by its large population of galax (*Galax aphylla*), a species plentiful in the mountains but restricted to steep, north-facing slopes in the Piedmont. A second regionally rare species recorded at this site is eastern featherbells (*Stenanthium gramineum*). The communities grade from Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) on the upper slope to Mesic Mixed Hardwood Forest (Piedmont Subtype) on the lower slope and ravine. It is notable in having multiple regionally disjunct species populations but lacking mountain laurel (*Kalmia latifolia*) and not being a Piedmont/Coastal Plain Heath Bluff community. This unusual character makes this site and its community of greater interest than typical for a small example of Dry-Mesic Oak—Hickory Forest (Hall and Boyer 1992).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the steep north facing slope. The canopy is dominated by white oak (*Quercus alba*) but is also composed of several other species of oaks and hickories, including southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), black oak (*Quercus velutina*), northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and shag-bark hickory (*Carya ovata*). One interesting member of the canopy is chestnut oak (*Quercus montana*), which is near the eastern edge of its range at this site. The subcanopy and shrub layer include such mesic species as white basswood (*Tilia americana* var. *heterophylla*), American witch-hazel (*Hamamelis virginiana*) and deciduous holly (*Ilex decidua*) as well as dry species such as Allegheny chinquapin (*Castanea pumila*), eastern hop-hornbeam (*Ostrya virginiana*), and small black blueberry (*Vaccinium tenellum*). In addition to containing the uncommon galax and featherbells, the herb layer is rich in both dry and mesic species. Herbs such as downy false-foxglove (*Aureolaria virginica*), crane-fly orchid (*Tipularia discolor*), and common elephant's-foot (*Elephantopus tomentosus*) are found higher on the slope, while devil's-bit (*Chamaelirium luteum*), royal fern (*Osmunda spectabilis*), and meadow alexanders (*Zizia trifoliata*) occur in the more mesic areas (Hall and Boyer 1992).

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype)

**RARE PLANTS:** None recorded.

**RARE ANIMALS:** None recorded.



**REFERENCES:**

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.







## Little Terrells Creek Floodplain

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Little Terrells Creek Floodplain

<b>Site Significance:</b> Moderate	<b>Size:</b> 212 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Chatham County, Conservation Trust for North Carolina Easement, Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Little Terrells Creek Bottomland Forest is of Moderate significance due to the Piedmont Alluvial Forest, one of the best 10 examples known in NC. The natural area also supports Piedmont Swamp Forest, both important bottomland habitats that aid in maintaining water quality and habitat integrity for the aquatic species downstream in the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Rock Rest Mafic Islands and Shore lies 0.1 mile to the south. Haw River Aquatic Habitat lies 0.6 miles to the west. Collins Mountain is 0.6 miles to the northwest.



Piedmont Swamp Forest at Little Terrells Creek Bottomland Forest. Photo by: Merry Conlin.

**SITE DESCRIPTION:** The floodplain along Terrells Creek is fairly broad as it approaches its terminus at the Haw River. This site occurs within the West Farrington pluton and is composed of meta-felsic and intermediate rock and largely acidic soils. Alluvial deposits form fairly narrow to moderately wide strips along one or both sides of the creek. In the north, a shallow terrace supports a patch of Piedmont Swamp Forest. Along Terrells Creek and adjacent tributaries an extensive patch of Piedmont Alluvial Forest is present. Much of the bordering uplands are successional forest with this relatively sheltered floodplain occurring in a matrix of low-density housing, loblolly plantation, and pastureland.

Piedmont Alluvial Forest occurs along Terrells Creek and two unnamed tributaries that flow through the northern portion of the site. Along this reach of Terrells Creek, the floodplain contains many linear channels and oxbow ponds from former routes of the creek. The canopy is moderately open and diverse with abundant box-elder (*Acer negundo*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*). Additional alluvial species in the canopy include green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), and black walnut (*Juglans nigra*). In the most mature portion, the canopy contains additional species such as willow oak (*Quercus phellos*), shag-bark hickory (*Carya ovata*), and water oak (*Quercus nigra*). The younger portions of the canopy average 10–12 inches in diameter. Gaps in the canopy are common and likely represent some combination of windthrow and loss of green ash (presumably killed by the invasive nonnative emerald ash borer). Many dead ash snags were noticed in these creek corridors. This community could also have been disturbed during timber harvest as the central portions bisect loblolly stands. The understory is sparse with young canopy species being the most common components. Some black willow (*Salix nigra*), sycamore (*Platanus occidentalis*), and sugarberry (*Celtis laevigata*) occur as well. The shrub layer is fairly sparse, with scattered spicebush (*Lindera benzoin*), painted buckeye (*Aesculus sylvatica*), American hornbeam (*Carpinus caroliniana*), silky dogwood (*Swida amomum*), deciduous holly (*Ilex decidua*), and bigleaf snowbell (*Styrax grandifolius*). Patches of the nonnative invasive autumn olive (*Elaeagnus umbellata*) occur throughout the community. The herbaceous layer is fairly diverse, but nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is most abundant. Additional common grasses include Virginia wild-rye (*Elymus virginicus*) common bottlebrush grass (*Elymus hystrix*), and river oats (*Chasmanthium latifolium*). Various sedges (*Carex* spp.) are scattered throughout and sometimes dominate patches. Locally uncommon southern rein-orchid (*Platanthera flava*) and broad-leaved water-plantain (*Alisma subcordatum*) occur in patches.

Piedmont Swamp Forest occurs on a low terrace just east of Terrells Creek. The canopy is closed to fairly open, with gaps in the long-inundated places. Within areas of localized ponding, canopy trees form hummocks rather than remain restricted to the margins. The canopy is dominated by red maple (*Acer rubrum*) with regular sweet gum (*Liquidambar styraciflua*) and willow oak (*Quercus phellos*). Some green ash (*Fraxinus pennsylvanica*) remains in the canopy, but dead snags and shrubby regeneration of this species are more common, likely a result of invasive nonnative emerald ash borer impacts. In one section, mature overcup oak (*Quercus lyrata*) occurs. The understory is open with American elm (*Ulmus americana*) and canopy species the most common. The shrub layer is also sparse with scattered deciduous holly (*Ilex decidua*) and canopy species. The herbaceous layer is variable. Within the depressions, sedges (*Carex* spp.) create a dense ground cover outside of the pools. Additional species tolerant of hydric conditions are patchy, including netted chainfern (*Lorinseria areolata*), sensitive fern (*Onoclea sensibilis*), spotted jewel-weed (*Impatiens capensis*), lizard's tail (*Saururus cernuus*), and leathery rush (*Juncus coriaceus*). A few patches of atamasco lily (*Zephyranthes atamasco*) are scattered throughout. Common greenbrier (*Smilax rotundifolia*) is the most abundant vine, and trumpet-creeper (*Campsis radicans*) is common.

**PROTECTION:** A portion of the forest is protected by an easement held by Conservation Trust for North Carolina, but much of the mature forest remains unprotected. This site would be a worthy target for registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Piedmont Alluvial Forest, Piedmont Swamp Forest.

**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

**REFERENCES:**

Conlin, M.R. 2024. Site Survey Report: Little Terrells Creek Bottomland Forest Natural Area, Chatham County Park Tract. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.









## Lower Bear Creek Slopes

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Lower Bear Creek Slopes

<b>Site Significance:</b> Moderate	<b>Size:</b> 330 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Private
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Pittsboro

**SIGNIFICANT FEATURES:** Lower Bear Creek Slopes is of Moderate significance for its support of 11 natural communities, including several that are among the best examples in the county. The most mature and extensive natural community is the Basic Mesic Forest (Piedmont Subtype), one of the best 10 examples known in NC. Many rare aquatic species, including the Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and the Federally Threatened Atlantic pigtoe (*Fusconaia masoni*), have been documented within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Rocky River Subbasin Aquatic Habitat borders the site, along both the Rocky River and Bear Creek. Rocky River Dragonfly Riffles adjoins downstream. Landrum Creek Forests is 1.6 air miles northwest, upstream.

**SITE DESCRIPTION:** This site consists of narrow floodplains, bluffs, and upland slopes around the lower reaches of Bear Creek and the Rocky River. The mature canopy contains a diverse collection of natural communities typical of the Piedmont, including Piedmont Alluvial Forest, Mesic Mixed Hardwood Forest, Dry-Mesic Oak—Hickory Forest, Dry Oak—Hickory Forest, Dry-Mesic Basic Oak—Hickory Forest, and Basic Mesic Forest. There are also patches of the uncommon Piedmont/Coastal Plain Heath Bluff, a small Floodplain Pool, a Rocky Bar and Shore (Mixed Bar Subtype) community, and narrow bands of Piedmont Headwater Stream Forest. The site forms part of the riparian corridor for the Deep River-Rocky River Aquatic Habitat, which includes Bear Creek.

Basic Mesic Forest (Piedmont Subtype) occurs along lower to mid north- and east-facing slopes. The canopy is a mix of tulip tree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*), with some Florida maple (*Acer floridanum*) and various hickory species, but no large American beech (*Fagus grandifolia*). The canopy is mature with trees averaging 14 inches in diameter and some trees to 18, even 24, inches in diameter. The understory includes eastern redbud (*Cercis canadensis*), flowering dogwood (*Benthamidia florida*), American holly (*Ilex opaca*), black tupelo (*Nyssa sylvatica*), wild black cherry (*Prunus serotina*), red maple (*Acer rubrum*), and American hornbeam (*Carpinus caroliniana*), as well as canopy species. Shrubs are sparse, but painted buckeye (*Aesculus sylvatica*), American strawberry-bush (*Euonymus americanus*), American witch-hazel (*Hamamelis virginiana*), and smooth black-haw (*Viburnum prunifolium*) were noted, among others. The herb layer is not dense, other than patches of Christmas fern (*Polystichum acrostichoides*), but is fairly diverse. Other species include common black-cohosh (*Actaea racemosa*), northern maidenhair-fern (*Adiantum pedatum*), round-lobed hepatica (*Hepatica americana*), common jack-in-the-pulpit (*Arisaema triphyllum*), rattlesnake-fern (*Botrypus virginianus*), slender toothwort (*Cardamine angustata*), yellow corydalis (*Corydalis flavula*), dimpled fawn-lily (*Erythronium umbilicatum*), Virginia snakeroot (*Endodeca serpentaria*), sweet-scent bedstraw (*Galium triflorum*), crested dwarf iris (*Iris cristata*), Solomon's-plume (*Maianthemum racemosum*), may apple (*Podophyllum peltatum*), violet wood-sorrel (*Oxalis violacea*), windflower (*Thalictrum thalictroides*), perfoliate bellwort (*Uvularia perfoliata*), and violets (*Viola* spp.), among others.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs along the ridge tops and upper slopes. The canopy is dominated by white oak (*Quercus alba*), with abundant post oak (*Quercus stellata*), southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa*), sweet pignut hickory (*Carya glabra*) and in



places red maple (*Acer rubrum*), and shortleaf pine (*Pinus echinata*). The maturity of the canopy trees is variable, averaging 12 inches in diameter, with some up to 18 inches in diameter. Patches of younger trees are present, regenerating from both selective cutting and wind damage. The understory includes sourwood (*Oxydendrum arboreum*), red maple, flowering dogwood (*Benthamidia florida*), and abundant eastern red cedar (*Juniperus virginiana*) as well as canopy species. The shrub layer is sparse to moderate, and consists primarily of farkleberry (*Vaccinium arboreum*), deerberry (*Vaccinium stamineum*), and small black blueberry (*Vaccinium tenellum*). The sparse herb layer includes spotted wintergreen (*Chimaphila maculata*), little brown jug (*Hexastylis arifolia*), poverty oat-grass (*Danthonia spicata*), blackseed needlegrass (*Piptochaetium avenaceum*), and wild oregano (*Cunila origanoides*) along with a scattering of other species.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs along the upland slopes. The canopy is dominated by white oak (*Quercus alba*), with northern red oak (*Quercus rubra*), and southern shagbark hickory (*Carya carolinae-septentrionalis*) abundant. Other trees include mockernut hickory (*Carya tomentosa*), sweet pignut hickory (*Carya glabra*), white ash (*Fraxinus americana*), and a few shortleaf pine (*Pinus echinata*). Canopy trees average 12–14 inches in diameter, with some up to 18 inches in diameter. The understory includes white ash, eastern redbud (*Cercis canadensis*), red maple (*Acer rubrum*), eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), red mulberry (*Morus rubra*), and winged elm (*Ulmus alata*), as well as canopy species. Shrubs are sparse—a few coral-berry (*Symphoricarpos orbiculatus*), farkleberry (*Vaccinium arboreum*), deerberry (*Vaccinium stamineum*), and nonnative invasive autumn olive (*Elaeagnus umbellata*). One section contains abundant painted buckeye (*Aesculus sylvatica*) as a tall shrub layer. Herbs are sparse, but include several species characteristic of less acidic soils, such as Virginia wild-rye (*Elymus virginicus*), bearded shortthusk (*Brachyelytrum erectum*), bloodroot (*Sanguinaria canadensis*), as well as more widespread species such as poverty oat-grass (*Danthonia spicata*), blackseed needlegrass (*Piptochaetium avenaceum*), and ebony spleenwort (*Asplenium platyneuron*).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the shallow slopes and ridge tops in various patches in the site. The canopy is dominated by white oak (*Quercus alba*), with abundant northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), red maple (*Acer rubrum*), and some black oak (*Quercus velutina*), and tulip tree (*Liriodendron tulipifera*). Canopy trees average 10–12 inches in diameter, the largest reaching 18–20 inches in diameter. The understory includes red maple, sourwood (*Oxydendrum arboreum*), flowering dogwood (*Benthamidia florida*), American holly (*Ilex opaca*), sweet gum (*Liquidambar styraciflua*), and in one portion abundant eastern red cedar (*Juniperus virginiana*). The shrub layer is generally sparse but includes some patches of early lowbush blueberry (*Vaccinium pallidum*). Herbs are sparse and consist primarily of spotted wintergreen (*Chimaphila maculata*) and little brown jug (*Hexastylis arifolia*).

A Floodplain Pool occurs in a mosaic of Dry Oak—Hickory Forest, Dry-Mesic Oak—Hickory Forest, Piedmont/Coastal Plain Heath Bluff, Piedmont Headwater Stream Forest, and Piedmont Alluvial Forest. This is a small intermittently flooded pool. Nonnative invasive species are abundant surrounding it.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on an area of east-facing slopes. The canopy is dominated by American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and varying amounts of tulip tree (*Liriodendron tulipifera*). Other canopy trees include white oak (*Quercus alba*), mockernut hickory (*Carya tomentosa*), and in one place, shortleaf pine (*Pinus echinata*). The understory is dominated by American holly (*Ilex opaca*) in some places and is a mix of red maple (*Acer rubrum*) and various canopy species in others. There are few shrubs. Herbaceous species are generally patchy, with areas of dense Christmas fern (*Polystichum acrostichoides*), limited patches of nonnative invasive Japanese stilt grass (*Microstegium vimineum*), and otherwise sparse cover.

Piedmont Alluvial Forest occurs on floodplains throughout the site, and similar vegetation occurs on the lower 10–15 feet of slopes of bluffs, where the river floods periodically. The floodplain is narrow in most areas, sometimes only 10 meters wide as it is often pinched off by the bluffs. The forest is typical mix of tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), sugarberry (*Celtis laevigata*), and black walnut (*Juglans nigra*). There are a few swamp chestnut oak (*Quercus michauxii*), American elm (*Ulmus americana*), bitter-nut hickory (*Carya cordiformis*), and even some eastern red cedar (*Juniperus virginiana*) in the canopy. Canopy trees are 12–14 inches in diameter. A few of the largest reach 20 and 22 inches in diameter. The understory includes American hornbeam (*Carpinus caroliniana*) as well as canopy species. Some portions are dominated by box-elder (*Acer negundo*). Shrubs can be moderately dense and include spicebush (*Lindera benzoin*), painted buckeye (*Aesculus sylvatica*), giant cane (*Arundinaria gigantea*), coral-berry (*Symphoricarpos orbiculatus*), and nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*). Typical floodplain spring herbaceous species are common, including yellow corydalis (*Corydalis flavula*), river oats (*Chasmanthium latifolium*), a sedge (*Carex* sp.), catchweed bedstraw (*Galium aparine*), spotted jewel-weed (*Impatiens capensis*), yellow crownbeard (*Verbesina occidentalis*), and nonnative invasive common starwort (*Stellaria media*). Additional herbaceous species noted include narrow-leaved spring beauty (*Claytonia virginica*), dimpled fawn-lily (*Erythronium umbilicatum*), heath woodrush (*Luzula multiflora* var. *multiflora*), common jack-in-the-pulpit (*Arisaema triphyllum*), Christmas fern (*Polystichum acrostichoides*), kidney-leaved buttercup (*Ranunculus abortivus*), wood stonecrop (*Sedum ternatum*), star chickweed (*Stellaria pubera*), halberd-leaved yellow violet (*Viola hastata*), windflower (*Thalictrum thalictroides*), Virginia knotweed (*Persicaria virginiana*), may apple (*Podophyllum peltatum*), bluegrass (*Poa* sp.), and nonnative invasive purple deadnettle (*Lamium purpureum*). Nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is extremely dense in some portions of the site.

Piedmont Headwater Stream Forest (Typic Subtype) occurs on two intermittent streams and ravines. The canopy is composed of white oak (*Quercus alba*), some sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), loblolly pine (*Pinus taeda*), northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), shortleaf pine (*Pinus echinata*), and some ash (*Fraxinus* sp.) and winged elm (*Ulmus alata*). One sycamore (*Platanus occidentalis*) and one post oak (*Quercus stellata*) are present. The canopy is mature, averaging 12 inches in diameter. The understory is dominated in part by American holly (*Ilex opaca*) and includes eastern red cedar (*Juniperus virginiana*) and flowering dogwood (*Benthamea florida*). Shrubs are sparse, but some deciduous holly (*Ilex decidua*), American witch-hazel (*Hamamelis virginiana*), farkleberry (*Vaccinium arboreum*), and St. Andrew's cross (*Hypericum hypericoides*) are present. Some poison ivy (*Toxicodendron radicans*) is present, as well as nonnative invasive Japanese honeysuckle (*Lonicera japonica*). Herbaceous species are moderate to dense. Species include Virginia cutgrass (*Leersia virginica*), sedges (*Carex* spp.), rattlesnake-fern (*Botrypus virginianus*), common bottlebrush grass (*Elymus hystrix*), bosc's witchgrass (*Dichanthelium boscii*), green-and-gold (*Chrysogonum virginianum*), and southern harebell (*Campanula divaricata*). The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is present, but mostly at low density.

Piedmont/Coastal Plain Heath Bluff occurs on steep lower slopes above Bear Creek. The canopy consists of white oak (*Quercus alba*), northern red oak (*Quercus rubra*), American beech (*Fagus grandifolia*) and mockernut hickory (*Carya tomentosa*). The canopy is mature, averaging 12–14 inches in diameter with some of the larger trees reaching 16–18 inches in diameter. Sourwood (*Oxydendrum arboreum*) and American holly (*Ilex opaca*) dominate the understory. There is a dense to moderate shrub layer of mountain laurel (*Kalmia latifolia*). Herbs are sparse, but some Christmas fern (*Polystichum acrostichoides*), dimpled fawn-lily (*Erythronium umbilicatum*), heartleaf (*Hexastylis* sp.), rattlesnake-root (*Nabalus* sp.), and ebony spleenwort (*Asplenium platyneuron*) were noted.

Rocky Bar and Shore (Mixed Bar Subtype) occurs on an island in the Rocky River. The bar is bordered partly by the sloping terrace with Piedmont Alluvial Forest and a residential area. The bar has a sparse canopy of small sycamore (*Platanus occidentalis*) and river birch (*Betula nigra*), with a couple of large sycamores and sugarberry (*Celtis laevigata*). The dominant herb is a grass that was not identifiable at the time of survey. Some common water-willow (*Justicia americana*) is present around the edges.

Rocky Bar and Shore (Water Willow Subtype) occurs on gravel bars and bedrock outcrops along Bear Creek. Water-willow (*Justicia americana*) is dominant in gravel bars. Longbeak arrowhead (*Sagittaria australis*) and pickerel weed (*Pontederia cordata*) occur in wet pockets. Young black willow (*Salix nigra*), and sycamore (*Platanus occidentalis*) occur on more stable bars. Other species include nonnative invasive marsh dewflower (*Murdannia keisak*), false nettle (*Boehmeria cylindrica*), spotted jewel-weed (*Impatiens capensis*), and rice cutgrass (*Leersia oryzoides*). Extensive mussel communities occur in the associated riffles.

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Headwater Stream Forest (Typic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Mixed Bar Subtype), Rocky Bar and Shore (Water Willow Subtype)

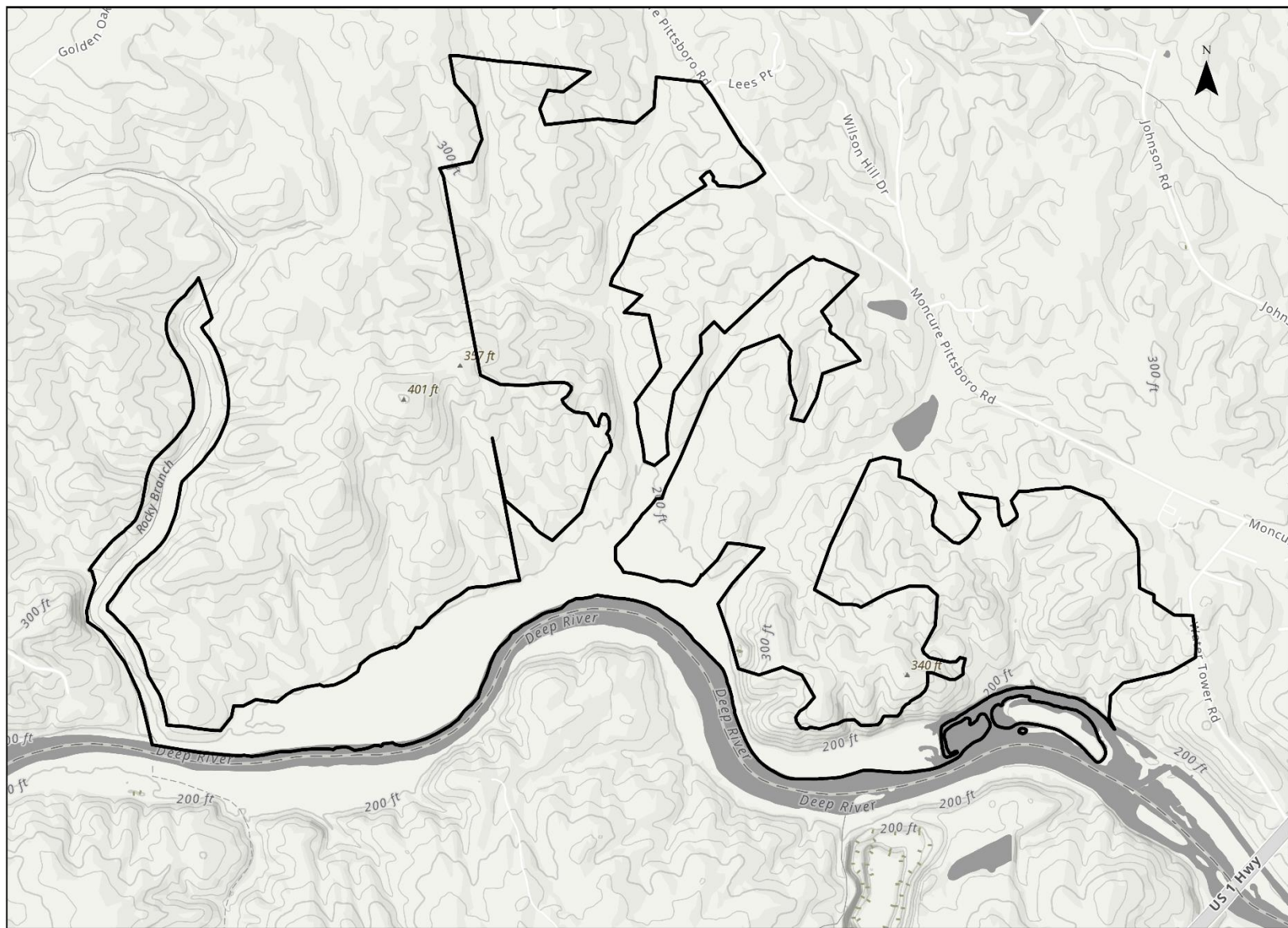
**RARE PLANTS:** The State and Federally Endangered harperella (*Ptilimnium nodosum*) was reintroduced at a gravel bar in the adjacent Rocky River in the past but has not been observed in the last five years.

**RARE ANIMALS:** Thirteen rare aquatic species have been documented in the adjacent Rocky River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), the State and Federally Threatened Atlantic pigtoe (*Fusconaia masoni*) historically, and seven species that are state listed as Endangered, Threatened, or Special Concern including, brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vauhanianus*), creeper (*Strophitus undulatus*), eastern pondmussel (*Sagittunio nasutus*), notched rainbow (*Venustaconcha constricta*), Savannah lilliput (*Toxolasma pullus*), and triangle floater (*Alasmidonta undulata*). Four state Significantly Rare species include chameleon lampmussel (*Lampsilis* sp. 2), eastern creekshell (*Villosa delumbis*), rayed pink fatmucket (*Lampsilis splendida*), and dragonfly Septima's clubtail (*Gomphurus septima*).

## REFERENCES:

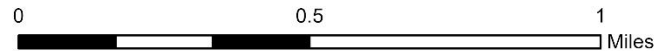
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- Schafale, M. P. 2014. Site Survey Report: Lower Bear Creek Slopes Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.





## Lower Deep River Slopes

N.C. Natural Heritage Program  
June 2025

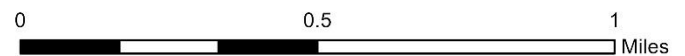






## Lower Deep River Slopes

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Lower Deep River Slopes

<b>Site Significance:</b> Exceptional	<b>Size:</b> 636 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Private, NC Parks and Recreation, NC Division of Mitigation Services Easement
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Moncure, Merry Oaks, Pittsboro, Colon

**SIGNIFICANT FEATURES:** Lower Deep River Slopes natural area is of Exceptional significance for its former support of Federally Endangered harperella (*Ptilimnium nodosum*) (one of only two populations known from North Carolina). While this species has not been recently observed it remains a high-quality reference and potential restoration site. Additionally, the site protects 12 different elements of biodiversity: Significantly Rare buttercup phacelia (*Phacelia covillei*), sensitive animal species, and ten unique natural communities. Many rare aquatic species, including the Federally Endangered Cape Fear shiner, occur within the Deep River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Rocky River Subbasin Aquatic Habitat borders the site, along the Deep River. The White Pines natural area lies just to the west (upstream). Moncure Boggy Streamheads is 0.1 mile northeast.



Rocky Bars of the Deep River Adjacent to a Section of the Lower Deep River Slopes Natural Area. Photo by: Scott Pohlman.



**SITE DESCRIPTION:** This site lies on the floodplain and bluffs along the Deep River. Most of the upland portion of the site consists of typical upland hardwood forests: Dry-Mesic Oak—Hickory Forest, Mesic Mixed Hardwood Forest, and Dry Oak—Hickory Forest. Small areas of Piedmont Alluvial Forest, Piedmont Headwater Stream Forest, and Low Elevation Seep have also been found. The steep, rocky, south-facing bluffs support a distinctive open glade community dominated by post oak, red cedar, winged elm, white ash, and hop hornbeam. It has a grassy herbaceous layer. The floodplain consists mostly of Piedmont Levee Forest with a rich herb layer; yellow corydalis (*Corydalis flavula*) is abundant; small-flower baby-blue-eyes (*Nemophila aphylla*) is common, and Significantly Rare buttercup phacelia (*Phacelia covillei*) is present. Along the Deep River is a record of Federally Endangered harperella (*Ptilimnium nodosum*). In low areas on the upland side of the floodplain are a series of beaver ponds, with good examples of Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh and Open Water subtypes). This site forms part of the riparian corridor for the Deep River-Rocky River Aquatic Habitat.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs on the upland ridges and knobs, and steep south-facing slopes. The canopy is dominated by white oak (*Quercus alba*), with southern red oak (*Quercus falcata*), post oak (*Quercus stellata*), scarlet oak (*Quercus coccinea*), and mockernut hickory (*Carya tomentosa*) common. The canopy is fairly mature but variable. Overall trees average 12 inches in diameter. The understory includes red maple (*Acer rubrum*) and sourwood (*Oxydendrum arboreum*). Shrubs include deerberry (*Vaccinium stamineum*). Herbs include little brown jug (*Hexastylis arifolia*), spotted wintergreen (*Chimaphila maculata*), nutrush (*Scleria* sp.), and crane fly orchid (*Tipularia discolor*).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on upper and lower slopes. The canopy is dominated by white oak (*Quercus alba*), with northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and sweet pignut hickory (*Carya glabra*). The condition and maturity of the canopy is variable, with trees in mature areas averaging 12 inches in diameter. The understory includes red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and eastern red cedar (*Juniperus virginiana*). Deerberry (*Vaccinium stamineum*) is the most abundant shrub.

Low Elevation Seep (Typic Subtype) occurs in a seepage area along the edge of a headwater stream. The seep is about 40 meters long and 3 meters wide and is shaded by trees from the adjacent community. Herbaceous species present include bee-balm (*Monarda* sp.), sedges (*Carex* spp.), violet (*Viola* sp.), buttercup (*Ranunculus* sp.), bulbous bitter-cress (*Cardamine bulbosa*), upright burhead (*Echinodorus cordifolius*), atamasco lily (*Zephyranthes atamasco*), and a moss (*Climacium americanum*).

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on mesic lower slopes and ravines scattered through the site. The canopy is dominated by American beech (*Fagus grandifolia*), tulip tree (*Liriodendron tulipifera*), and white oak (*Quercus alba*). The canopy is fairly mature with trees averaging 12 inches in diameter. Understory includes flowering dogwood (*Benthamidia florida*), red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and American holly (*Ilex opaca*), as well as canopy species. Some richer ravines have some shag-bark hickory (*Carya ovata*), painted buckeye (*Aesculus sylvatica*), and Florida maple (*Acer floridanum*). Herbs include Christmas fern (*Polystichum acrostichoides*), round-lobed hepatica (*Hepatica americana*), bellwort (*Uvularia* sp.), windflower (*Thalictrum thalictroides*), may apple (*Podophyllum peltatum*), bristly buttercup (*Ranunculus hispidus*), and bloodroot (*Sanguinaria canadensis*).

Piedmont Alluvial Forest occurs about midway through the course of an unnamed stream, where the floodplain abruptly widens. This transition is well above the elevation of the Deep River floodplain and must be related to local geology rather than to flood waters backing up from the river. The canopy here consists of sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), tulip tree (*Liriodendron tulipifera*), American elm (*Ulmus americana*), and black walnut (*Juglans nigra*). The understory includes American hornbeam (*Carpinus caroliniana*), flowering dogwood (*Benthamidia florida*), and green ash (*Fraxinus pennsylvanica*). Shrubs noted include coral-berry (*Symphoricarpos orbiculatus*) and nonnative

invasive autumn olive (*Elaeagnus umbellata*). The herb layer is dense. The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) dominates patches. Other herbs include various sedges (*Carex* spp.), witchgrass (*Dichanthelium* sp.), woodsorrel (*Oxalis dillenii*/*O. stricta*), dimpled fawn-lily (*Erythronium umbilicatum*), and bedstraw (*Galium* sp.). Nonnative invasive *Lonicera japonica* is also present.

Piedmont Basic Glade (Typic Subtype) occurs on a steep, south-facing bluff. The rock outcrops appear to be diorite. The canopy is open, dominated by post oak (*Quercus stellata*) and eastern red cedar (*Juniperus virginiana*), with abundant winged elm (*Ulmus alata*) and some white ash (*Fraxinus americana*) and eastern hop-hornbeam (*Ostrya virginiana*). Trees are small and dense in some portions. Farkleberry (*Vaccinium arboreum*) is the dominant shrub, bigleaf snowbell (*Styrax grandifolius*) is locally abundant, and shrubby St. John's-wort (*Hypericum prolificum*) is present. The herb layer includes dense crow-poison (*Nothoscordum bivalve*) and an abundant medium size grass of unknown species. The lower slopes of the glade have extensive nonnative invasive Japanese stilt grass (*Microstegium vimineum*). Other herbs include wild oregano (*Cunila origanoides*), American alumroot (*Heuchera americana*), resurrection fern (*Pleopeltis michauxiana*), rattlesnake hawkweed (*Hieracium venosum*), azure bluet (*Houstonia caerulea*), and Virginia saxifrage (*Micranthes virginensis*).

Piedmont Headwater Stream Forest (Typic Subtype) occurs in a narrow and discontinuous floodplain of an intermittent stream. The canopy is a mix of white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), and a few sycamore (*Platanus occidentalis*). The understory includes American hornbeam (*Carpinus caroliniana*), American holly (*Ilex opaca*), and eastern red cedar (*Juniperus virginiana*). The only shrub noted was nonnative invasive autumn olive (*Elaeagnus umbellata*), which is not dense. Herbs include dimpled fawn-lily (*Erythronium umbilicatum*), Christmas fern (*Polystichum acrostichoides*), wood-sorrel (*Oxalis dillenii*/*O. stricta*), atamasco lily (*Zephyranthes atamasco*), narrow-leaved spring beauty (*Claytonia virginica*), and rattlesnake-fern (*Botrypus virginianus*).

Piedmont Levee Forest (Typic Subtype) occurs on a floodplain of the Deep River. The forest is a mix of sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), sugarberry (*Celtis laevigata*), sweet gum (*Liquidambar styraciflua*), black walnut (*Juglans nigra*), green ash (*Fraxinus pennsylvanica*), cherry-bark oak (*Quercus pagoda*), and box-elder (*Acer negundo*). In some portions there are some loblolly pine (*Pinus taeda*). The condition is highly variable. Mature parts average 14 inches in diameter, but it is successional in many places. The understory includes box-elder (*Acer negundo*), American hornbeam (*Carpinus caroliniana*), and canopy species. Some nonnative invasive Chinese privet (*Ligustrum sinense*) is present but is not dense. The herb layer includes river oats (*Chasmanthium latifolium*), Virginia wild-rye (*Elymus virginicus*), small-flower baby-blue-eyes (*Nemophila aphylla*), narrow-leaved spring beauty (*Claytonia virginica*), smooth yellow violet (*Viola eriocarpa*), woolly blue violet (*Viola sororia*), false nettle (*Boehmeria cylindrica*), and wingstem (*Verbesina alternifolia*). Slender wood sedge (*Carex digitalis*) and dimpled fawn-lily (*Erythronium umbilicatum*) are also abundant. Nonnative invasive herbs are also common, including Japanese stilt grass (*Microstegium vimineum*), purple deadnettle (*Lamium purpureum*), ground ivy (*Glechoma hederacea*), hairy bitter-cress (*Cardamine hirsuta*), and creeping Jennie (*Lysimachia nummularia*) along with Japanese honeysuckle (*Lonicera japonica*).

Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) occurs in two beaver ponds. These portions have not been surveyed in the field but are readily visible on aerial photos and are part of a complex where the Piedmont Marsh Subtype has been surveyed to some degree.

Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype) occurs along the upper and outer edges of a series of beaver ponds, along with shallower ponds, in low-lying areas on the upland edge of a floodplain terrace. The upper end of a large beaver pond is shallow to fairly deep standing water. There are no snags of forest trees, but there may not have been trees when it was formed; the surrounding area is young successional forest. Some black willow (*Salix nigra*) have become established in much of the pond,

but vegetation is predominantly marshy. Fairly abundant cottongrass bulrush (*Scirpus cyperinus*) and some broad-leaf cattail (*Typha latifolia*) are present. Duckweed is present on the water in some areas. At the edge, shallow standing water extends into the young forest canopy of river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), and red maple (*Acer rubrum*). In the middle of the complex is an old, long beaver dam, with black willow 6 inches in diameter established on it, as well as beds of lizard's tail (*Saururus cernuus*). The pond above is dominated by soft rush (*Juncus effusus*), with abundant swamp rosemallow (*Hibiscus moscheutos*). Another impoundment is present downstream, and it too is dominated by rushes.

**PROTECTION:** Much of the site is within the Deep River Trail, a state park unit, and is dedicated. Most of the upstream portion is privately registered.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Low Elevation Seep (Typic Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Basic Glade (Typic Subtype), Piedmont Headwater Stream Forest (Typic Subtype), Piedmont Levee Forest (Typic Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype).

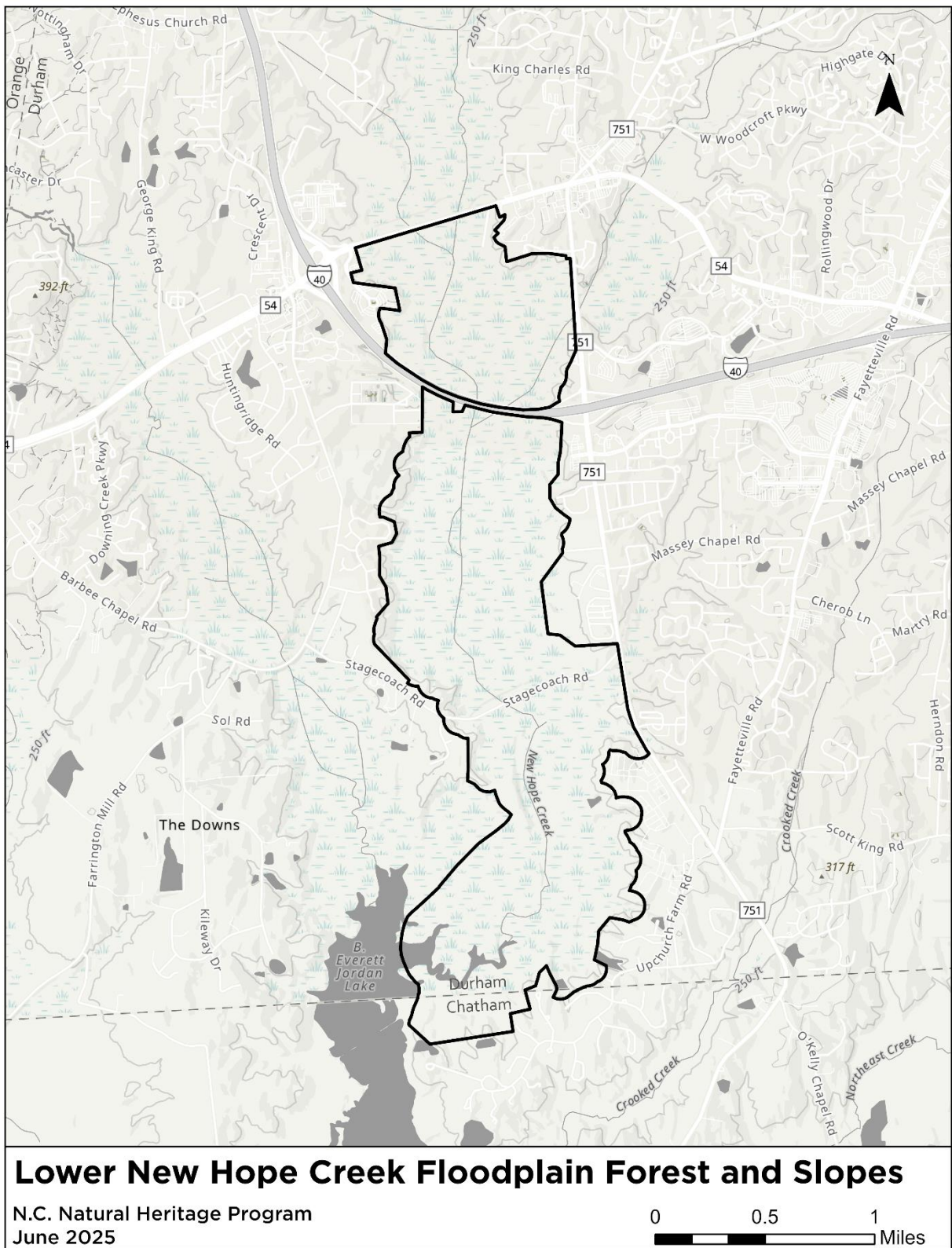
**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*). Historical occurrence of Federally Endangered harperella (*Ptilimnium nodosum*).

**RARE ANIMALS:** A waterbird colony is present. Three rare aquatic species have been documented in the adjacent Deep River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), the State Threatened Carolina redhorse (*Moxostoma* sp. 3) and Significantly Rare dragonfly Septima's clubtail (*Gomphurus septima*).

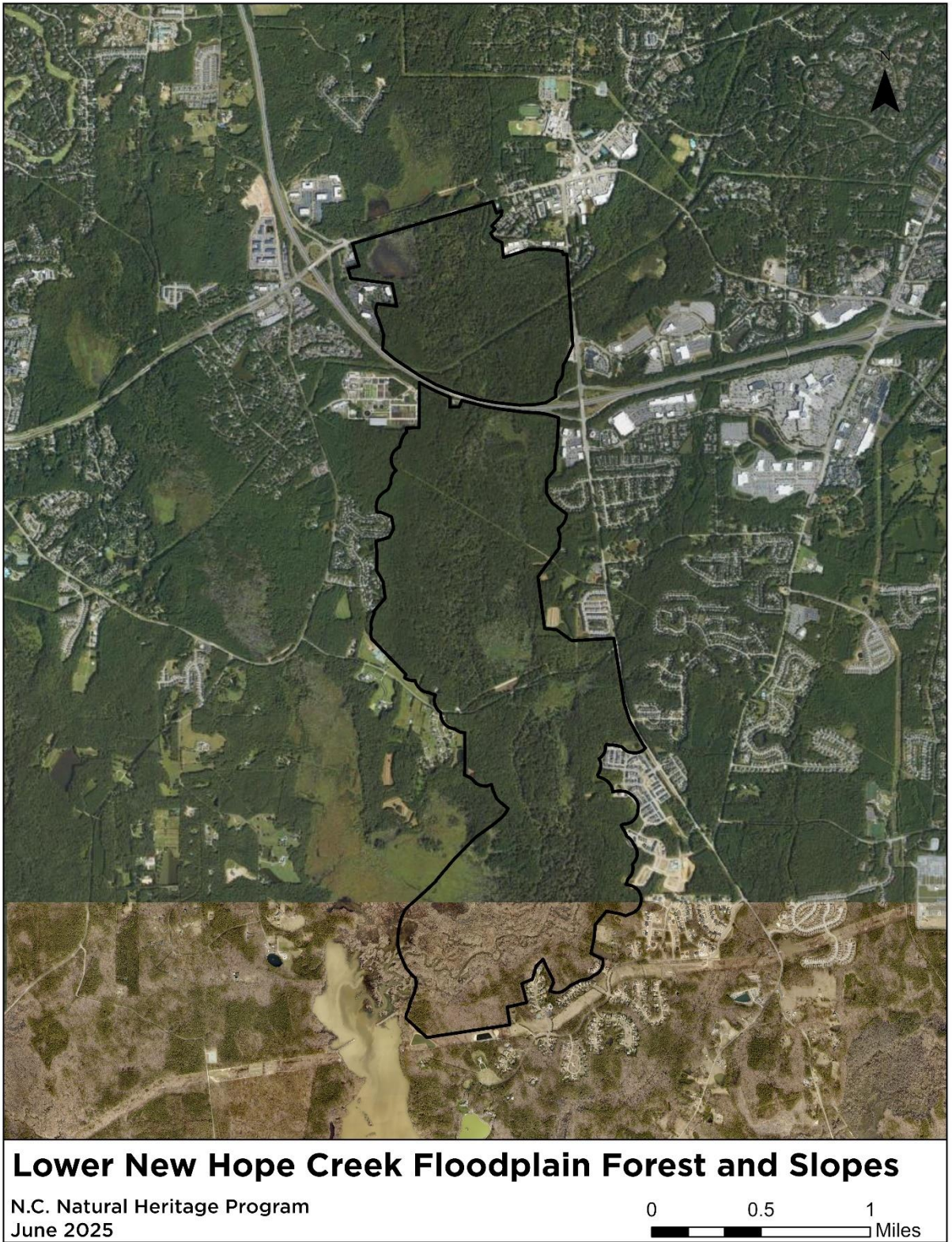
## REFERENCES:

- LeGrand, H. and E. Schwartzman. 2004. Site Survey Report: Lower Deep River Slopes. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- LeGrand, H. 2003. Site Survey Report: Lower Deep River Slopes. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- LeGrand, H. 2005. Site Survey Report: Lower Deep River Slopes. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M., S. Pohlman, M. Franklin, and J. Ratcliffe. 2017. Site Note: Lower Deep River Slopes. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Chatham County Natural Area Inventory

### Lower New Hope Creek Floodplain Forest and Slopes

<b>Site Significance:</b> High	<b>Size:</b> 1,821 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Private, US Army Corps of Engineers, City of Durham, Unique Places to Save Easement
<b>Collective Value:</b> High (R3)	<b>Chatham Quadrangle:</b> Greenlevel

**SIGNIFICANT FEATURES:** The Lower New Hope Creek Floodplain Forest and Slopes natural area is of High significance for its support of nine elements of biodiversity. This includes extensive and mature bottomland forest natural communities such as the uncommon Piedmont Bottomland Forest (Typic Low Subtype) and a high-quality Low-Elevation Seep, among others. Much of this floodplain is north of Chatham County, but intact forested area supports water quality and habitat for the downstream Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** Morgan Creek Floodplain Forest is one mile west. Northeast Creek/Panther Creek Dikes and Bottomlands is 1.2 miles southeast.

**SITE DESCRIPTION:** This floodplain forms the headwaters of the B. Everett Jordan Lake. This is one of the best floodplains in North Carolina, in terms of maturity of the canopy. The majority of the site occurs across the border in Durham County, with only a small patch of the associated natural communities found in Chatham. Extensive bottomland forests are present north of the county line, including the prominent Piedmont Bottomland Forest (Typic Low Subtype). The only natural community found within the county is Dry-Mesic Oak—Hickory Forest (Piedmont Subtype).

The Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on an upland slope bordering Jordan Lake. White oak (*Quercus alba*) is the dominant canopy tree. Red maple (*Acer rubrum*) and sweet pignut hickory (*Carya glabra*) are also common. Eastern redbud (*Cercis canadensis*) is common in the understory layer, and downy arrowwood (*Viburnum rafinesqueanum*) is the dominant shrub. The widespread occurrence of two blueberry species, deerberry (*Vaccinium stamineum*) and small black blueberry (*Vaccinium tenellum*), hint at the acid nature of the soil. The community is a small patch in a successional and developed matrix.

**PROTECTION:** This entire site is within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Chatham County: Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Durham County: Low Elevation Seep (Typic Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), Piedmont Levee Forest (Typic Subtype), Piedmont Swamp Forest.

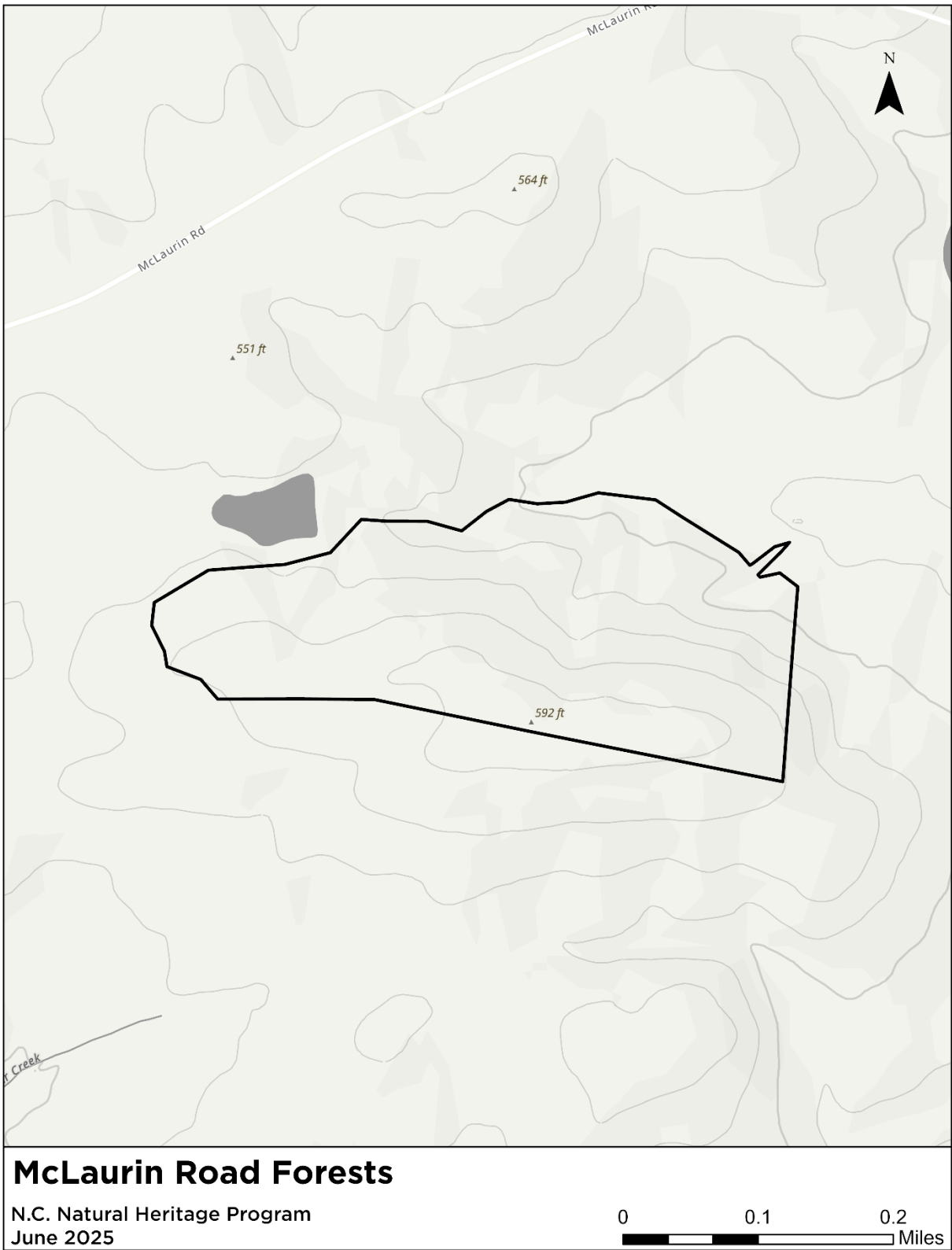
**RARE PLANTS:** None Observed.

**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*) and other sensitive species are present.

#### REFERENCES:

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Parks and Recreation, Department of Natural and Cultural Resources, Raleigh, NC.









## McLaurin Road Forests

N.C. Natural Heritage Program  
June 2025

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Miles



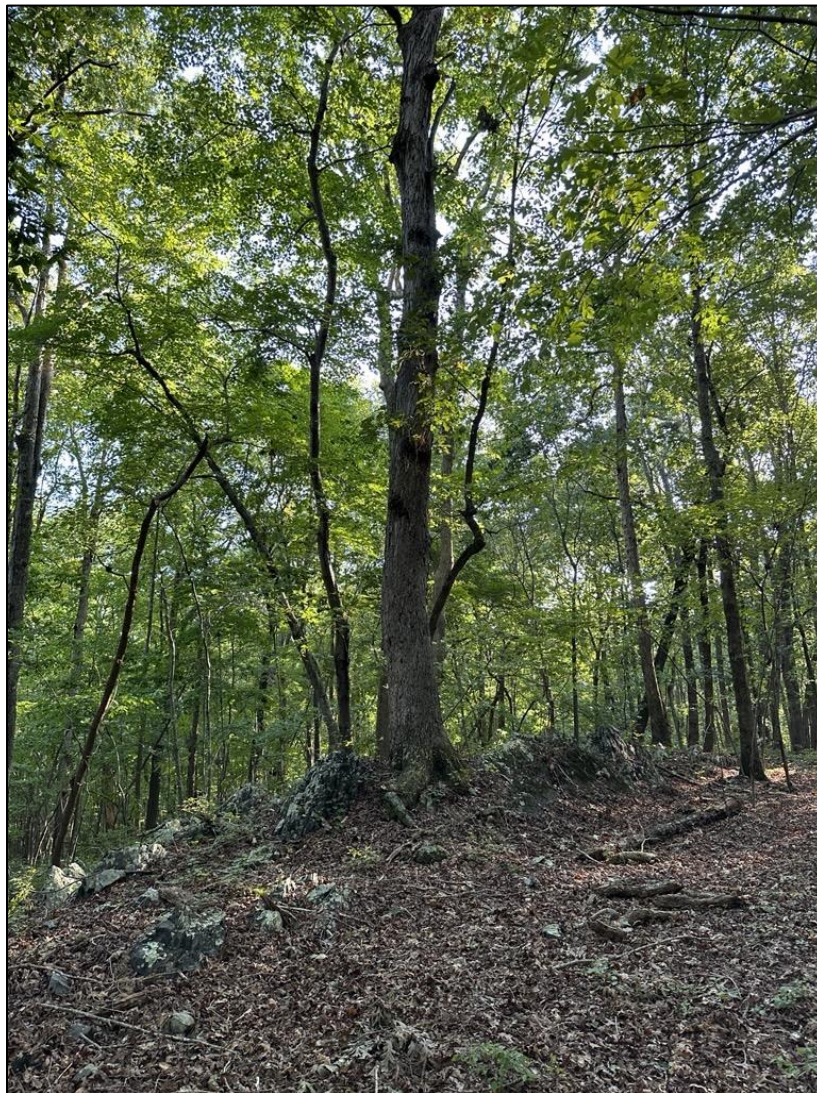
## Chatham County Natural Area Inventory

### McLaurin Road Forests

<b>Site Significance:</b> General	<b>Size:</b> 34 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Siler City NE

**SIGNIFICANT FEATURES:** McLaurin Road Forests is of General significance for its support of three natural communities, Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and an uncommon Low Elevation Seep (Typic Subtype). This site represents a patch of relatively mature forested habitat in a part of the county where that is infrequent.

**LANDSCAPE RELATIONSHIPS:** Woods Mill Bend along the Rocky River is approximately 1.5 miles north. NC 902 Laurel Bluffs is approximately 2.3 miles northeast.



Rocky Ridge within Dry Oak—Hickory Forest (Piedmont Subtype) at McLaurin Road Forests Natural Area. Photo By: Merry Conlin.



**SITE DESCRIPTION:** This site comprises an unnamed gently sloping hill just north of Little Bear Creek. The underlying geology and some of the flora suggests slightly less acidic soils are present. Much of the surrounding lowlands are in agriculture or pastureland. The upland forested communities represent second generation hardwoods. This intact forested area and associated habitats are uncommon in this part of the county except for the forested areas along the Rocky River. The summit and narrow ridge contain a patch of Dry Oak—Hickory Forest (Piedmont Subtype). Downslope this community grades to Dry-Mesic Oak—Hickory (Piedmont Subtype). A small, diverse, Low Elevation Seep (Piedmont Subtype) forms a Piedmont Headwater Stream Forest along the stream that flows outside of the boundary.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs on the short summit and ridge of an unnamed hill. The closed canopy is dominated by white oak (*Quercus alba*). Spanish oak (*Quercus falcata*), scarlet oak (*Quercus coccinea*), and post oak (*Quercus stellata*) are common. The canopy is second generation but mature, with canopy averages of 14–16 inches in diameter. One black tupelo (*Nyssa sylvatica*) in the canopy



Little Ladies'-Tresses (*Spiranthes tuberosa*) at McLaurin Road Forests Natural Area. Photo by: Merry Conlin.

is 18.2 inches in diameter. The largest southern red oak measures 20 inches in diameter. The understory is sparse and open. Sourwood (*Oxydendrum arboreum*), sweet pignut hickory (*Carya glabra*), and red hickory (*Carya ovalis*) are common. There is very little in the shrub layer except a few patches of dangleberry (*Gaylussacia frondosa*) and a few deerberry (*Vaccinium stamineum*). The herbaceous layer is likewise sparse and dominated by muscadine grape (*Vitis rotundifolia*). Little brown jug (*Hexastylis arifolia*), crane fly orchid (*Tipularia discolor*), and some Christmas fern (*Polystichum acrostichoides*) are present. A patch of the locally uncommon little ladies'-tresses (*Spiranthes tuberosa*) occurs on the summit. This community is in good condition with no nonnative invasive species observed.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the lower gentle slopes found at the site. The closed canopy is dominated by white oak (*Quercus alba*). Mockernut hickory (*Carya tomentosa*) and tulip tree (*Liriodendron tulipifera*) are common. The canopy is second generation but mature, with averages of 12–14 inches in diameter. The understory is fairly open with some American holly (*Ilex opaca*), east-

ern redbud (*Cercis canadensis*), sourwood (*Oxydendrum arboreum*), and regenerating tulip tree. Some flowering dogwood (*Benthamidia florida*) and the nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*) are present in the sparse shrub layer. Few acid-loving (ericaceous) species were observed, suggesting an intermediate to slightly more basic mixture of soils. The herbaceous layer is fairly sparse and variable with abundant Christmas fern (*Polystichum acrostichoides*) and white ash



(*Fraxinus americana*) seedlings. Some fly-poison (*Amianthium muscitoxicum*), slender spikegrass (*Chasmanthium laxum*), Solomon's-plume (*Maianthemum racemosum*) and Carolina lily (*Lilium michauxii*) are present. This community is in good condition; nonnative species are not yet prevalent.

Low Elevation Seep (Typic Subtype) occurs in an upland hollow and forms the headwater of a Piedmont Headwater Stream Forest downslope. A few younger canopy trees are rooted inside the community, largely red maple (*Acer rubrum*) and tulip tree (*Liriodendron tulipifera*). The shrub layer is moderately dense, with hairy highbush blueberry (*Vaccinium fuscatum*) and possumhaw viburnum (*Viburnum nudum*). This community starkly contrasts with the surrounding uplands due to its herbaceous diversity. It is particularly recognizable due to the abundance of ferns, primarily southern lady fern (*Athyrium asplenoides*), as well as cinnamon fern (*Osmundastrum cinnamomeum*) and royal fern (*Osmunda spectabilis*). The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is common. Additional species include stout wood reed-grass (*Cinna arundinacea*), Virginia cutgrass (*Leersia virginica*), false nettle (*Boehmeria cylindrica*), fringed loosestrife (*Steironema ciliatum*), and primrose-leaf violet (*Viola primulifolia*). Patches of moss (*Sphagnum* sp.) are scattered throughout.



**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

A Small Low Elevation Seep (Typic Subtype) at McLaurin Road Forests Natural Area. Photo by: Merry Conlin.

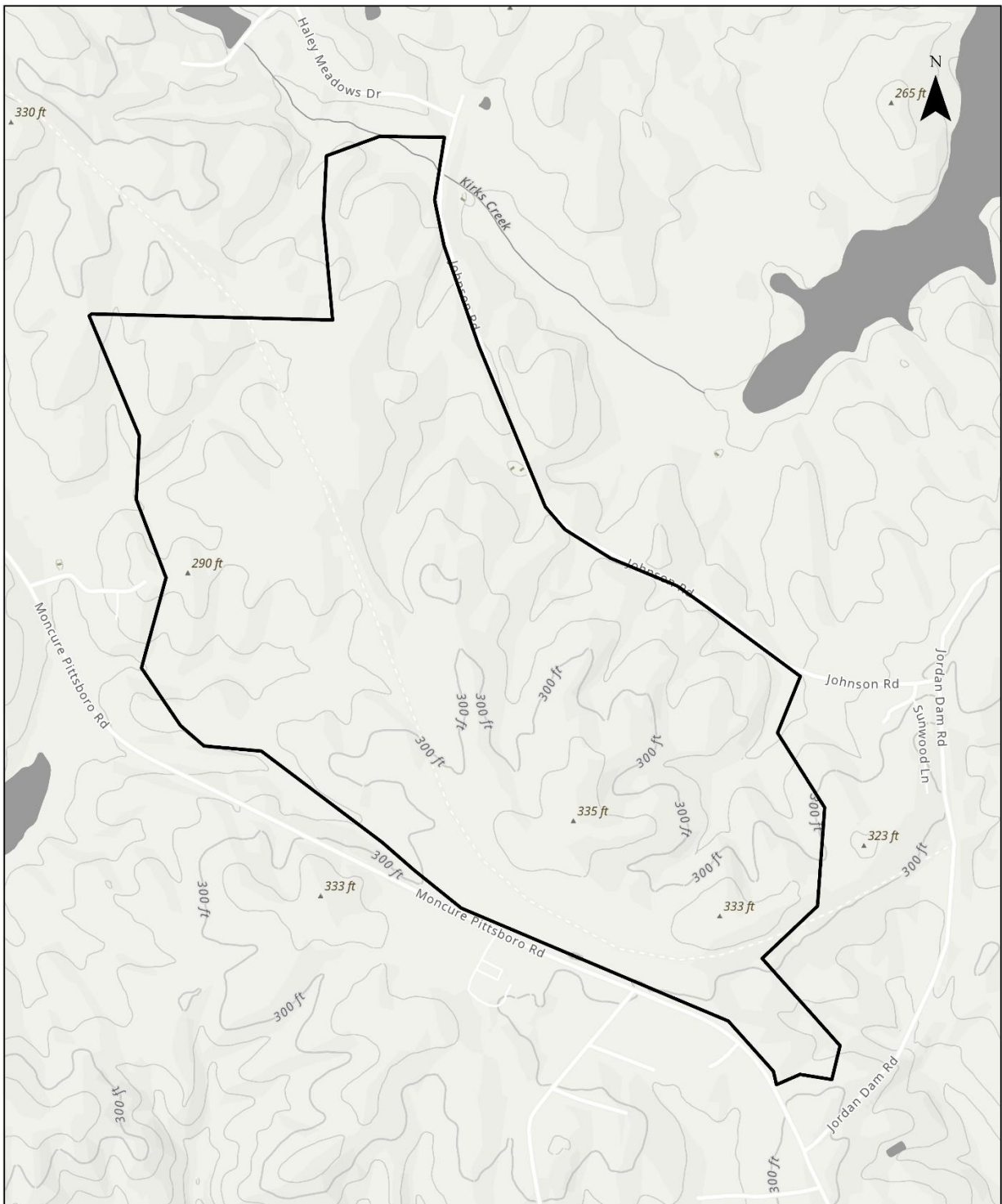
**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Low Elevation Seep (Typic Subtype).

**RARE PLANTS:** None Observed.

**RARE ANIMALS:** None Observed.

#### REFERENCES:

Conlin, M.R. 2024. Site Survey Report: McLaurin Road Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

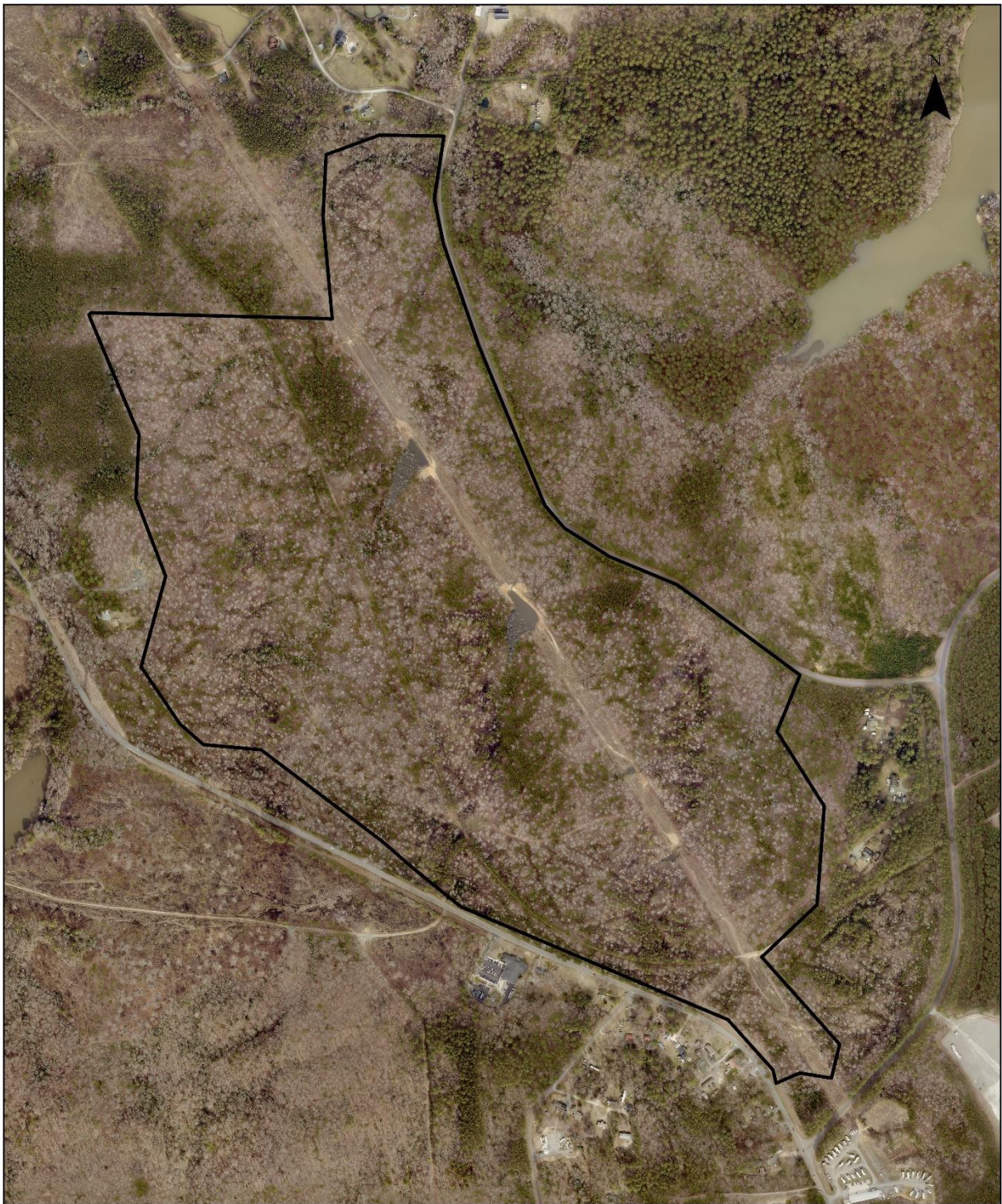


## Moncure Boggy Streamheads

N.C. Natural Heritage Program  
June 2025

0 0.1 0.3  
Miles





## Moncure Boggy Streamheads

N.C. Natural Heritage Program  
June 2025

0 0.1 0.3  
Miles

## Chatham County Natural Area Inventory

### Moncure Boggy Streamheads

<b>Site Significance:</b> Exceptional	<b>Size:</b> 270 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Private, US Army Corps of Engineers
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Moncure Boggy Streamheads is of Exceptional importance for its support of State Special Concern species bog spicebush (*Lindera subcoriacea*) and two natural communities. These communities include the rare Piedmont Boggy Streamhead and mature Dry Oak—Hickory Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Lower Deep River Slopes is 650 feet south. Poes Ridge/ Dam Road Upland Forest is 0.5 miles northeast.

**SITE DESCRIPTION:** The site consists of small spur ridges and small stream drainages that grade to relatively flat uplands. Streams on the northeast side drain to Jordan Lake, whereas a few on the west and south drain to the Deep River. Many of the drainages have substantial areas of seepage and saturated soil and support the rare Piedmont Boggy Streamhead community. These areas support flora with many species more common in the Coastal Plain. Other streams have a more typical flora of Piedmont Headwater Stream Forest. The spur ridges are upland hardwood forest, some of which have been thinned and are successional. Mature Dry Oak—Hickory Forest remains on the north side. There is also a very small example of an Upland Depression Swamp Forest; too small to qualify as an NCNHP natural community element.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs along many of the spur ridges. The canopy is dominated by white oak (*Quercus alba*), with abundant southern red oak (*Quercus falcata*) and shortleaf pine (*Pinus echinata*). Post oak (*Quercus stellata*) and black oak (*Quercus velutina*) are common. In most parts, the canopy is mature, with trees averaging 12 inches in diameter and few larger trees. A few areas have canopy trees averaging only 10 inches in diameter. The understory includes sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), and black tupelo (*Nyssa sylvatica*). The shrub layer is patchy, with large areas dominated by dangle-berry (*Gaylussacia frondosa*) and other areas less densely dominated by early lowbush blueberry (*Vaccinium pallidum*) or small black blueberry (*Vaccinium tenellum*). Herbaceous species are sparse. Successional areas with loblolly pine (*Pinus taeda*) dominant are not included.

Piedmont Boggy Streamheads occur along a series of intermittent to small perennial streams. The canopy is closed but often includes shade from trees rooted outside of the narrow floodplains or saturated areas. Red maple (*Acer rubrum*), tulip tree (*Liriodendron tulipifera*), and a few white oak (*Quercus alba*) are rooted within the community. The canopy trees average 10–12 inches in diameter in general. The understory includes sourwood (*Oxydendrum arboreum*), as well as the canopy species, and a few sweetbay magnolia (*Magnolia virginiana*), water oak (*Quercus nigra*), and black tupelo (*Nyssa sylvatica*). There is a shrub layer of moderate density that is dominated by possum-haw viburnum (*Viburnum nudum*) or black highbush blueberry (*Vaccinium fuscum*) and sometimes includes a few tag alder (*Alnus serrulata*), black holly (*Ilex verticillata*), and small swamp cyrilla (*Cyrilla racemiflora*). Smilax rotundifolia sometimes forms tangles. Herbs are moderate to dense. The moss (*Sphagnum* sp.) dominates patches that may be less than a square meter along some streams to 10 square meters or more along others. Cinnamon fern (*Osmundastrum cinnamomeum*) is nearly constant and sometimes abundant. Netted chainfern (*Lorinseria areolata*) is locally abundant. Royal fern (*Osmunda spectabilis*) is present in some areas, as are primrose-leaf violet (*Viola primulifolia*), witchgrass (*Dichanthelium* sp.), bugleweed (*Lycopus* sp.), southern lady fern (*Athyrium asplenoides*), slender spikegrass (*Chasmanthium laxum*), and lizard's tail (*Saururus cernuus*). The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is present in patches but limited in extent. Vines are

common; most are greenbriers, including two more typical of the Coastal Plain, laurel-leaf greenbrier (*Smilax laurifolia*), and Walter greenbrier (*Smilax walteri*).

**PROTECTION:** A small portion of this site is protected within a Natural Heritage Program Registered Heritage Area. The area outside of this agreement would be a worthy target of a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Piedmont Boggy Streamhead.

**RARE PLANTS:** Special Concern bog spicebush (*Lindera subcoriacea*).

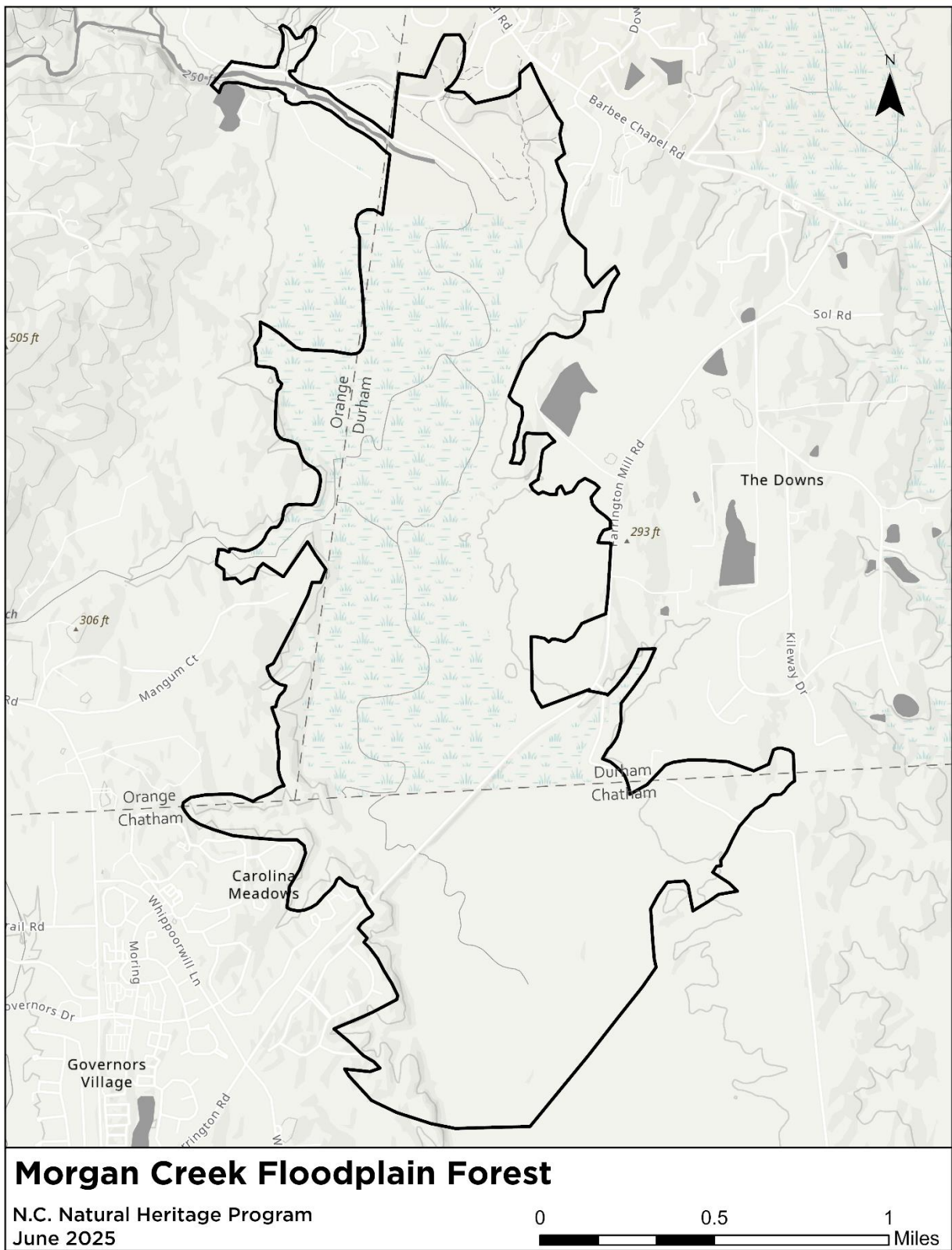
**RARE ANIMALS:** None observed.

#### **REFERENCES:**

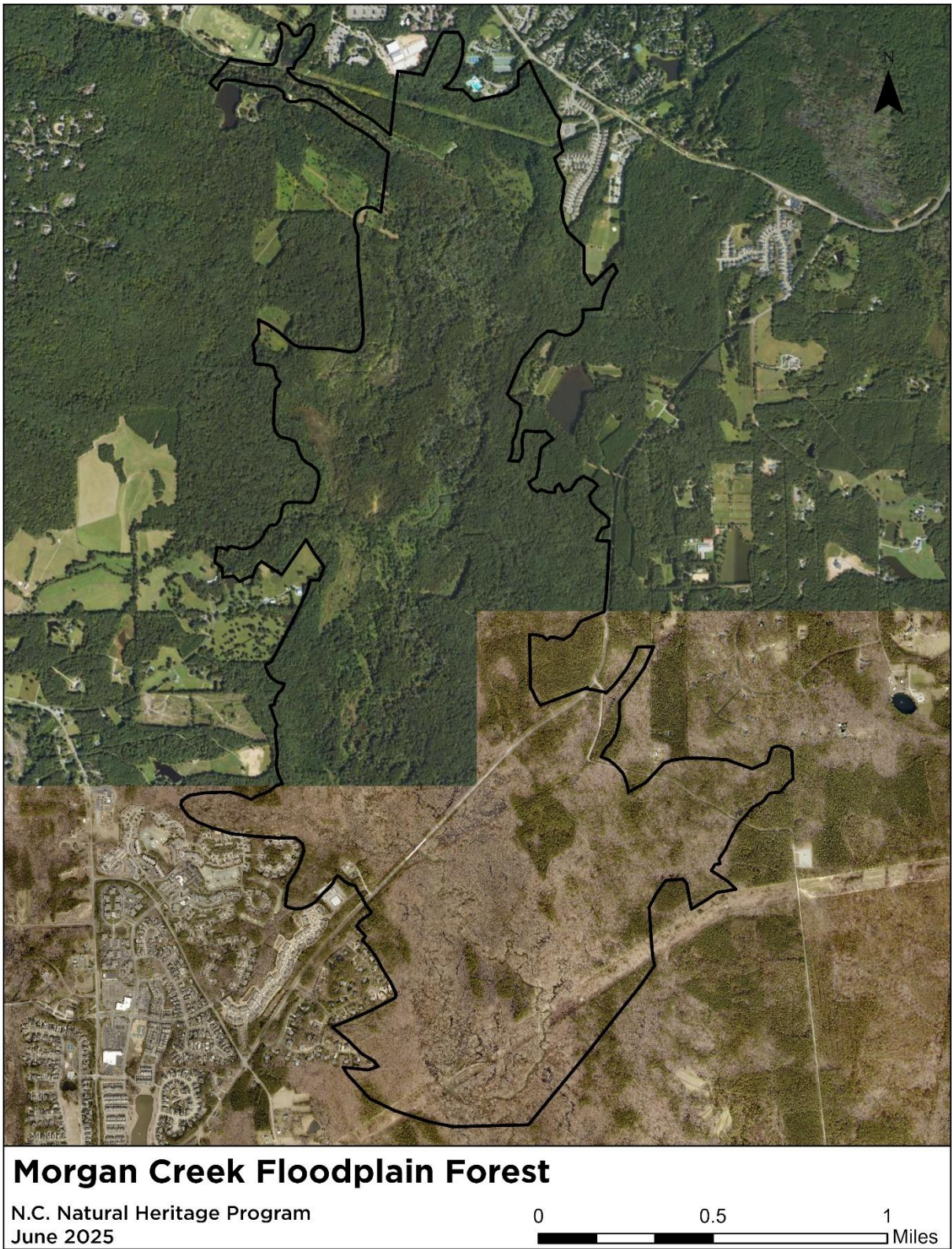
LeGrand, H. 2009 Site Survey Report: Moncure Boggy Streamheads Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Schafale, M.P. 2020. Site Survey Report: Moncure Boggy Streamheads Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Chatham County Natural Area Inventory

### Morgan Creek Floodplain Forest

<b>Site Significance:</b> Very High	<b>Size:</b> 1,558 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private, US Army Corps of Engineers, University of North Carolina at Chapel Hill, NC DEQ Stewardship Program, Triangle Land Conservancy
<b>Collective Value:</b> High (C3)	<b>Chatham Quadrangle:</b> Farrington, Green Level

**SIGNIFICANT FEATURES:** The Morgan Creek Floodplain Forest is of Very High importance for its support of high-quality natural communities including good examples of Piedmont/Mountain Semipermanent Impoundments of all three subtypes and the Special Concern species gray dogwood (*Swida racemosa*) in Orange County. Although these elements do not extend into the Chatham County portion, this site is diverse and supports 12 elements of biodiversity in total, ten natural communities (many of which are in Chatham), and two rare plants. This site provides important wildlife habitat for many common and rare animal species through a largely intact bottomland corridor to Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** Mason Farm Oak—Hickory Forest, Laurel Hill Ridge and Vernal Pool, and Morgan Creek Bluffs are adjacent to northwest (Orange Co.), and Cub Creek—Edwards Ridge is 1.2 miles west (Chatham Co.).

**SITE DESCRIPTION:** The southernmost extent of this natural area located in Chatham County represents only a small fraction of the extensive bottomland communities found throughout this site. This site comprises largely extensive swamp and bottomland habitat ranging north into Orange County to the shores of Jordan Lake in Chatham. Though this fraction in Chatham County is small it supports several of the natural communities found within the site. Only those that are found within Chatham County will be discussed here. In this area during high water events the lake waters can back up into this floodplain. The floodplain is fairly flat and free of channels and pools. The most extensive natural community that extends north is Piedmont Bottomland Forest (Typic Low Subtype). Outside of the floodplain are shallow sloped uplands that are drier and support natural communities such as Mesic Mixed Hardwood Forest (Piedmont Subtype) and Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype).

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs over a diabase dike. White oak (*Quercus alba*) is the dominant tree. A scattering of other oaks is present. Both shag-bark hickory (*Carya ovata*) and southern shagbark hickory (*Carya carolinae-septentrionalis*) are found here. Eastern red cedar (*Juniperus virginiana*) is quite common in the understory. Other understory trees include eastern redbud (*Cercis canadensis*) and eastern hop-hornbeam (*Ostrya virginiana*). The shrub layer features an abundance of several viburnums, especially downy arrowwood (*Viburnum rafinesqueanum*). There is little herb layer. Watch List Lewis's heartleaf (*Hexastylis lewisii*) is abundant along the narrow floodplain of an unnamed creek.

Dry Basic Oak—Hickory Forest occurs on a shallow upland spur that appears to be over a diabase dike, as some rocks are present. White oak (*Quercus alba*) dominates the canopy. Also numerous are hickories, especially sweet pignut hickory (*Carya glabra*). Post oak (*Quercus stellata*) is reasonably common, as are a mix of black oak (*Quercus velutina*) and scarlet oak (*Quercus coccinea*). The understory layer features numerous eastern red cedar (*Juniperus virginiana*). Perhaps the most striking feature is the dense shrub layer of viburnums in many places, especially downy arrowwood (*Viburnum rafinesqueanum*). Southern arrow-wood (*Viburnum dentatum*) is surprisingly numerous in such a dry setting. A few blueberry species are present. The herb layer is very poor, with little brown jug (*Hexastylis arifolia*) being the most obvious.



Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the slight uplands bordering and within the floodplain. White oak (*Quercus alba*) dominates the canopy, and there is a diverse mixture of both xeric and hydric associated trees. Also common is American beech (*Fagus grandifolia*). Dry upland trees include post oak (*Quercus stellata*) and southern red oak (*Quercus falcata*), whereas wetland trees include cherry-bark oak (*Quercus pagoda*) and swamp chestnut oak (*Quercus michauxii*). A moderate number of loblolly pine (*Pinus taeda*) are present. The most common understory trees are American hornbeam (*Carpinus caroliniana*) and eastern hop-hornbeam (*Ostrya virginiana*). A mix of viburnums and blueberries are dominant in the shrub layer. The herb layer was not well studied due to the timing of the survey.

Piedmont Headwater Stream Forest (Hardpan Subtype) grades into the Bottomland Forest on the low end of the moisture gradient and Dry Oak—Hickory Forest in surrounding uplands. The canopy is dominated by willow oak (*Quercus phellos*) (with many large trees in the range of 21 inches in diameter and some examples up to 28 inches in diameter), Shumard oak (*Quercus shumardii*), and red maple (*Acer rubrum*) (averaging 16–18 inches in diameter). Understory trees include pawpaw (*Asimina triloba*), flowering dogwood (*Benthameidia florida*), white ash (*Fraxinus americana*), sweet gum (*Liquidambar styraciflua*), and winged elm (*Ulmus alata*). Shrubs include deciduous holly (*Ilex decidua*), spicebush (*Lindera benzoin*), and southern arrow-wood (*Viburnum dentatum*). Herbs include bladder sedge (*Carex intumescens*), sedges (*Carex spp.*), bedstraw (*Galium spp.*), a quillwort (*Isoetes sp.*), atamasco lily (*Zephyranthes atamasco*), and moss (*Sphagnum sp.*). Vines include crossvine (*Bignonia capreolata*), trumpet-creeper (*Campsis radicans*), greenbrier (*Smilax sp.*), climbing dogbane (*Thyrsanthella difformis*), and muscadine grape (*Vitis rotundifolia*).

Piedmont Bottomland Forest (Typic Low Subtype) occurs within the majority of the Chatham County portion of this site. The extensive floodplain is about a mile wide in this area. The floodplain is flat and reasonably free of channels, natural levees, and floodplain pools. Cherry-bark oak (*Quercus pagoda*) and swamp chestnut oak (*Quercus michauxii*) dominate the canopy. Also numerous are willow oak (*Quercus phellos*) and sweet gum (*Liquidambar styraciflua*). The understory has relatively few species, with American hornbeam (*Carpinus caroliniana*) being common. Likewise, the shrub layer is somewhat sparse; deciduous holly (*Ilex decidua*) is very common. The herb layer was not well examined due to the late season survey period.

**PROTECTION:** The Chatham County portion and much of the northern section of the site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Chatham Co: Dry Basic Oak—Hickory Forest, Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), Durham/Orange Co: Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Piedmont Headwater Stream Forest (Hardpan Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype), Piedmont/Mountain Semipermanent Impoundment (Shrub Subtype).

**RARE PLANTS:** Chatham Co: Watch List Lewis's heartleaf (*Hexastylis lewisii*).

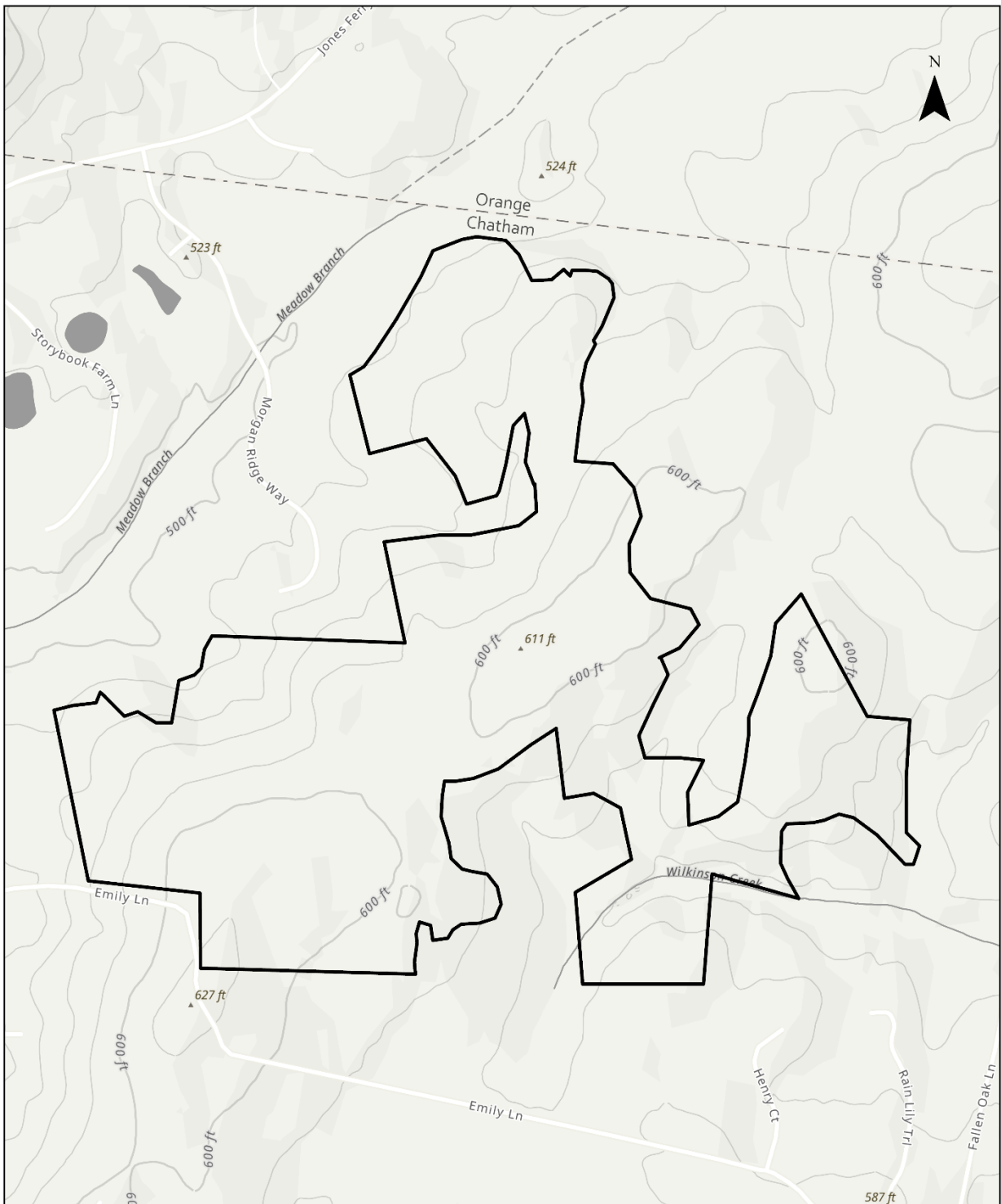
**RARE ANIMALS:** None observed.

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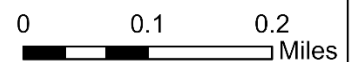
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## Morgan Ridge

N.C. Natural Heritage Program  
June 2025







## Morgan Ridge

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Morgan Ridge

<b>Site Significance:</b> Very High	<b>Size:</b> 134 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Morgan Ridge is of Very High significance for its support of a high-quality Dry Basic Oak—Hickory Forest natural community. This site also supports two other natural communities—the rare Upland Depression Swamp Forest and Dry Oak—Hickory Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Terrells Mountain is 0.4 miles northwest.

**SITE DESCRIPTION:** Morgan Ridge is a broad, gently sloped ridge top, giving way to steeper side slopes. The area is underlain by diorite and gabbro and shows evidence of soils with unusually high pH and base saturation. Unusual topography is present on the ridge top as well, including an unusually flat area and a small depression. Parts of the area are also especially rocky, with numerous boulders on some knobs. Though successional pine forests are embedded, most of the site supports a Dry Basic Oak—Hickory Forest community that is relatively quite mature and in excellent condition. This forest is dominated by a combination of southern shagbark hickory, post oak, and white oak. The depression on the ridge top contains an Upland Depression Swamp Forest community, also in excellent condition. Small patches of Dry Oak—Hickory Forest and Dry-Mesic Oak—Hickory Forest are also in excellent condition.

Dry Basic Oak—Hickory Forest occurs on the upper slopes and ridge top, including an unusually flat ridge top area. The canopy is dominated by white oak (*Quercus alba*), southern shagbark hickory (*Carya caroliniae-septentrionalis*), and post oak (*Quercus stellata*), with abundant white ash (*Fraxinus americana*), Biltmore ash (*Fraxinus biltmoreana*), sweet pignut hickory (*Carya glabra*), and mockernut hickory (*Carya tomentosa*). Occasional loblolly pine (*Pinus taeda*), shortleaf pine (*Pinus echinata*), southern red oak (*Quercus falcata*), black oak (*Quercus velutina*), Shumard oak (*Quercus shumardii*), scarlet oak (*Quercus coccinea*), and other tree species are present. This community is in excellent condition and the average diameter for dominant canopy trees is 12 inches with some trees being 20 inches. The understory is dominated by eastern red-cedar (*Juniperus virginiana*) in most places. Winged elm (*Ulmus alata*), Florida maple (*Acer floridanum*), red maple (*Acer rubrum*) are also common, and flowering dogwood (*Benthamidia florida*) is present. Shrubs are sparse. In some areas, muscadine grape (*Vitis rotundifolia*) cover the ground. Elsewhere, little-headed nutrush (*Scleria oligantha*) is the most abundant herb. Narrow melic grass (*Melica mutica*), wild oregano (*Cunila origanoides*), and little brown jug (*Hexastylis arifolia*) are present. Parts of the community are unusually dry. In many areas, post oak is more abundant than white oak, suggesting that this site is transitional to Xeric Hardpan Forest (Basic Rocky Subtype).

Dry Oak—Hickory Forest (Piedmont Subtype) is a more acidic community that occurs in some portions of the ridge top and upper slopes, including some bouldery areas, but not the unusually flat area. Though it was not obvious that the underlying rock is different, it may be. This mature community has a canopy dominated by white oak (*Quercus alba*) and abundant southern red oak (*Quercus falcata*), with post oak (*Quercus stellata*), black oak (*Quercus velutina*), and scarlet oak (*Quercus coccinea*) occurring occasionally. Hickories are less abundant. This community is in good condition and the average diameter for dominant canopy trees is 12 inches. American holly (*Ilex opaca*) and sweetgum (*Liquidambar styraciflua*) dominate the understory. There are some flowering dogwood (*Benthamidia florida*), red maple (*Acer rubrum*), and sourwood (*Oxydendrum arboreum*) present. The shrub layer consists of viburnum (*Viburnum* sp.) and occasional nonnative invasive autumn olive (*Elaeagnus umbellata*). The herb layer consists of blueberry (*Vaccinium* sp.) and little brown jug (*Hexastylis arifolia*).

Upland Depression Swamp Forest occurs in the depression on the ridgetop. It is bordered by the unusually flat area on three sides, with a distinct rocky slope on the other side. It holds water in the winter but was dry at the time of this survey. The canopy consists almost completely of willow oak (*Quercus phellos*). Canopy trees average 12 inches in diameter. A few smaller sweetgum (*Liquidambar styraciflua*) are present but there is no other understory. There are sparse shrubs that include highbush blueberry (*Vaccinium corymbosum*) and deciduous holly (*Ilex decidua*). There is a dense herb layer, much of it consisting of mosses. Peat moss (*Sphagnum lescurii*) dominates large patches, and pine tree moss (*Climacium americanum*) also dominates some areas. Joor's sedge (*Carex* cf. *joorii*) is prominent, though not dense. Particularly interesting, short-bristle hornedrush (*Rhynchospora corniculata*) and hop sedge (*Carex lupulina*), both species more typical of Coastal Plain river swamps, are present. Slender spikegrass (*Chasmanthium laxum*) dominates a zone around the outer edge.

**PROTECTION:** This site is under no formal conservation, and contains tracts targeted for a Chatham County Conservation Subdivision. Intact forested portions of the site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry Basic Oak—Hickory Forest, Dry Oak—Hickory Forest (Piedmont Subtype), Upland Depression Swamp Forest.

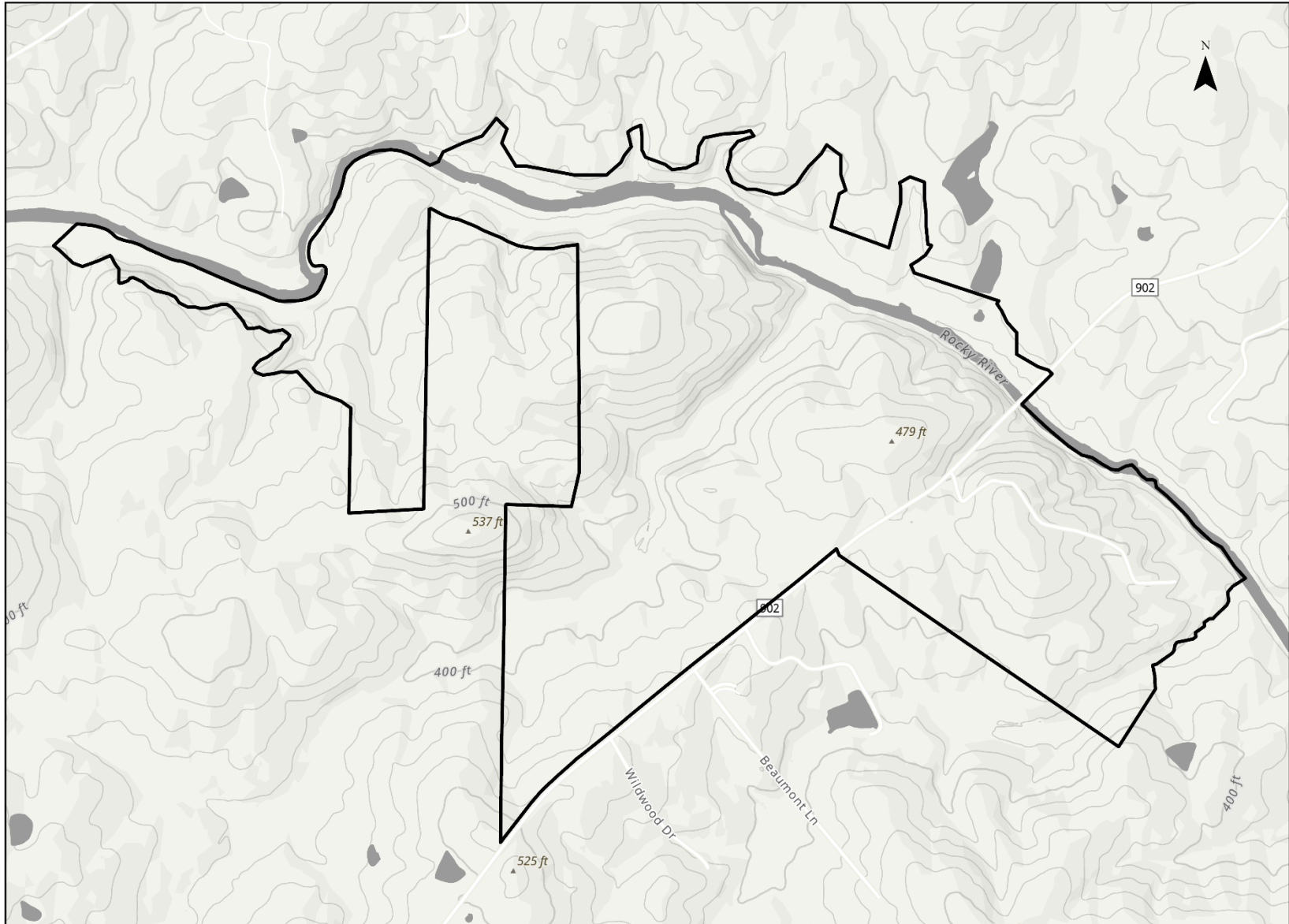
**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

#### **REFERENCES:**

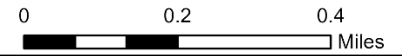
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## NC 902 Laurel Bluffs

N.C. Natural Heritage Program  
June 2025







## NC 902 Laurel Bluffs

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### NC 902 Laurel Bluffs

<b>Site Significance:</b> High	<b>Size:</b> 552 acres
<b>Representational Value:</b> High (R3)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Siler City NE

**SIGNIFICANT FEATURES:** NC 902 Laurel Bluffs is of High importance due to its support of high-quality natural communities, namely, Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) which is among the ten best known examples in the state. This site is diverse and supports eight more natural communities in addition to the one mentioned above. Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat flows through the site. Woods Mill Bend is 0.9 miles west. Landrum Creek Forests is 0.3 miles upstream.



Rocky River at NC 902 Laurel Bluffs Natural Area. Photo by: Scott Pohlman.

**SITE DESCRIPTION:** This site consists of bluffs and moderate slopes on both sides of the Rocky River, along with a narrow floodplain. An excellent example of a Piedmont/Coastal Plain Heath Bluff community



is present on the steep north-facing bluffs. Extensive Dry-Mesic Oak—Hickory Forest and small amounts of Mesic Mixed Hardwood Forest and Basic Mesic Forest are in very good condition. Piedmont Alluvial Forest communities in fairly good condition are present on several creeks. Part of the Rocky River floodplain supports good quality Piedmont Levee Forest, Rocky Bar and Shore (Mixed Bar Subtype), Rocky Bar and Shore (Water Willow Subtype), Floodplain Pool, and a small area of Piedmont Bottomland Forest (High Subtype). The portion of the Rocky River that runs through the site supports a set of riffles with a particularly diverse rare mussel fauna. The site forms part of the riparian corridor for the Deep River-Rocky River Aquatic Habitat.

Basic Mesic Forest (Piedmont Subtype) occurs on parts of the steep river bluffs. Given that no other basic communities are present at the site, and that no mafic rocks were seen, it appears it is related to more limited weathering of the clayey rock substrate, or perhaps to high deposits of alluvium on the slopes. The canopy is dominated by tulip tree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*), with a few American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), and hickories (*Carya* spp.). The canopy is mature, with trees averaging 12 inches in diameter. The understory includes American hornbeam (*Carpinus caroliniana*), flowering dogwood (*Benthamidia florida*), red maple (*Acer rubrum*), and eastern redbud (*Cercis canadensis*), as well as canopy species. Shrubs include some spicebush (*Lindera benzoin*) and painted buckeye (*Aesculus sylvatica*). The herb layer is moderate in density. Species include common jack-in-the-pulpit (*Arisaema triphyllum*), rattlesnake-fern (*Botrypus virginianus*), crested dwarf iris (*Iris cristata*), little brown jug (*Hexastylis arifolia*), wild comfrey (*Andersonglossum virginianum*), smoother sweet-cicely (*Osmorhiza longistylis*), lopseed (*Phryma leptostachya*), and common Solomon's-seal (*Polygonatum biflorum*).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the upper to mid slopes. The canopy is dominated by a mix of white oak (*Quercus alba*) with northern red oak (*Quercus rubra*) and some sweet pignut hickory (*Carya glabra*) and mockernut hickory (*Carya tomentosa*). Some patches contain lesser numbers of southern shagbark hickory (*Carya carolinae-septentrionalis*), shortleaf pine (*Pinus echinata*), tulip tree (*Liriodendron tulipifera*), and other species. Within the most mature patches the canopy averages 12–14 inches in diameter and trees up to 16–18 inches are present. The understory consists primarily of red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and American holly (*Ilex opaca*). Shrubs and herbs are sparse.

Floodplain Pools occur in overflow channels that likely are recently abandoned river channels. Deposition of alluvium has left portions blocked enough to hold water during the summer. The banks of the channels are steep and up to 6 feet high. The upstream pool was noted to be 15–25 feet wide and more than 100 feet long. The downstream pool was a little smaller. No plants are present in the pools. The pools are regularly flooded and likely scoured in larger floods and are probably not suitable for amphibian breeding. They may provide refugia for young fish.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on parts of the steep river bluffs. Limited areas are in good condition. The canopy is dominated by American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and some white oak (*Quercus alba*), with a few sweet pignut hickory (*Carya glabra*), mockernut hickory (*Carya tomentosa*), and tulip tree (*Liriodendron tulipifera*). The canopy is fairly mature with trees averaging 12–14 inches in diameter and large trees reaching 18 inches in diameter. The understory includes flowering dogwood (*Benthamidia florida*), red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), black tupelo (*Nyssa sylvatica*), and American holly (*Ilex opaca*). Shrubs and herbs are sparse, and some sections have moderate cover of Christmas fern (*Polystichum acrostichoides*).

Piedmont Alluvial Forest occurs in small to medium stream bottoms along a series of tributaries. The forest is dominated by tulip tree (*Liriodendron tulipifera*), with abundant red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), and some green ash (*Fraxinus pennsylvanica*), white oak (*Quercus alba*), black

walnut (*Juglans nigra*), and river birch (*Betula nigra*). Canopy trees average 12 inches in diameter in many parts; sometimes trees average 10 inches in diameter. The understory includes American hornbeam (*Carpinus caroliniana*), flowering dogwood (*Benthamidia florida*), American holly (*Ilex opaca*), winged elm (*Ulmus alata*), and canopy species. The shrub layer is open but includes some nonnative invasive autumn olive (*Elaeagnus umbellata*), painted buckeye (*Aesculus sylvatica*), and coral-berry (*Symphoricarpos orbiculatus*). The herb layer is moderate to dense. It is fairly diverse, but less so than the Piedmont Levee Forest. Species include (*Polystichum acrostichoides*), bedstraw (*Galium* spp.), wild geranium (*Geranium maculatum*), yellow crownbeard (*Verbesina occidentalis*), false nettle (*Boehmeria cylindrica*), bluegrass (*Poa* sp.), violet (*Viola* sp.), common bottlebrush grass (*Elymus hystrix*), common jack-in-the-pulpit (*Arisaema triphyllum*), common Solomon's-seal (*Polygonatum biflorum*), sensitive fern (*Onoclea sensibilis*), and white avens (*Geum canadense*). Nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is present in patches but is less extensive than in the river floodplain.

Piedmont Levee Forest (Typic Subtype) is found on lower parts of the floodplain of the Rocky River. The classification of this community is uncertain. The Rocky River has a fairly narrow floodplain, which is confined by bedrock along much of its length. Most floodplain communities in this situation are interpreted as Piedmont Alluvial Forest. However, in this stretch, there is a distinct differentiation of the floodplain into a lower part and a high terrace. The vegetation of the lower part appears to fit Piedmont Levee Forest better. The high terrace vegetation fits well into Piedmont Bottomland Forest (High Subtype) but is too small for an NCNHP element occurrence. The canopy is dominated by a mix of tulip tree (*Liriodendron tulipifera*), sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*), and green ash (*Fraxinus pennsylvanica*), with a variety of other trees that include American elm (*Ulmus americana*), sweet gum (*Liquidambar styraciflua*), swamp chestnut oak (*Quercus michauxii*), Shumard oak (*Quercus shumardii*), shagbark hickory (*Carya ovata*), and northern red oak (*Quercus rubra*). The canopy is quite mature over much of the community, with canopy trees averaging 14–16 inches in diameter and large trees 18–24 inches in diameter. The understory is dominated by box-elder (*Acer negundo*), American hornbeam (*Carpinus caroliniana*), American holly (*Ilex opaca*), and red maple (*Acer rubrum*). The nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*) were dense in some parts but have been cut and killed with herbicide. Spicebush (*Lindera benzoin*) is the most abundant native shrub. A variety of vines are present. The herb layer is generally dense. River oats (*Chasmanthium latifolium*), Virginia wild-rye (*Elymus virginicus*), nonnative invasive Japanese stilt grass (*Microstegium vimineum*), and wingstem (*Verbesina alternifolia*) dominate patches. A diversity of other herbs is present, including Canada wild-ginger (*Asarum canadense*), common jack-in-the-pulpit (*Arisaema triphyllum*), green dragon (*Arisaema dracontium*), Asa Gray sedge (*Carex grayi*), Virginia Knotweed (*Persicaria virginiana*), smoother sweet-cicely (*Osmorhiza longistylis*), Christmas fern (*Polystichum acrostichoides*), and lopseed (*Phryma leptostachya*). Some portions had heavy enough scouring from floodwaters that they have bare soil with few herbs.

Piedmont/Coastal Plain Heath Bluff occurs along Steep north-facing bluffs above the Rocky River. The canopy ranges from closed to somewhat open, and includes northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), sourwood (*Oxydendrum arboreum*), and sweet pignut hickory (*Carya glabra*). Canopy trees average 12–14 inches in diameter and reach 18 inches in diameter. Mountain laurel (*Kalmia latifolia*) forms a dense shrub layer. Herbs are sparse, but some Christmas fern (*Polystichum acrostichoides*), Virginia heartleaf (*Hexastylis virginica*), and other species are present.

Rocky Bar and Shore (Mixed Bar Subtype) occurs in patches along the river, on cobble bars and small areas of scoured bedrock, where severe flood disturbance prevents the development of forest. Also included is a broad area that appears to be a recently abandoned channel segment that still functions as an overflow channel. The upstream end of this channel appears to continue to receive intense scour and to have bar vegetation, but it is separated from the river by a band of Piedmont Levee Forest. The bar community vegetation is an irregular mix of short and battered trees, shrubs and shrub-sized trees, herbs, and bare sand

and rocks. Sycamore (*Platanus occidentalis*) is the most abundant tree species, but river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), and box-elder (*Acer negundo*) are abundant, and some American hornbeam (*Carpinus caroliniana*), American elm (*Ulmus americana*), and even Carolina broomwood (*Tilia americana* var. *caroliniana*) are present. Some nonnative invasive Chinese privet (*Ligustrum sinense*) and golden St. John's-wort (*Hypericum frondosum*) are present as shrubs. Herbs include Virginia wild-rye (*Elymus virginicus*), goldenrod (*Solidago* sp.), field garlic (*Allium vineale*), false nettle (*Boehmeria cylindrica*), and nonnative invasives Japanese stilt grass (*Microstegium vimineum*), and marsh dewflower (*Murdannia keisak*) along with a variety of unidentifiable species. Common water-willow (*Justicia americana*) is present in small patches in wetter areas.

Rocky Bar and Shore (Water Willow Subtype) occurs on cobble bars in the river. Common water-willow (*Justicia americana*) dominates in open to moderately dense stands and is generally the only plant species present in any abundance.

**PROTECTION:** The majority of this site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Levee Forest (Typic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Mixed Bar Subtype), Rocky Bar and Shore (Water Willow Subtype).

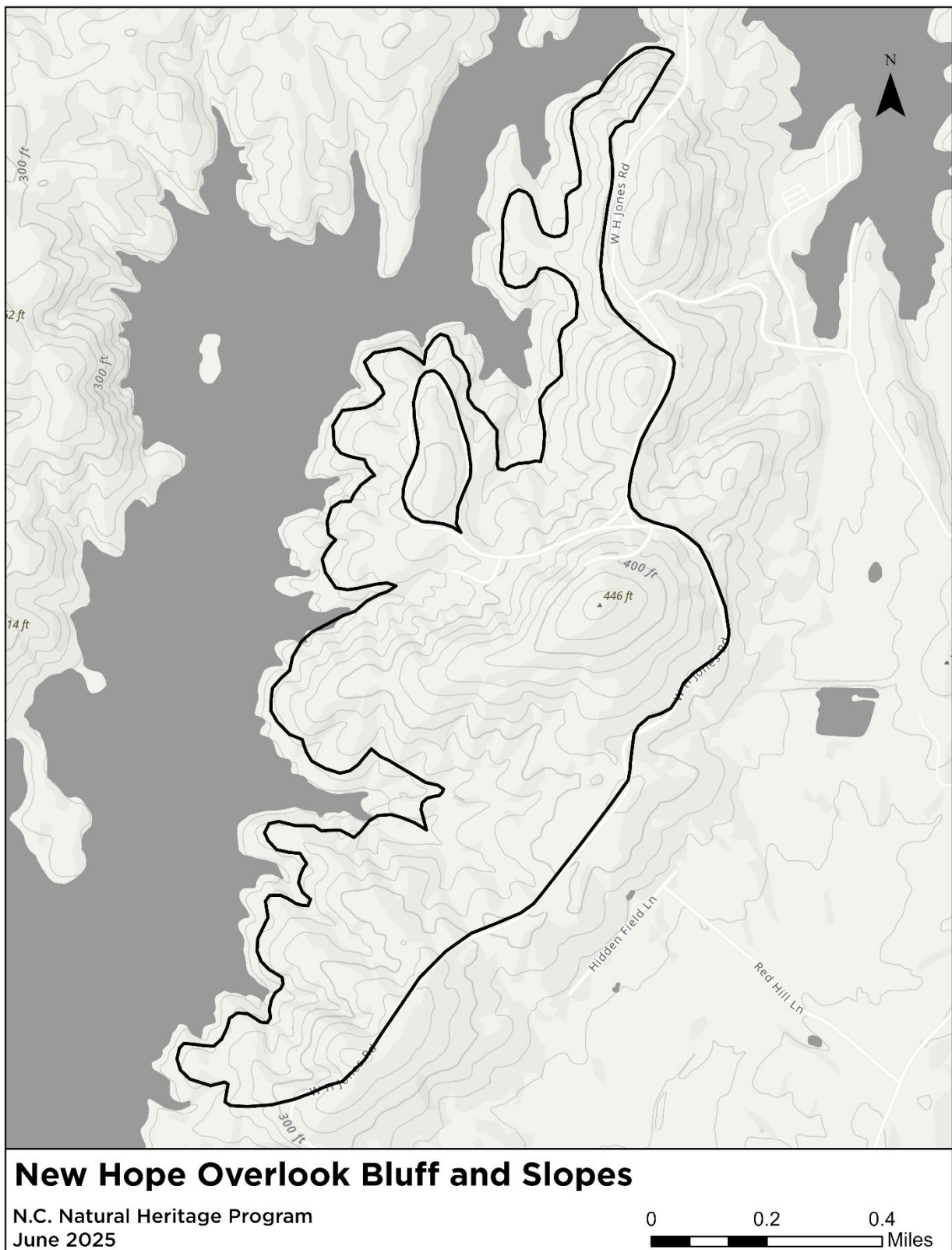
**RARE PLANTS:** None Observed.

**RARE ANIMALS:** Ten rare aquatic species have been documented in the adjacent Rocky River; the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and five additional species state listed as Endangered, Threatened, or Special Concern including brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vaughaniana*), creeper (*Strophitus undulatus*), Savannah Lilliput (*Toxolasma pullus*), and triangle floater (*Alasmidonta undulata*). Three species are Significantly Rare including, eastern creekshell (*Villosa delumbis*), Septima's clubtail (*Gomphurus septima*) and historically, rapids clubtail (*Phanogomphus quadricolor*). One Watch List species, spine-crowned clubtail (*Hylogomphus abbreviatus*) has been observed.

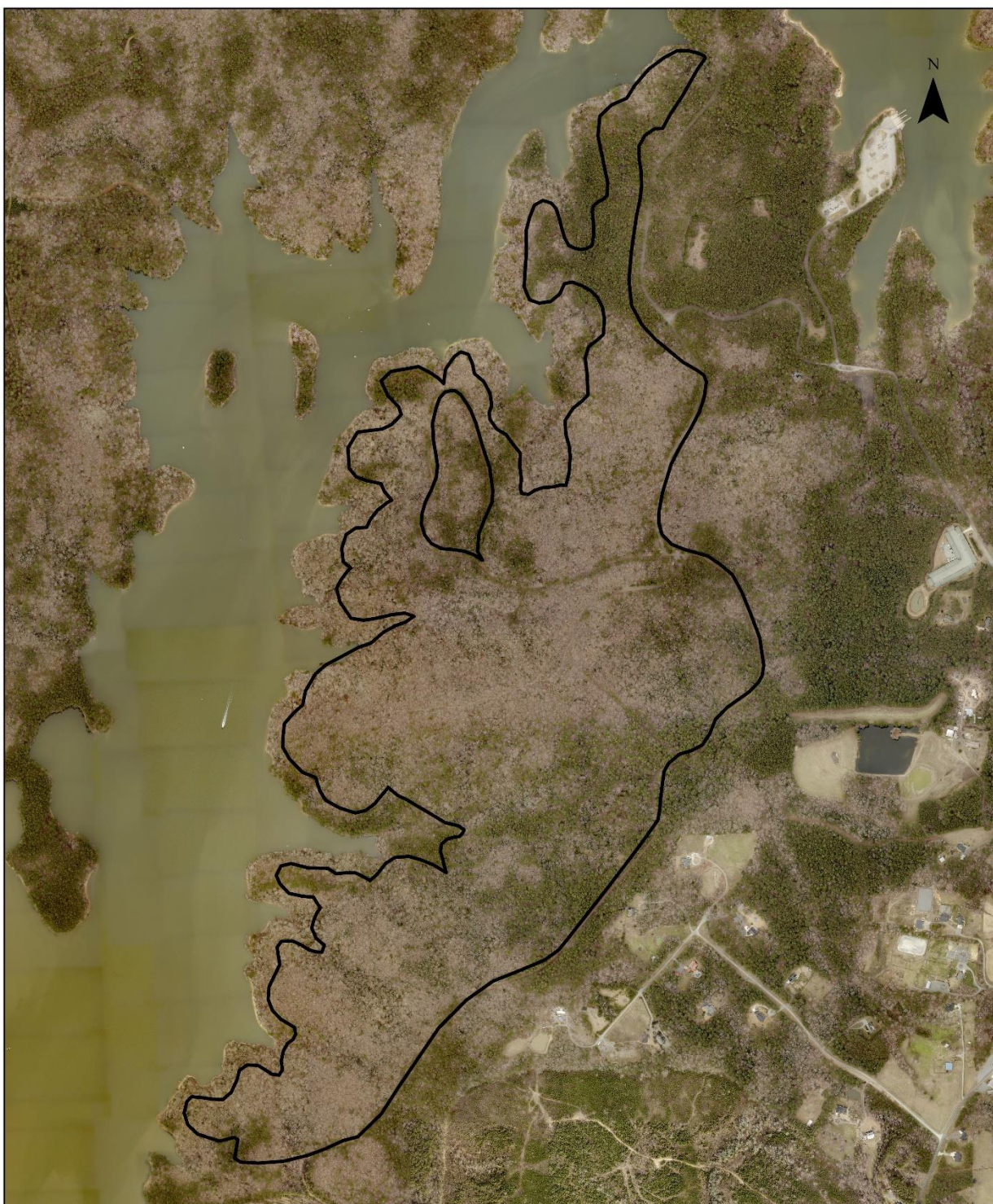
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## **New Hope Overlook Bluff and Slopes**

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles

## Chatham County Natural Area Inventory

### New Hope Overlook Bluff and Slopes

<b>Site Significance:</b> General	<b>Size:</b> 406 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** New Hope Overlook Bluff and Slopes is of General significance as it contains a considerable extent of mature upland hardwood forests. This includes good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and Piedmont/Coastal Plain Heath Bluff. These characteristic Piedmont natural communities provide essential habitat for both common and rare species that live along Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** Gum Springs Church Road Slopes is 0.8 miles west across Jordan Lake. Poes Ridge/ Dam Road Upland Forests is 0.5 miles southwest.

**SITE DESCRIPTION:** This site occurs in the geologic Hyco Formation near the boundary of the Carolina Terrane and the Deep River Triassic Basin along Jordan Lake. The slopes of the site are largely west facing and include a prominent east-west ridge. Parts of the natural area and associated communities are bisected by north-south roads and a state recreation area and campground. The forests are generally mature hardwoods or successional pine stands. The majority of the site contains Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) of good quality. There are some small patches of additional communities, such as a small Piedmont/Coastal Plain Heath Bluff and Dry Oak—Hickory Forest (Piedmont Subtype) on the highest ridges. A few hiking trails loop through much of the site.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs along the two highest summits in the natural area. White oak (*Quercus alba*) is dominant in the canopy, and post oak (*Quercus stellata*) and Spanish oak (*Quercus falcata*) are frequent. Interestingly, on the northern knoll, shortleaf pine (*Pinus echinata*) almost entirely encircles the community in the canopy. This community is in good-excellent condition, with a mature canopy averaging 18–20 inches in diameter. The largest tree measures 32 inches in diameter. The understory and shrub layers are sparse with common American holly (*Ilex opaca*) and scattered stems of sourwood (*Oxydendrum arboreum*). A few large (average 15 inches in diameter) eastern red cedar (*Juniperus virginiana*) were observed in the understory. Heath species, particularly early lowbush blueberry (*Vaccinium pallidum*) and black huckleberry (*Gaylussacia baccata*) appear in patches in the sparse herbaceous layer. Sections dominated by muscadine grape (*Vitis rotundifolia*) are common as well. These knolls are notably rockier than the slopes surrounding them. A few stems of invasive nonnative autumn olive (*Elaeagnus umbellata*) were noted in this community.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the majority of the slopes and lower ridges at the site. White oak (*Quercus alba*) is dominant. Northern red oak (*Quercus rubra*) and mockernut hickory (*Carya tomentosa*) are common and scattered throughout the canopy. Some loblolly pine (*Pinus taeda*) is present in this community, but the most extensive pine stands are not included in the mapping of this community. The canopy is mature with trees averaging 16–18 inches in diameter and large trees regularly 25–27 inches in diameter. The understory is not dense, most commonly consisting of patches of American holly (*Ilex opaca*) and younger canopy species such as white oak and mockernut hickory. The understory contains small patches of eastern hop-hornbeam (*Ostrya virginiana*), but the understory is otherwise diverse. The shrub layer is sparse to mostly nonexistent. Herbaceous species are also sparse. Patches of early lowbush blueberry (*Vaccinium pallidum*), muscadine grape (*Vitis rotundifolia*), and little brown jug (*Hexastylis arifolia*) are the most common species in the lower strata.





Piedmont/Coastal Plain Heath Bluff in New Hope Overlook Bluff and Slopes Natural Area, with Green Mountain Laurel (*Kalmia latifolia*) Shrubs Downslope. Photo by: Merry Conlin.

Piedmont/Coastal Plain Heath Bluff occurs along one northwest-facing slope in the northern portion of the natural area. White oak (*Quercus alba*) is dominant in the canopy. Some northern red oak (*Quercus rubra*) and tulip tree (*Liriodendron tulipifera*) appear in this stratum as well. The understory contains abundant American beech (*Fagus grandifolia*) and American holly (*Ilex opaca*). Mountain laurel (*Kalmia latifolia*) is dominant in the shrub layer. Some Florida maple (*Acer floridanum*), painted buckeye (*Aesculus sylvatica*), and flowering dogwood (*Benthamidia florida*) are present as well. The herbaceous layer is particularly sparse with scattered stems of early lowbush blueberry (*Vaccinium pallidum*), little brown jug (*Hexastylis arifolia*), and sedges (*Carex* sp.). The canopy is mature with the oak species averaging 20–22 inches in diameter. A few stems of invasive nonnative autumn olive (*Elaeagnus umbellata*) are present in the shrub layer. This community is only present as a small patch at this site, it was likely much more extensive before the flooding of Jordan Lake (LeGrand 1999).

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area at the Jordan Lake State Recreation Area.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Piedmont/Coastal Plain Heath Bluff.

**RARE PLANTS:** None observed in 2024 surveys. State Endangered Veined Skullcap (*Scutellaria nervosa*) is historical at the site.

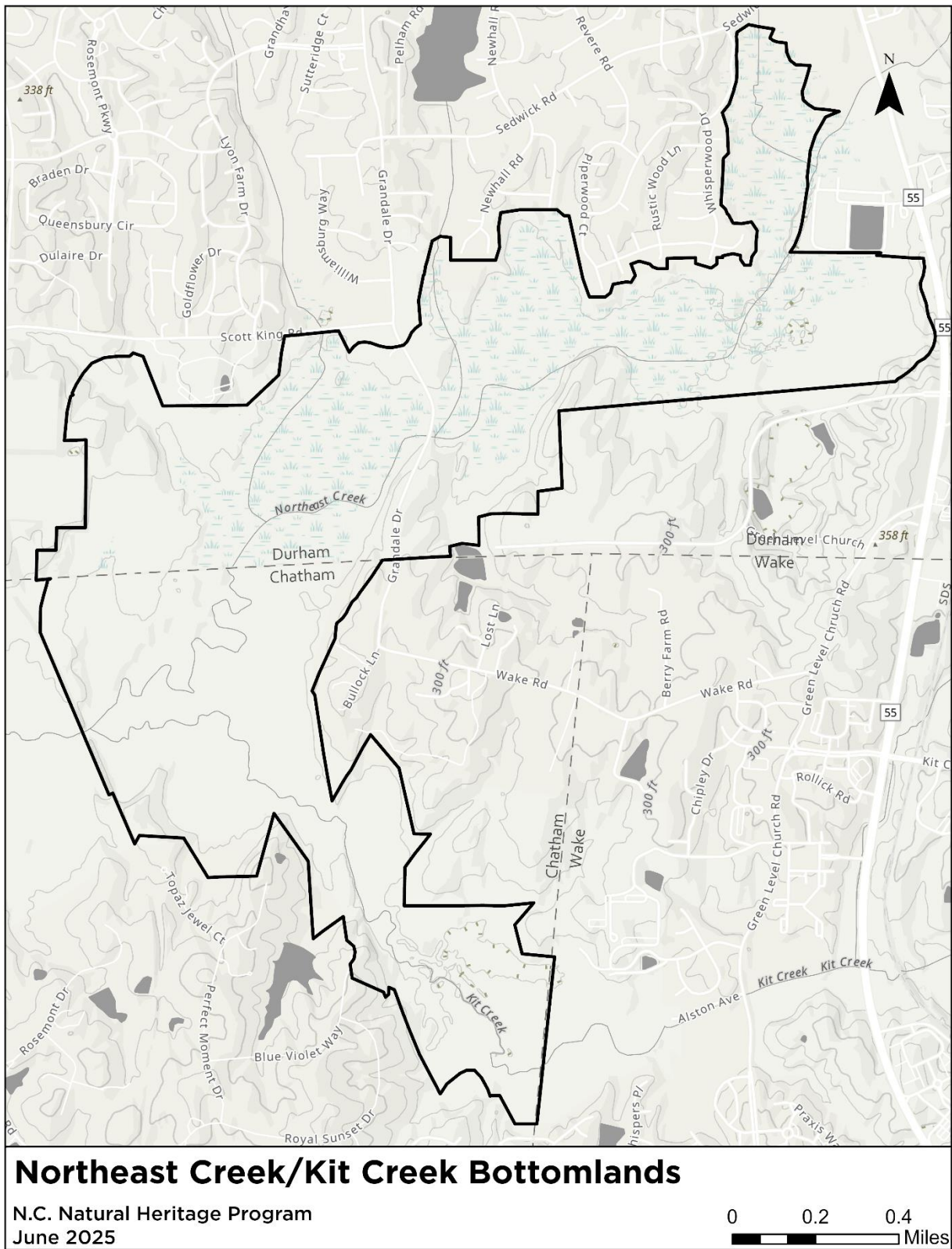
**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*) and Watch List smooth earthsnake (*Virginia valeriae*).

**REFERENCES:**

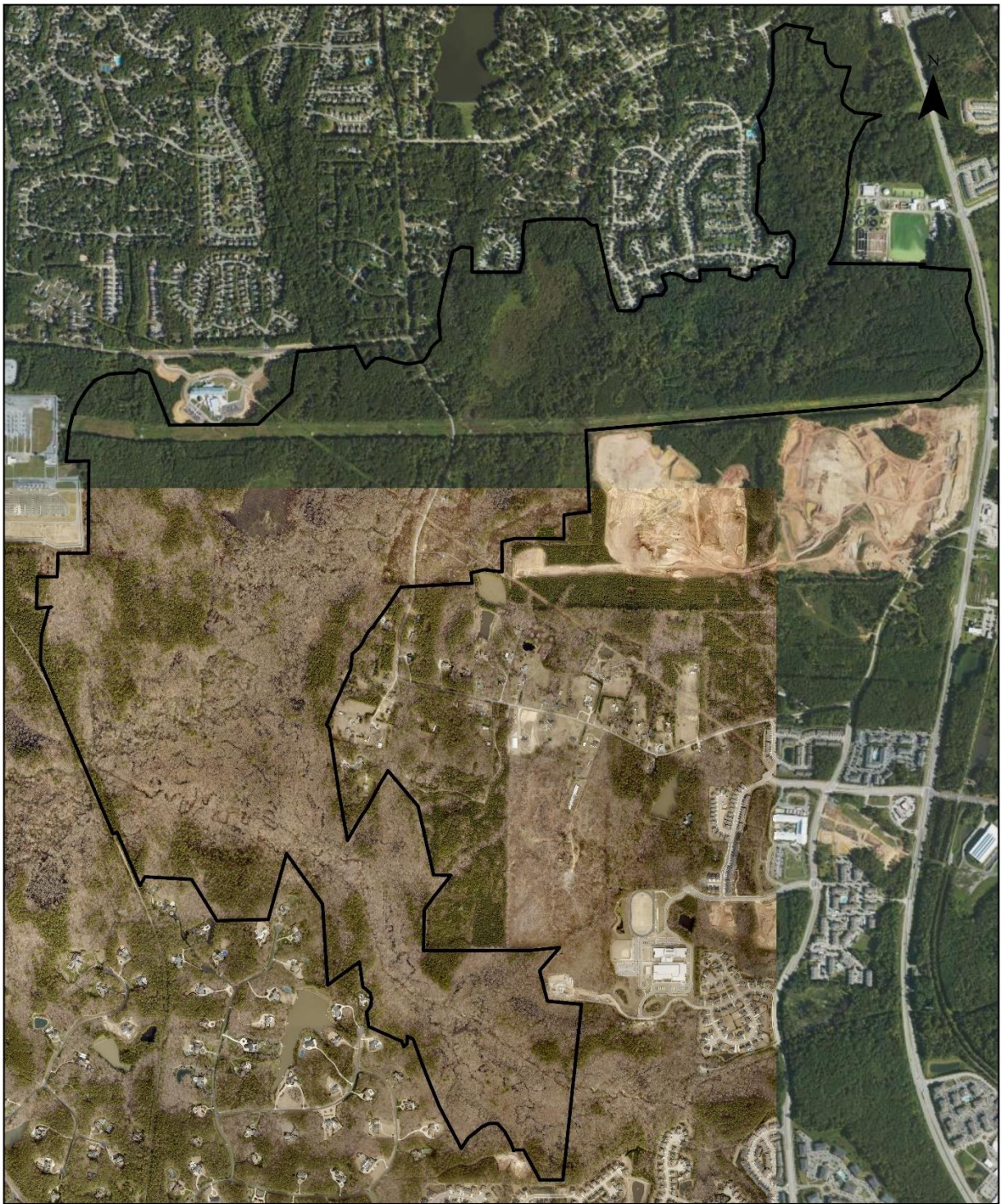
Conlin, M.R. 2024. Site Survey Report: New Hope Overlook Bluff and Slopes Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Northeast Creek/Kit Creek Bottomlands

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Northeast Creek/Kit Creek Bottomlands

<b>Site Significance:</b> High	<b>Size:</b> 1,068 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Private, US Army Corps of Engineers
<b>Collective Value:</b> High (C3)	<b>Chatham Quadrangle:</b> Green Level

**SIGNIFICANT FEATURES:** Northeast Creek/Kit Creek Bottomlands is of High significance for its support of State Threatened Indian Physic (*Gillenia stipulata*). Additionally, this site supports eight elements of biodiversity, including six natural communities, Significantly Rare Douglass's bittercress (*Cardamine douglassii*), and a waterbird colony. Several of the natural communities, including good to excellent examples of Piedmont Swamp Forest and Piedmont Bottomland Forest (Typic Low Subtype), are rare in the state. Both of these floodplain communities are among the best examples in the region for these rare communities.

**LANDSCAPE RELATIONSHIPS:** Northeast Creek/Panther Creek Dikes and Bottomlands is one mile to the southwest.

**SITE DESCRIPTION:** This site consists primarily of broad floodplains, and in Chatham County, Northeast Creek meanders with many anabranching channels. Kit Creek remains heavily entrenched throughout this reach upstream of Northeast Creek (in the west). The floodplain is intact with a mature canopy and dynamic understory exposed to frequent flooding and sedimentation. Most of the site is Piedmont Bottomland Forest (Typic Low Subtype) dominated by cherrybark oak and swamp chestnut oak. There are some Piedmont Swamp Forest and extensive Piedmont/Mountain Semipermanent Impoundment communities in beaver ponds. The uplands include some good quality Mesic Mixed Hardwood Forest and small patches of Basic Mesic Forest in the southern portion. Two rare plants are present in the site: Douglass's bittercress (*Cardamine douglassii*) and Indian physic (*Gillenia stipulata*). Unusual and Watch List plants found at the site include Lewis's heartleaf (*Hexastylis lewisii*), butterweed (*Packera glabella*), and leatherwood (*Dirca palustris*). A waterbird colony is also present. The site and floodplain are more extensive to the north in neighboring Durham County. Only the elements encountered in Chatham County are described here.

Basic Mesic Forest (Piedmont Subtype) occurs in small patches on the lower slopes and a gentle floodplain ridge. The canopy contains abundant tulip tree (*Liriodendron tulipifera*), bitter-nut hickory (*Carya cordiformis*), sweet gum (*Liquidambar styraciflua*), and some American beech (*Fagus grandifolia*). The understory contains some Florida maple (*Acer floridanum*), and eastern redbud (*Cercis canadensis*). Interestingly, some cucumber magnolia (*Magnolia acuminata*) has been reported from this site (LeGrand 1999). Shrubs are fairly sparse and include painted buckeye (*Aesculus sylvatica*), several viburnums, and Watch List leatherwood (*Dirca palustris*). Nonnative invasive autumn olive (*Elaeagnus umbellata*) is present but not overly dense. The herb layer is sparse. During the early spring period of this survey, only Christmas fern (*Polystichum acrostichoides*) is common.



Flower of Leatherwood (*Dirca palustris*) at Northeast Creek/Kit Creek Bottomlands. Photo by: Merry Conlin.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the slight uplands of the larger Northeast Creek floodplain but only exists marginally in the portion of the site surveyed here. The canopy has abundant American beech (*Fagus grandifolia*), shag-bark hickory (*Carya ovata*), white oak (*Quercus alba*), and loblolly pine (*Pinus taeda*). Canopy trees average of 13 inches in diameter and the largest American beech was observed at 37.2 inches in diameter. The understory and shrub layer are sparse, with young American beech the most abundant. White oak, American holly (*Ilex opaca*), and eastern red cedar (*Juniperus virginiana*) are common as well. The herb layer is also sparse with sporadic clusters of slender spikegrass (*Chasmanthium laxum*), downy rattlesnake-plantain (*Goodyera pubescens*), partridge-berry (*Mitchella repens*), American strawberry-bush (*Euonymus americanus*), and atamasco lily (*Zephyranthes atamasco*). Some invasive species are here and inside the loblolly pine stands, most notably Japanese honeysuckle (*Lonicera japonica*).



Piedmont Bottomland Forest (Typic Low Subtype) with a Carpet of Moss in Northeast Creek/Kit Creek Bottomlands. Photo by: Merry Conlin.

Piedmont Bottomland Forest (Typic Low Subtype) occurs broadly over the floodplain and is intermixed with localized wet pools and branches of both creeks. The canopy is dominated by oaks. Cherry-bark oak (*Quercus pagoda*) and swamp chestnut oak (*Quercus michauxii*) are the most abundant. Tulip tree (*Liriodendron tulipifera*) is infrequent in much of the survey area, only showing up as a more significant canopy component in the southwest portion near Kit Creek. Very few individuals of sycamore (*Platanus occidentalis*) appear in this area as well. Other incidental canopy species are loblolly pine (*Pinus taeda*), willow oak (*Quercus phellos*), and Shumard oak (*Quercus shumardii*), and, in the transition zones, American beech



(*Fagus grandifolia*) and white oak (*Quercus alba*). This community is mature in this section. The oak species average 27 inches in diameter and additional species are commonly 16–18 inches in diameter. The largest individual observed is a 66-inch diameter cherry-bark oak. The understory is variable in composition but overall open and includes frequent winged elm (*Ulmus alata*), American holly (*Ilex opaca*), red maple (*Acer rubrum*), Florida maple (*Acer floridanum*), American beech (*Fagus grandifolia*), and some occasional pawpaw (*Asimina triloba*). The shrub layer is also variable but predominately sparse, ranging to moderately dense. At several locations painted buckeye (*Aesculus sylvatica*) is dominant. Common species include spicebush (*Lindera benzoin*) and nonnative invasive Chinese privet (*Ligustrum sinense*). In some sections greenbriers (*Smilax* spp.) are thick, reaching heights of the shrub layer. Along one reach of Kit Creek, Watch List leatherwood (*Dirca palustris*) is frequent and fairly abundant. The herb layer is sparse. The most common genus is *Carex*, however it was too early in the year for fruit and identification. Additional species include rattlesnake-fern (*Botrypus virginianus*), river oats (*Chasmanthium latifolium*), kidney-leaved buttercup (*Ranunculus abortivus*), dock (*Rumex* sp.), and common starwort (*Stellaria media*). Around Northeast Creek several large (approx. 400sq meter) sections of the floodplain contain a carpet of toothed plagiomnium moss (*Plagiomnium* cf. *cuspidatum*) with abundant spring ephemerals dimpled fawn-lily (*Erythronium umbilicatum*), narrow-leaved spring beauty (*Claytonia virginica*), and the less frequent windflower (*Thalictrum thalictroides*). Due to the early season survey, many species (and potential invasives) were likely not detected. There were signs of recent beaver activity along Kit Creek and impoundments are known from further up in the floodplain.

**PROTECTION:** A portion of this natural area is protected in separate Natural Heritage Program Registered Heritage Areas. One of these should be expanded to include intervening natural communities of high quality.

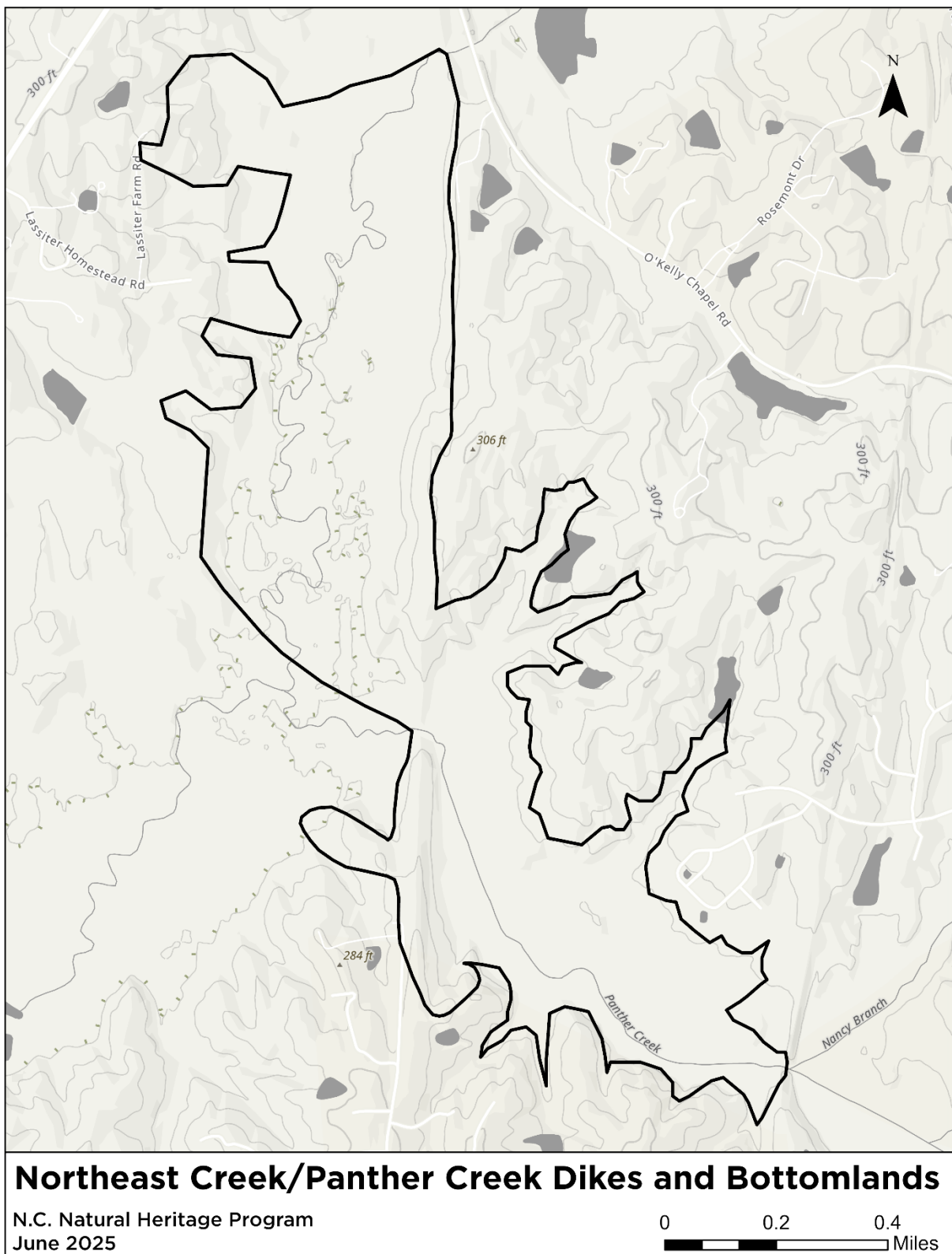
**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), Piedmont Swamp Forest, Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype), Piedmont/Mountain Semipermanent Impoundment (Shrub Subtype).

**RARE PLANTS:** Significantly Rare Douglass’s bittercress (*Cardamine douglassii*), and Watch List Lewis’s heartleaf (*Hexastylis lewisii*) and leatherwood (*Dirca palustris*).

**RARE ANIMALS:** None observed.

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Northeast Creek/ Kit Creek Bottomlands Natural Area, Chatham Tract. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- LeGrand, H. E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Chatham County Natural Area Inventory

### Northeast Creek/ Panther Creek Dikes and Bottomlands

<b>Site Significance:</b> Moderate	<b>Size:</b> 499 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> Moderate (R4)	<b>Quadrangle:</b> Green Level

**SIGNIFICANT FEATURES:** Northeast Creek/Panther Creek Dikes and Bottomlands is of Moderate significance for its support of the rare Piedmont Bottomland Forest (High Subtype) natural community. This occurrence is one of the top ten known in the state. In addition, this site hosts three more natural communities, the rare Piedmont Bottomland Forest (Low Subtype), and regionally uncommon Dry Basic Oak—Hickory Forest, and Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Northeast Creek/Kit Creek Bottomlands is one mile to the northeast.

**SITE DESCRIPTION:** The site contains a good example of a diabase dike, an uncommon geomorphic feature that is otherwise interbedded in sandstones of the Deep River Triassic Basin. This diabase dike is visible at the surface as spheroidal boulders, round and dark rocks up to one foot across. The dike is a long linear feature broken only where Panther Creek has cut across. Soils that weather from diabase rock tend to support a more basic affiliated flora. There are good examples of Basic Oak—Hickory Forest on the dikes, and the southern portion contains a small example of Basic Mesic Forest. The floodplain of Northeast Creek contains a good to excellent example of Piedmont/Mountain Bottomland Forest, along with scattered Floodplain Pools. The Watch List leatherwood (*Dirca palustris*) and eastern wahoo (*Euonymus atropurpureus*) are present in the site as well.

Dry Basic Oak—Hickory Forest occurs along the diabase dike and upper slopes. The canopy features white oak, post oak, black oak, Florida maple, and pignut hickory, among others. Parts of the canopy are mature with trees in the 9–12 inches in diameter range. Some eastern red cedar (*Juniperus virginiana*), eastern redbud (*Cercis canadensis*), and eastern hop-hornbeam (*Ostrya virginiana*) are in the understory. Downy arrowwood (*Viburnum rafinesqueanum*) is abundant in the shrub layer. Scattered individuals of cucumber magnolia (*Magnolia acuminata*) are present. The herb layer is poorly developed.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs along the diabase dike and lower slopes. Diabase rocks up to 1 foot across are present on the surface. White oak (*Quercus alba*) is the dominant canopy tree, and Florida maple (*Acer floridanum*) is also abundant. Shag-bark hickory (*Carya ovata*) is widespread. The canopy is fairly young, averaging 9–10 inches in diameter. The understory is well developed and eastern hop-hornbeam (*Ostrya virginiana*) is abundant. The shrub layer is dominated by viburnums, especially downy arrowwood (*Viburnum rafinesqueanum*). Also in the shrub layer are bigleaf snowbell (*Styrax grandifolius*) and both pawpaw (*Asimina triloba*) and dwarf pawpaw (*Asimina parviflora*). Few herbaceous species were noted.

Piedmont Bottomland Forest of both the Low and High Subtype occur just east of the creek with the subtypes corresponding to the evident inundation periods. This is a mature hardwood stand dominated by cherry-bark oak (*Quercus pagoda*); American beech (*Fagus grandifolia*), Shumard oak (*Quercus shumardii*), northern red oak (*Quercus rubra*), swamp chestnut oak (*Quercus michauxii*), willow oak (*Quercus phellos*), and sweet gum (*Liquidambar styraciflua*) are also in the canopy. A large stand of giant cane (*Arundinaria gigantea*) is present east of the creek, but there are few if any Floodplain Pools. West of the creek are many meanders, old cut-off meanders that are now Floodplain Pools, and creeks that flow east into Northeast Creek. Additional canopy trees here include Florida maple (*Acer floridanum*) and tulip tree

(*Liriodendron tulipifera*). A few overcup oak (*Quercus lyrata*) occur around the margins of the pools. The floodplain is roughly 0.3 mile wide, and about 1.0 mile long here, based on aerial photo measurements. Nearly all Floodplain Pools are on the west side of Northeast Creek, as are nearly all creeks and meanders. Northeast Creek appears to be migrating eastward. This is a mature forest with very little disturbance observed.

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry Basic Oak—Hickory Forest, Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Piedmont Bottomland Forest (High Subtype), Piedmont Bottomland Forest (Typic Low Subtype).

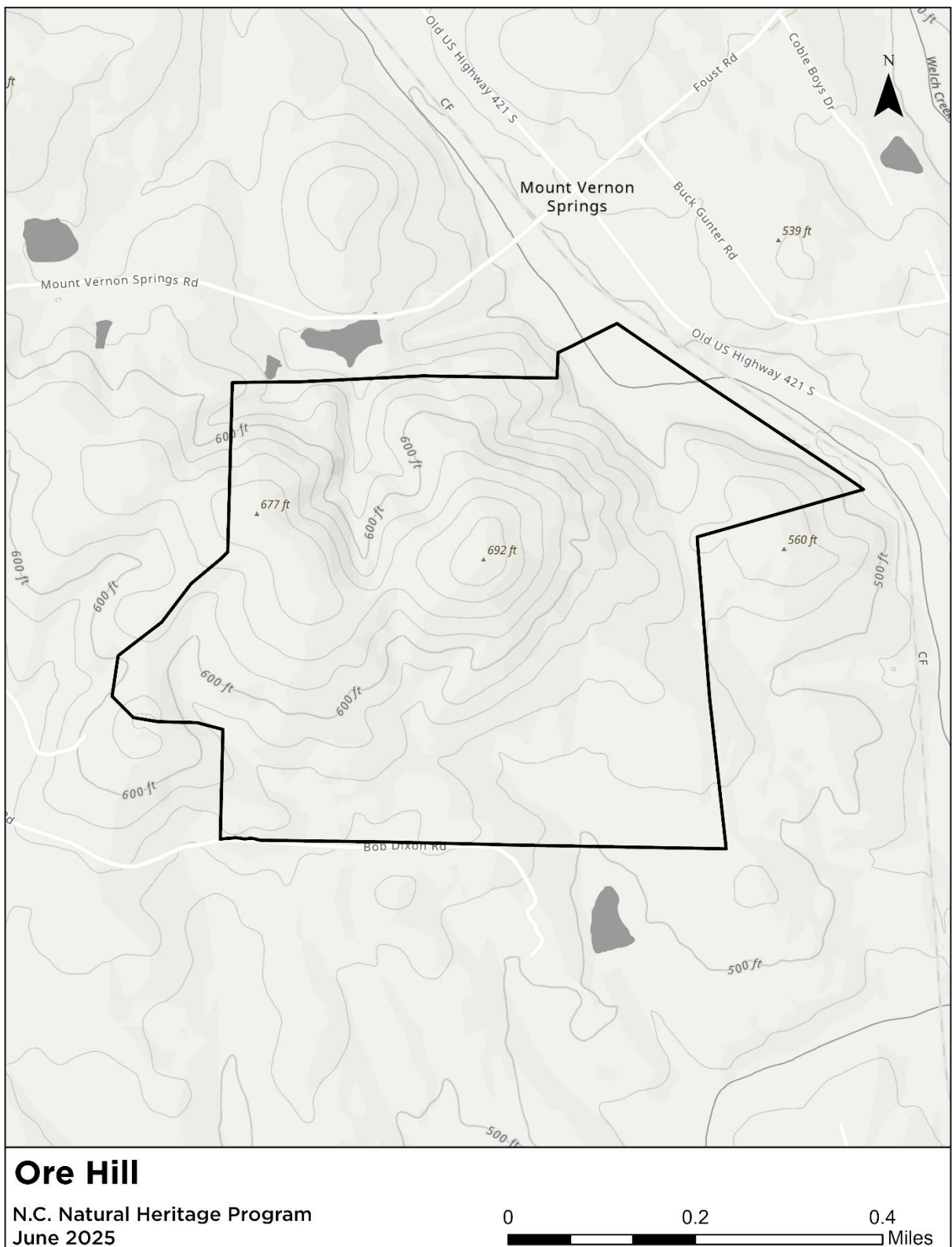
**RARE PLANTS:** Watch List leatherwood (*Dirca palustris*) and eastern wahoo (*Euonymus atropurpureus*).

**RARE ANIMALS:** A waterbird colony is present.

#### **REFERENCES:**

LeGrand, H.E. and S.M. Pohlman. 2006. Northeast Creek/Panther Creek Dikes and Bottomlands Natural Area, Visit I and Visit II. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Chatham County Natural Area Inventory

### Ore Hill

<b>Site Significance:</b> Exceptional	<b>Size:</b> 185 acres
<b>Representational Value:</b> Exceptional (R1)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Siler City

**SIGNIFICANT FEATURES:** Ore Hill natural area is of Exceptional significance due to its support of the critically imperiled Xeric Hardpan Forest (Acidic Hardpan Subtype) natural community. This occurrence is one of the best examples known in the state. Additionally, this site supports four more natural communities and sensitive animal species.

**LANDSCAPE RELATIONSHIPS:** The Deep River-Rocky River Aquatic Habitat, along Tick Creek, begins 1.2 miles to the east, and Evans Creek, which borders Ore Hill, is a tributary to it. The nearest terrestrial natural area is more than 3.5 miles away.

**SITE DESCRIPTION:** This site consists of a distinctive monadnock knob and surrounding flatter lands. The rocky peaks and slopes support a Piedmont Monadnock Forest community which is relatively mature and in good condition. A flat area in the lower part of the site has a good example of Xeric Hardpan Forest (Acidic Subtype). Other natural communities present include Piedmont Headwater Stream Forest, Low Elevation Seep, and Dry-Mesic Oak—Hickory Forest. Ore Hill contains numerous veins with iron ore minerals and has been the site of iron mining back into colonial times. Pits, shafts, and spoil piles are scattered over the knob, and the ruins of an old furnace are present. Mining activity was limited to a small part of the land area and ceased many decades ago. The forests on much of the site are unusually mature for the Piedmont and of natural composition.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on lower slopes of the knob and on the creek bluffs. The canopy is dominated by white oak (*Quercus alba*), with abundant northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and some chestnut oak (*Quercus montana*), shortleaf pine (*Pinus echinata*), and other species. Some patches have abundant sweet gum (*Liquidambar styraciflua*) or tulip tree (*Liriodendron tulipifera*) in the canopy. The condition varies, but there are some areas of mature forest with trees averaging 12–14 or even 16 inches in diameter. The understory includes sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), flowering dogwood (*Benthamidia florida*), and other species. The shrub and herb layers are generally sparse.

Low Elevation Seep (Typic Subtype) occurs in a seepage area in the bottom of a small headwater creek. The canopy is similar to the Piedmont Headwater Stream Forest in which it is embedded, with white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*) dominating. The canopy is generally mature, with trees averaging 12 inches in diameter. There is a moderately dense shrub layer, including black highbush blueberry (*Vaccinium fuscatum*), dangleberry (*Gaylussacia frondosa*), horse-sugar (*Symplocos tinctoria*), and possum-haw viburnum (*Viburnum nudum*). Herbs are fairly dense, with cinnamon fern (*Osmundastrum cinnamomeum*), royal fern (*Osmunda spectabilis*), netted chainfern (*Lorinseria areolata*), and New York fern (*Amauropelta noveboracensis*) dominant. Also present are Virginia chainfern (*Anchistea virginica*) and fowl manna-grass (*Glyceria striata*).

Piedmont Headwater Stream Forest (Typic Subtype) is found in narrow floodplains along two intermittent creeks. White oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*) make up most of the canopy, and some willow oak (*Quercus*

*phellos*) and American beech (*Fagus grandifolia*) are present. The canopy is fairly mature, with trees averaging 12 inches in diameter. The understory consists mostly of the same species. There are few shrubs. The herb layer is moderate to dense. New York fern (*Amauropelta noveboracensis*) dominates patches, and some cinnamon fern (*Osmundastrum cinnamomeum*) is present.

Piedmont Monadnock Forest (Typic Subtype) occurs along the rocky knobs, extending down all sides. The canopy is dominated by chestnut oak (*Quercus montana*), with small numbers of shortleaf pine (*Pinus echinata*) and white oak (*Quercus alba*). Most of the community is relatively mature, with canopy trees averaging 12–14 inches in diameter. The understory consists mainly of sourwood (*Oxydendrum arboreum*). The shrub layer is generally sparse and includes early lowbush blueberry (*Vaccinium pallidum*), dangleberry (*Gaylussacia frondosa*), deerberry (*Vaccinium stamineum*), and other species. Vines, including muscadine grape (*Vitis rotundifolia*) and common greenbrier (*Smilax rotundifolia*), are locally abundant. Herbaceous species are sparse.

Xeric Hardpan Forest (Acidic Hardpan Subtype) occurs on a nearly flat ridge south of the knob. The canopy is dominated by post oak (*Quercus stellata*), with a few shortleaf pine (*Pinus echinata*) and other trees. Canopy trees are old, with many 12–16 inches in diameter. The open understory includes eastern red cedar (*Juniperus virginiana*), winged elm (*Ulmus alata*), persimmon (*Diospyros virginiana*), and some blackjack oak (*Quercus marilandica*). The shrub layer is variable, but there is substantial deerberry (*Vaccinium stamineum*) and small black blueberry (*Vaccinium tenellum*). Little-headed nutrush (*Scleria oligantha*) is common in the herb layer.

**PROTECTION:** This majority of this site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Low Elevation Seep (Typic Subtype), Piedmont Headwater Stream Forest (Typic Subtype), Piedmont Monadnock Forest (Typic Subtype), Xeric Hardpan Forest (Acidic Hardpan Subtype).

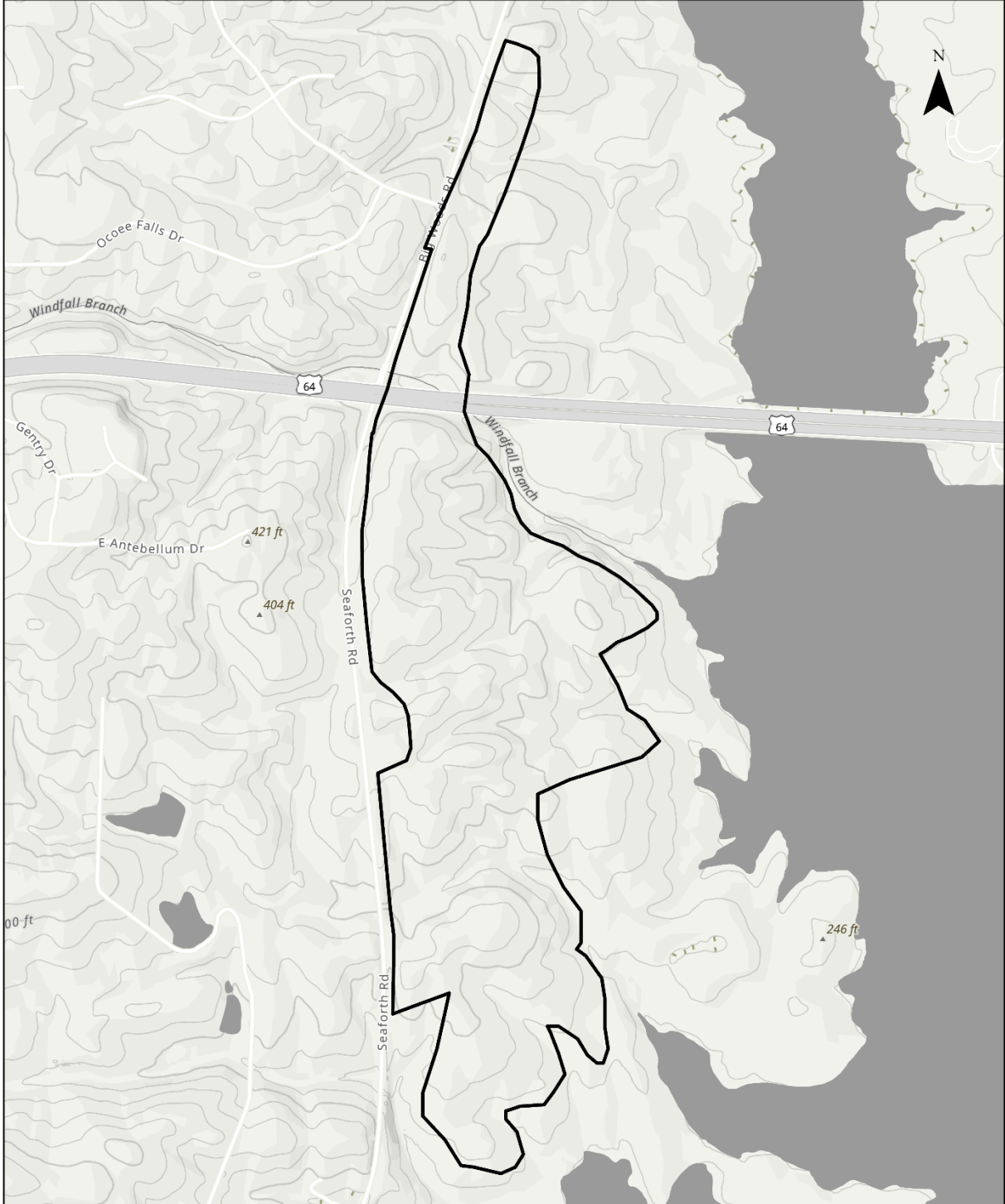
**RARE PLANTS:** None observed.

**RARE ANIMALS:** Sensitive species are present.

#### **REFERENCES:**

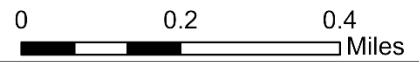
Schafale, M.P. and A.E. (Schwarz) Weakley. 2012. Site Survey Report: Ore Hill Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.





## Parkers Creek Ridges

N.C. Natural Heritage Program  
June 2025





## Parkers Creek Ridges

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Parkers Creek Ridges

<b>Site Significance:</b> General	<b>Size:</b> 227 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> General (R5)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Parkers Creek Ridges is of General significance as it contains relatively mature upland hardwood forests. This includes good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), and Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype). These characteristic Piedmont natural communities provide essential habitat for both common and rare species that live along Jordan Lake.

**LANDSCAPE RELATIONSHIPS:** Big Woods Road Upland Forests is 0.5 miles northwest. Big Woods Road Slopes is 1.5 miles north along the lake.



Parkers Creek Ridges Natural Area, Dry Oak—Hickory Forest with Layer of Shrubby Black Huckleberry (*Gaylussacia baccata*) on the Summit. Photo by: Merry Conlin.



**SITE DESCRIPTION:** This natural area consists of upland slopes, short ridges, and ravines on western side of Jordan Lake along the eastern side of the Deep River Triassic Basin. Windfall Branch drains the northern portion. The varied slope aspects from the dissected terrain create a diversity of microclimates ranging from relatively moist to relatively dry. The slightly drier ridges contain mature Dry Oak—Hickory Forest that grades to Dry-Mesic Oak—Hickory Forest on the lower slopes. North of US-64 are several small patches of Dry-Mesic Basic Oak—Hickory Forest. Several acres of successional forest and loblolly pine stands are embedded within the natural area. The communities in this site are in good condition, with some invasion from the successional areas. This appears to be a popular game land with numerous trails and visitors encountered.

Dry Oak—Hickory Forest (Piedmont Subtype) is found on the ridges and uplands of the site where not heavily altered. The canopy is dominated by white oak (*Quercus alba*). Mockernut hickory (*Carya tomentosa*) is frequent, with scattered Spanish oak (*Quercus falcata*) and scarlet oak (*Quercus coccinea*) present as well. Loblolly pine (*Pinus taeda*) and shortleaf pine (*Pinus echinata*) are scattered in this community. Those areas with the dense successional loblolly stands were removed from maps of this community. This community is only moderately drier than the surrounding slopes, for example, no post oak (*Quercus stellata*) was noted during this survey but was recorded in prior surveys (LeGrand 1998). The canopy averages 18–20 inches in diameter. Some of the largest oaks measure 25 inches in diameter. The understory contains abundant American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), and regenerating hickories (*Carya* spp.). The shrub layer is sparse with occasional farkleberry (*Vaccinium arboreum*), deciduous holly (*Ilex decidua*), and smooth black-haw (*Viburnum prunifolium*). A few ridges have dense patches of dangleberry (*Gaylussacia frondosa*) and one summit contains a patch of the locally uncommon black huckleberry (*Gaylussacia baccata*). The herb layer is also sparse. A few dense patches are dominated by muscadine grape (*Vitis rotundifolia*), early lowbush blueberry (*Vaccinium pallidum*) and nutrush (*Scleria* sp.).

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs in small patches on the upland slopes. The canopy is dominated by white oak (*Quercus alba*). Common canopy species also include sweet pignut hickory (*Carya glabra*) and northern red oak (*Quercus rubra*). A few southern shagbark hickory (*Carya carolinae-septentrionalis*) are present as well. This community is in fair-good condition with a canopy average of 14–16 inches and larger oaks measuring 25 inches in diameter. The understory contains some eastern redbud (*Cercis canadensis*), frequent eastern red cedar (*Juniperus virginiana*), eastern hop-hornbeam (*Ostrya virginiana*), and American holly (*Ilex opaca*). The shrub layer is sparse with some painted buckeye (*Aesculus sylvatica*) and white ash (*Fraxinus americana*). The herbaceous layer is likewise sparse, with patches of muscadine grape (*Vitis rotundifolia*) and Christmas fern (*Polystichum acrostichoides*). This survey did not reveal a strongly basic-affiliated flora, but the scattered indicator species in the understory suggested the classification remain.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) is the main community found at this site found on the upland slopes. The canopy is dominated by white oak (*Quercus alba*) with some scattered northern red oak (*Quercus rubra*). The canopy is mixed age, but averages 16–18 inches in diameter. American holly (*Ilex opaca*) and sourwood (*Oxydendrum arboreum*) are common understory species. Other understory species include flowering dogwood (*Benthamidia florida*), sweet gum (*Liquidambar styraciflua*), and eastern red cedar (*Juniperus virginiana*). The shrub layer is patchy with some American beech (*Fagus grandifolia*), fringe tree (*Chionanthus virginicus*), and the nonnative invasive autumn olive (*Elaeagnus umbellata*). The herbaceous layer is sparse. Christmas fern (*Polystichum acrostichoides*), little brown jug (*Hexastylis arifolia*), and muscadine grape (*Vitis rotundifolia*) are common. This community is slightly more mesic in the sheltered ravine along Windfall Branch. Species not found elsewhere in the natural area occur here, including mountain laurel (*Kalmia latifolia*) and pinxterflower (*Rhododendron periclymenoides*). However, American beech (*Fagus grandifolia*) is only common in the understory and not the canopy, suggesting a dry-mesic classification is most appropriate.

**PROTECTION:** This majority of this site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype).

**RARE PLANTS:** None observed.

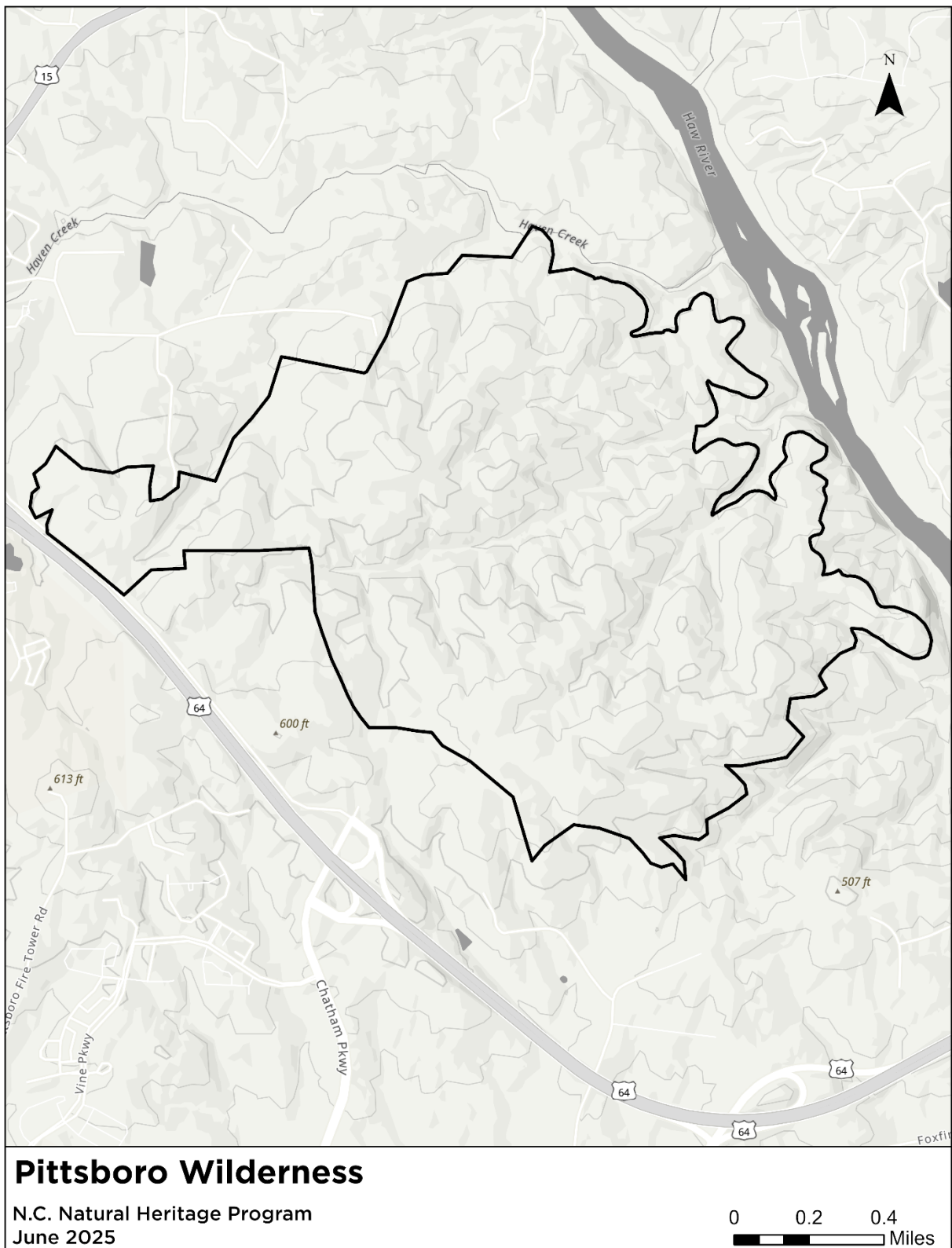
**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*), and Significantly Rare Carolina ladle crayfish (*Cambarus davidi*).

**REFERENCES:**

Conlin, M.R. and M. Franklin. 2024. Site Survey Report: Parkers Creek Ridges Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Pittsboro Wilderness

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Pittsboro Wilderness

<b>Site Significance:</b> General	<b>Size:</b> 1214 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> NC Division of Parks and Recreation, NC Division of Mitigation Services Easement, Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum, Merry Oaks, Pittsboro

**SIGNIFICANT FEATURES:** Pittsboro Wilderness natural area is of General significance for its support of two natural communities, Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) and Mesic Mixed Hardwood Forest (Piedmont Subtype). These characteristic Piedmont natural communities provide essential habitat for both common and rare species. Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Haw River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Haw River Levees and Bluffs is adjacent. CPF/ Haw River Aquatic Habitat is 900 feet away from the eastern boundary at the most, and directly downslope.

**SITE DESCRIPTION:** Pittsboro Wilderness natural area was described in the original Chatham County Inventory (Hall and Boyer 1992) for its significance as a wildlife reservoir. The intact forested area is largely a mosaic of second-growth hardwoods and pine forests. The easternmost edge of the natural area contains the most mature forested areas and shares a boundary with the Very High rated Haw River Levees and Bluffs natural area. This portion contains the main natural community found at the site, Mesic Mixed Hardwood Forest (Piedmont Subtype) that continues into the adjacent natural area. A small patch of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on an upland ridge. This site has not been accessed on the ground by NCNHP Biologists since Triangle Land Conservancy coordinated inventory efforts in 2008. Updates to the natural area have been based on satellite imagery where recent timber harvests or development have visibly reduced forested acres.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on the upper slopes and summits. The canopy contains abundant white oak (*Quercus alba*) and northern red oak (*Quercus rubra*). Most of this section is typical Dry-Mesic—Oak Hickory Forest; in addition to the oaks there are sweet pignut and mockernut hickories (*Carya glabra*, *C. tomentosa*), a fairly sparse understory of flowering dogwood (*Benthamidia florida*) and red maple (*Acer rubrum*) and scattered drier woodland herbs. These include little brown jug (*Hexastylis arifolia*), downy rattlesnake-plantain (*Goodyera pubescens*), and crane-fly orchid (*Tipularia discolor*). Resurrection fern (*Pleopeltis michauxiana*) decorates several rock outcrops (Hall and Boyer 1992).

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the east facing slopes towards the Haw River. The canopy is dominated by American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), sweet pignut hickory (*Carya glabra*), black tupelo (*Nyssa sylvatica*), and sourwood (*Oxydendrum arboreum*). Shrubs include bigleaf snowbell (*Styrax grandifolius*), mountain laurel (*Kalmia latifolia*), painted buckeye (*Aesculus sylvatica*), American strawberry-bush (*Euonymus americanus*), and viburnum (*Viburnum* spp.). Some Carolina broomwood (*Tilia americana* var. *caroliniana*) is present. The herbaceous layer is fairly diverse. Species include common Solomon's-seal (*Polygonatum biflorum*), northern maidenhair-fern (*Adiantum pedatum*), Christmas fern (*Polystichum acrostichoides*), Canada sanicle (*Sanicula canadensis*), common black-cohosh (*Actaea racemosa*), crested dwarf iris (*Iris cristata*), yellow pimpernel (*Taenidia integerrima*), and, on rock, blunt-lobe woodsia (*Woodsia obtusa*) and resurrection fern (*Pleopeltis michauxiana*). Rich flora, perhaps transitional to Basic Mesic Forest (Hall and Boyer 1992).

**PROTECTION:** Most of this site is proposed for development and under no formal conservation agreements. A small portion of the site overlaps with the dedicated Lower Haw River State Nature Preserve.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype)

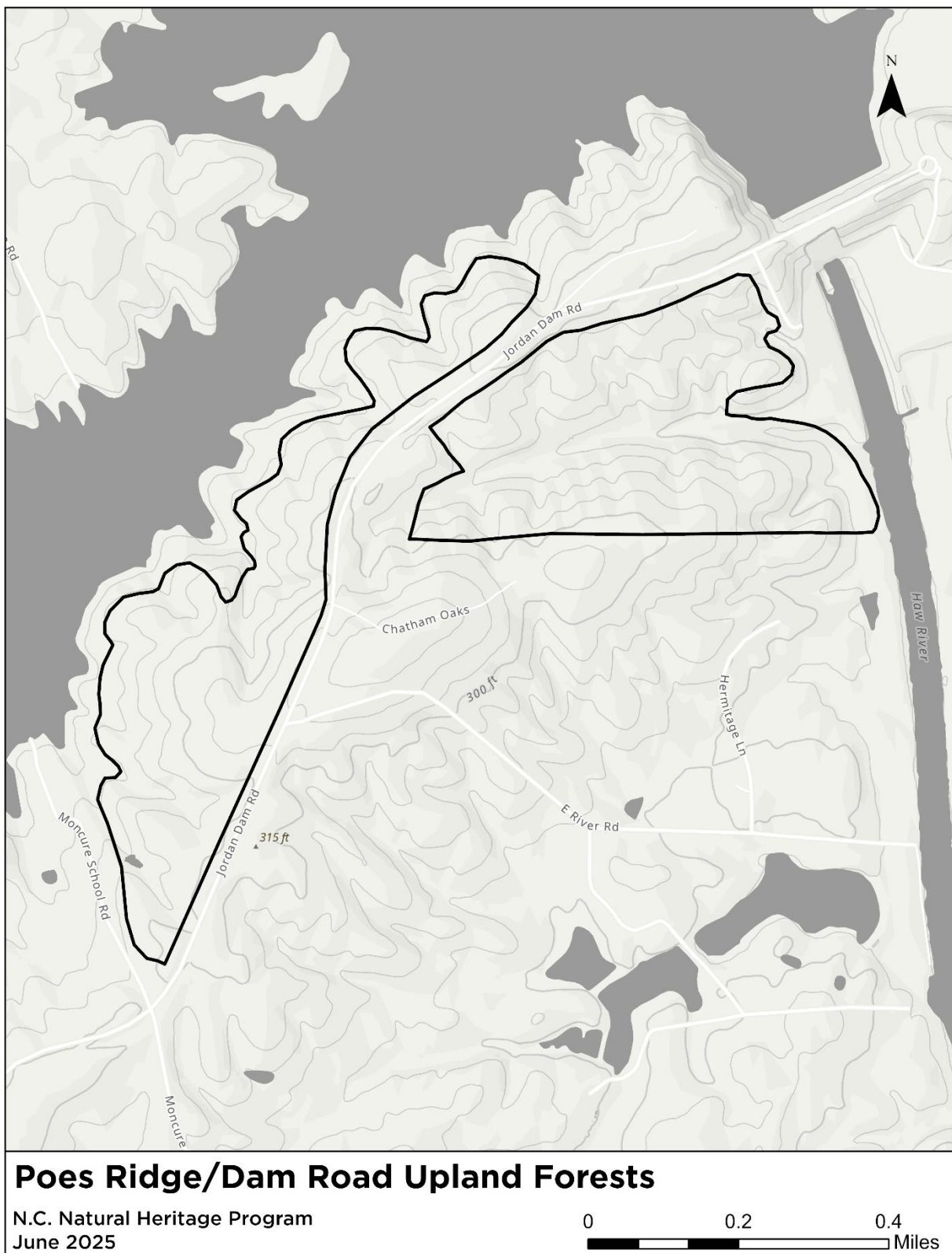
**RARE PLANTS:** None reported.

**RARE ANIMALS:** Significantly Rare Septima's clubtail (*Gomphurus septima*) has been documented at the site. Three rare aquatic species have been documented in the adjacent Haw River; the State and Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*), State Endangered Yellow Lampmussel (*Lampsilis cariosa*), and historically the Watch List spine-crowned clubtail (*Hylogomphus abbreviatus*).

**REFERENCES:**

- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- LeGrand, H.E., M. Franklin, and S. McRae. 2008. Site Survey Report: Pittsboro Wilderness Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.











## Chatham County Natural Area Inventory

### Poes Ridge/ Dam Road Upland Forests

<b>Site Significance:</b> General	<b>Size:</b> 178 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Poes Ridge/Dam Road Upland Forests natural area is of General significance for protecting good quality examples of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype) and a population of Significantly Rare buttercup phacelia (*Phacelia covillei*). These good quality, characteristic, Piedmont natural communities provide essential habitat for both common and rare species that live along Jordan Lake and the Haw River.

**LANDSCAPE RELATIONSHIPS:** Haw River Dicentra Slopes is 0.8 miles south (downstream) along the Haw River. Moncure Boggy Streamheads is 0.6 miles west.



Poes Ridge/Dam Road Upland Forests Natural Area. Ravine of Mesic Mixed Hardwood Forest (Piedmont Subtype) with Rich Spring Flora. Photo by: Merry Conlin.



**SITE DESCRIPTION:** This site consists of slopes overlooking the Kirks Creek arm of Jordan Lake and slopes above the Haw River just below the dam. The site contains a mixture of alluvial bottomland, mesic slopes, and upland mature hardwood forest communities. Some pine stands are included in the site. A variety of spring and summer wildflowers occur on the slopes and bottomland. This site contains small but mature examples of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) and Mesic Mixed Hardwood Forest (Piedmont Subtype). The Mesic Mixed Hardwood Forest supports a population of Significantly Rare buttercup phacelia (*Phacelia covillei*).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along most of the upper slopes. White oak (*Quercus alba*) is the canopy dominant. Florida maple (*Acer floridanum*) and northern red oak (*Quercus rubra*) are common, and American beech (*Fagus grandifolia*) is locally common. Other canopy species include black oak (*Quercus velutina*), sweetgum, southern red oak (*Quercus falcata*), red maple (*Acer rubrum*), and sweet pignut hickory (*Carya glabra*). Flowering dogwood (*Benthamidia florida*), American holly (*Ilex opaca*), and sourwood (*Oxydendrum arboreum*) are common in the understory. Maple-leaf viburnum (*Viburnum acerifolium*) is common in the shrub layer. Muscadine grape (*Vitis rotundifolia*) is locally abundant in the herb layer. Little brown jug (*Hexastylis arifolia*) and crane fly orchid (*Tipularia discolor*) are common.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the more sheltered slopes and along the largest ravine found in the site. The common canopy trees are northern red oak (*Quercus rubra*) and American beech (*Fagus grandifolia*). Closer to the Haw River mature sugarberry (*Celtis laevigata*) and tulip tree (*Liriodendron tulipifera*) occur. Spicebush (*Lindera benzoin*) and painted buckeye (*Aesculus sylvatica*) are common in the shrub layer. A few American bladdernut (*Staphylea trifolia*) and eastern hop-hornbeam (*Ostrya virginiana*) are present as well. Spring wildflowers are present, such as may apple (*Podophyllum peltatum*), common black-cohosh (*Actaea racemosa*), slender toothwort (*Cardamine angustata*), windflower (*Thalictrum thalictroides*), both trout lily (*Erythronium americanum*) and dimpled fawn-lily (*Erythronium umbilicatum*), among others. Northern maidenhair-fern (*Adiantum pedatum*) has also been observed in the past (LeGrand 1999). The Significantly Rare buttercup phacelia (*Phacelia covillei*) is abundant as a spring ephemeral and carpets a section of the forest floor. Some of the flora suggests at least part of this community, particularly the section closer to the Haw River, is possibly intermediate to Basic Mesic Forest. Nonnative invasives are common, especially along the Haw River section as dense Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*).

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype).

**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*).

**RARE ANIMALS:** None observed.

#### **REFERENCES:**

- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers -

Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Pohlman, S.M. and M.R. Conlin. 2024. Site Note: Poes Ridge/Dam Road Upland Forests Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Chatham County Natural Area Inventory

### Robeson Creek Depression and Hardpan

<b>Site Significance:</b> Moderate	<b>Size:</b> 33 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Robeson Creek Depression and Hardpan is of Moderate significance for protecting good quality examples of Dry Oak—Hickory Forest (Piedmont Subtype) and the rarer Mixed Moisture Hardpan Forest and Upland Depression Swamp Forest. The site contains the only known example of Upland Depression Swamp Forest in the Jordan Lake project area and provides important habitat for amphibians and other wildlife.

**LANDSCAPE RELATIONSHIPS:** Haw River Levees and Bluffs and the southern terminus of the Haw River Aquatic Habitat are within 600 feet.

**SITE DESCRIPTION:** This site is located on the east facing slopes of the Haw River just above the impounded area of Jordan Lake. The site contains the only known example of Upland Depression Swamp Forest in the Jordan Lake project area. The depression is found along an upland ridge surrounded by relatively mature hardwood forests of a somewhat hardpan soil. The natural communities elsewhere are Dry Oak—Hickory Forest and Xeric Hardpan Forest.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs on a low ridge and gentle slopes. The canopy contains post oak (*Quercus stellata*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), and mockernut hickory (*Carya tomentosa*), among others. Southern shagbark hickory (*Carya carolinae-septentrionalis*) is also present. Some eastern red cedar (*Juniperus virginiana*) and eastern hop-hornbeam (*Ostrya virginiana*) are present in the understory. Other understory species include flowering dogwood (*Benthamia florida*), American holly (*Ilex opaca*), and sourwood (*Oxydendrum arboreum*). There are practically no shrubs, and very few herbs. It seems to contain a mix of some Dry-Mesic Oak—Hickory Forest, and some hint of Basic Oak—Hickory Forest. A few nonnative invasive autumn olive (*Elaeagnus umbellata*) shrubs are present.

Mixed Moisture Hardpan Forest occurs on an upland ridge. Willow oak (*Quercus phellos*) is present, along with post oak (*Quercus stellata*), white oak (*Quercus alba*), black oak (*Quercus velutina*), and southern red oak (*Quercus falcata*). A few shag-bark hickory (*Carya ovata*) are present. Climbing dogbane (*Thysanthea difformis*), a vine often found in wetland hardpans, is found in the herb layer. Other trees in the hardpan include black tupelo (*Nyssa sylvatica*) and eastern redbud (*Cercis canadensis*). Some far-berberry (*Vaccinium arboreum*) is present in the shrub layer, but most blueberry (*Vaccinium* spp.) species are conspicuously scarce. The site seems more mesic than a typical xeric hardpan; however, the ground is clearly over a hardpan. The soil seems close to circumneutral.

Upland Depression Swamp occurs in a swale on an upland ridge surround by mature hardwoods. It measures approximately 40 x 120 feet. The depression likely holds a foot of water in late winter and spring. Mature willow oak (*Quercus phellos*) and sweet gum (*Liquidambar styraciflua*) dominate the trees around the perimeter and in the depression. The dominant shrub along the perimeter is fetter-bush (*Eubotrys racemosus*); black highbush blueberry (*Vaccinium fuscum*) is also present. Other common species are common greenbrier (*Smilax rotundifolia*), fringed sedge (*Carex crinita*), and sphagnum moss (*Sphagnum* sp.).

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Mixed Moisture Hardpan Forest, Upland Depression Swamp.

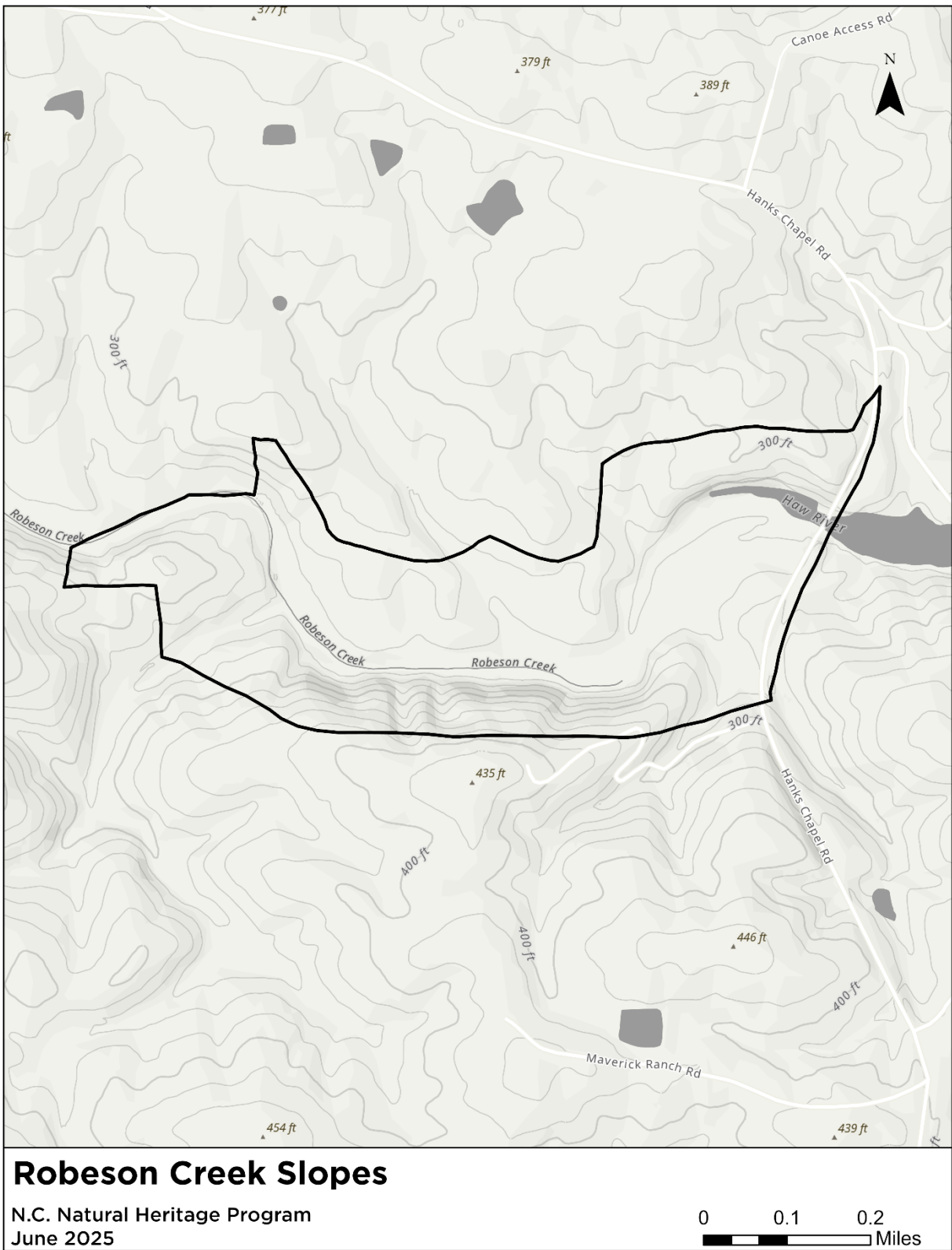
**RARE PLANTS:** None reported.

**RARE ANIMALS:** Watch List Eastern Whip-poor-will (*Antrostomus vociferus*) and Significantly Rare Septima's clubtail (*Gomphurus septima*).

**REFERENCES:**

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.









## Robeson Creek Slopes

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Robeson Creek Slopes

<b>Site Significance:</b> General	<b>Size:</b> 140 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> General (R5)	<b>Quadrangle:</b> Merry Oaks

**SIGNIFICANT FEATURES:** Robeson Creek Slopes is of General significance for its support of mesic and upland hardwood forests, with abundant wildflowers, including locally rare to uncommon plants. Two natural communities are described at the site including Basic Mesic Forest (Piedmont Subtype) and Mesic Mixed Hardwood Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Robeson Creek Depression and Hardpan is 0.5 miles to the northeast.



Bluff Along Robeson Creek as it Crosses through Robeson Creek Slopes Natural Area. Photo by: Scott Pohlman.





Northern Maidenhair Fern (*Adiantum pedatum*) at Robeson Creek Slopes Natural Area. Photo by: Scott Pohlman.

**SITE DESCRIPTION:** Steep slopes on both sides of Robeson Creek support mesic and upland hardwood forests. The steep slopes and large rock outcrops that in some spots rise nearly vertically above the creek provide some dramatic scenery and a microclimate for uncommon flora. This is a region of largely felsic meta-volcaniclastic rock but contains a flora that suggests some intermixed areas with slightly less acidic soils. A steep, north-facing rocky bluff has marginal shield-fern among other interesting or locally uncommon species. On the north side of the creek are large colonies of regionally uncommon southern barren-strawberry (*Waldsteinia doniana*) and mountain thimble-weed (*Anemone lancifolia*).

Basic Mesic Forest (Piedmont Subtype) occurs as a small, intermediate patch at the base of north and northeast facing slopes. The canopy is dominated by Florida maple (*Acer floridanum*) and American beech (*Fagus grandifolia*), with northern red oak (*Quercus rubra*) and slippery elm (*Ulmus rubra*) also present. Understory species include Carolina broomwood (*Tilia americana* var. *caroliniana*), eastern redbud (*Cercis canadensis*), eastern hop-hornbeam (*Ostrya virginiana*), American hornbeam (*Carpinus caroliniana*), pawpaw (*Asimina triloba*), and fringe tree (*Chionanthus vir-*

*ginicus*). Shrubs include bigleaf snowbell (*Styrax grandifolius*), wild hydrangea (*Hydrangea arborescens*), and coral-berry (*Symphoricarpos orbiculatus*). There are localized patches where nonnative invasive autumn olive (*Elaeagnus umbellata*) is dense. A rich herb layer includes northern maidenhair-fern (*Adiantum pedatum*), yellow corydalis (*Corydalis flavula*), Canada wild-ginger (*Asarum canadense*), common jack-in-the-pulpit (*Arisaema triphyllum*), common black-cohosh (*Actaea racemosa*), may apple (*Podophyllum peltatum*), bloodroot (*Sanguinaria canadensis*), marginal wood-fern (*Dryopteris marginalis*), and southern barren-strawberry (*Waldsteinia doniana*).

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on slopes both north and south of Robeson Creek. The canopy is dominated by white oak (*Quercus alba*), American beech (*Fagus grandifolia*), and northern red oak (*Quercus rubra*). On the very steep north-facing slopes, there are relatively little subcanopy or shrub layers. Common herbs include dimpled fawn-lily (*Erythronium umbilicatum*), which is very abundant, slender toothwort (*Cardamine angustata*), and several species of heartleaf (*Hexastylis* spp.). The south-facing slopes contain the locally scarce yellow corydalis (*Corydalis flavula*). A narrow floodplain contains some nonnative invasive autumn olive (*Elaeagnus umbellata*) but also some of the herbs mountain thimble-weed (*Anemone lancifolia*) and may apple (*Podophyllum peltatum*).

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype).

**RARE PLANTS:** None reported.

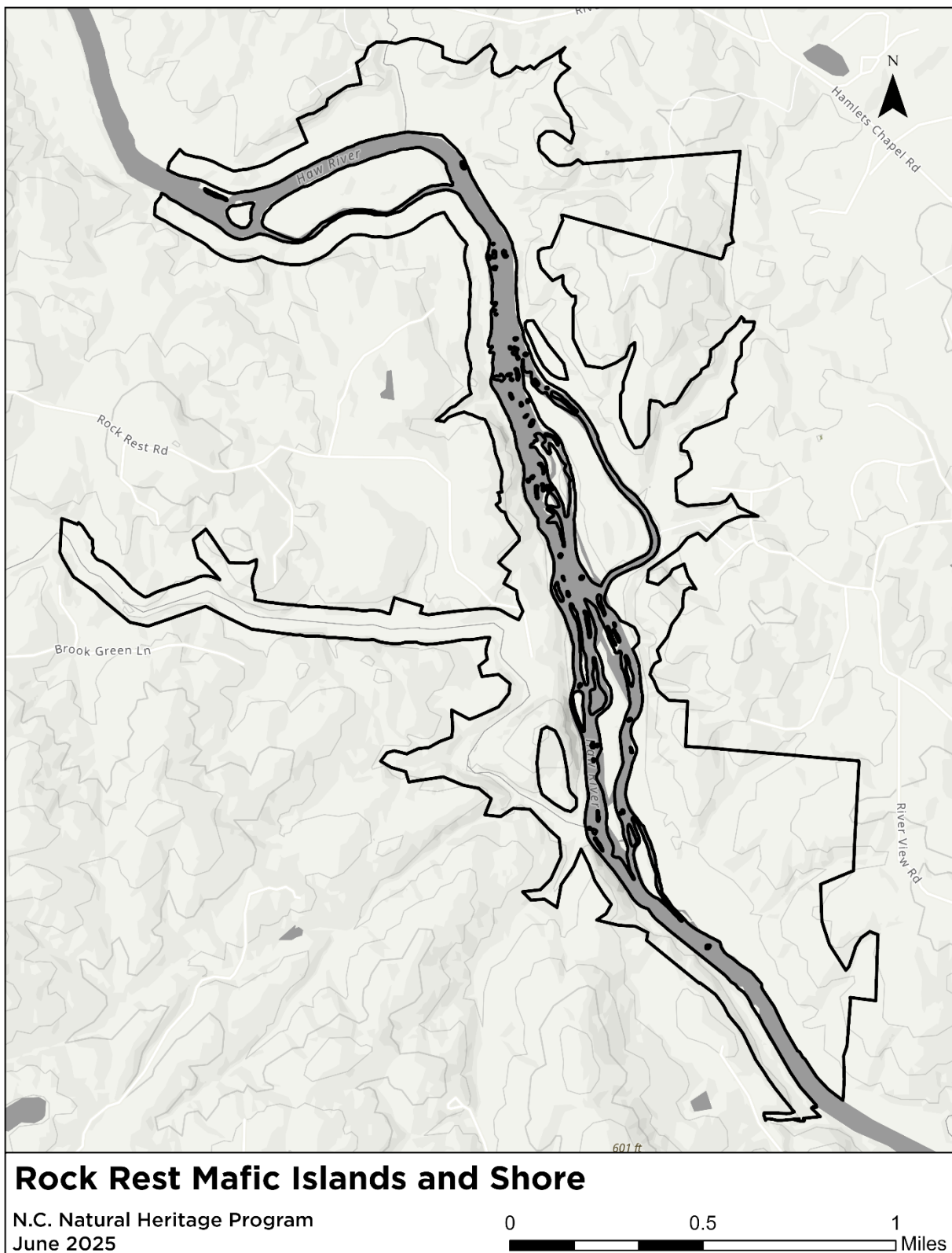
**RARE ANIMALS:** None reported.

**REFERENCES:**

Finnegan, J. and S. Pohlman. 2013. Site Note: Robeson Creek Slopes Natural Area, Registered Heritage Area Site Visit. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.

LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Rock Rest Mafic Islands and Shore

N.C. Natural Heritage Program  
June 2025

0 0.5 1 Miles



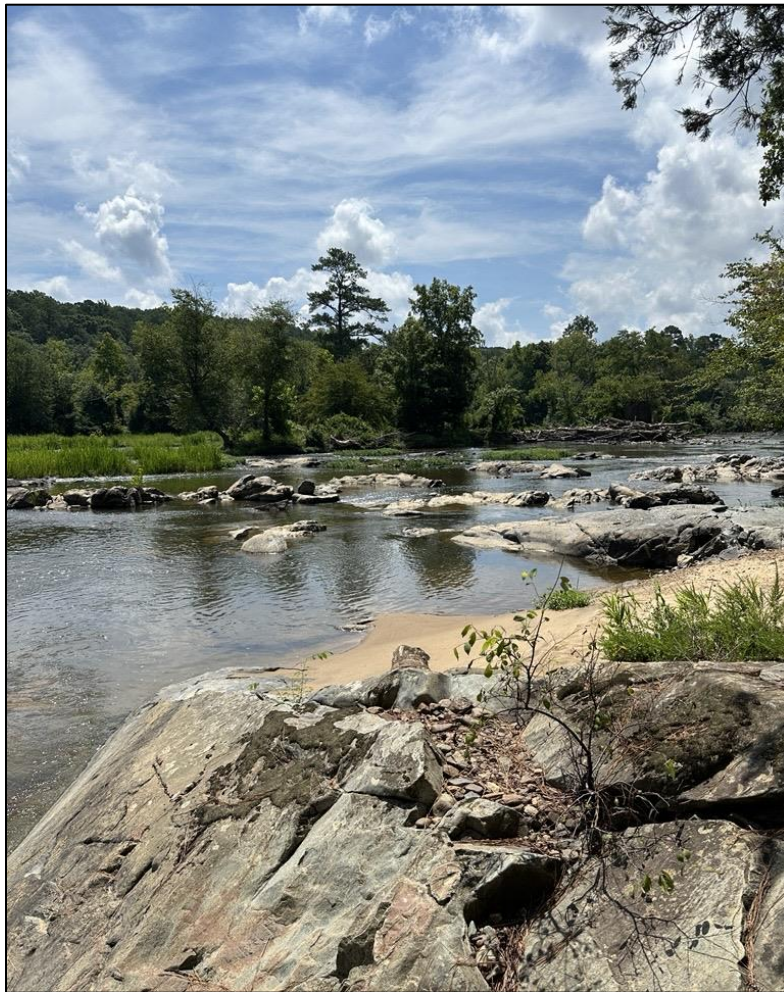
## Chatham County Natural Area Inventory

### Rock Rest Mafic Islands and Shore

<b>Site Significance:</b> Very High	<b>Size:</b> 917 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Triangle Land Conservancy Easement, Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Rock Rest Mafic Islands and Shore natural area is of Very High significance for its support of some of the best known examples of two alluvial communities, Piedmont Alluvial Forest and Rocky Bar and Shore (Southern Wild Rice Subtype). Additionally, this site supports four elements of biodiversity—three more natural communities and the Significantly Rare buttercup phacelia (*Phacelia covillei*). Many rare aquatic species, including the Federally Endangered Cape Fear shiner, occur within the Haw River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Haw River Aquatic Habitat flows through the site. Little Terrells Creek Bottomland and Forest is 0.2 miles north.



The Haw River in Rock Rest Mafic Islands and Shore Natural Area.  
Photo by: Merry Conlin.

**SITE DESCRIPTION:** Rock Rest Mafic Islands and Shore is a series of large rocky islands and extensive rapids in the Haw River, along with adjacent bluffs and uplands. Although much of this area is mapped with an igneous felsic geologic complex, the flora reflects the intermediate to basic nature of the soil and scattered areas of underlying basalt rock. A substantial area of alluvial soils is present on the north shore and on the islands, supporting a patchy Piedmont Alluvial Forest community. Rocky Bar and Shore (Southern Wild Rice Subtype) is documented here, and other subtypes of Rocky Bar and Shore occur but haven't been extensively mapped. The rare buttercup phacelia (*Phacelia covillei*) occurs in a couple of places in the floodplain forest. The bluffs support patches of mature forest communities, primarily Basic Mesic Forest and Dry-Mesic Basic Oak—Hickory Forest, but also including Mesic Mixed Hardwood Forest and Dry-Mesic Oak—Hickory Forest. Interspersed with them are substantial areas of younger hardwood forest and areas whose condition is not well known. These areas contribute to making this site a large contiguous patch of forest as well as buffering the higher quality communities.



The Watch List Heartleaf Skullcap (*Scutellaria ovata*) in Rock Rest Mafic Islands and Shore Natural Area. Photo by: Merry Conlin.

Basic Mesic Forest (Piedmont Subtype) occurs along intermittent streams and sheltered ravines at the site. The canopy is closed and varied, dominated by tulip tree (*Liriodendron tulipifera*) with abundant sweet gum (*Liquidambar styraciflua*) and American beech (*Fagus grandifolia*). Northern red oak (*Quercus rubra*) and bitter-nut hickory (*Carya cordiformis*) are common. Some white ash (*Fraxinus americana*) is found in the canopy, but standing dead snags and downed logs are more frequent, likely the result of the non-native pest emerald ash borer. The canopy is mature. Trees average 14–16 inches, and larger canopy oaks measure in the 20–22 inches in diameter. The understory is sparse, with regenerating American beech the most common. Flowering dogwood (*Benthamidia florida*) is frequent. The shrub layer is likewise sparse, dominated by the nonnative invasive autumn olive (*Elaeagnus umbellata*) and some patches of painted buckeye (*Aesculus sylvatica*). The herbaceous layer is fairly sparse. There is a slightly higher richness along the slopes that border intermittent streams. Coral-berry (*Symphoricarpos orbiculatus*) and the nonnative invasive Japanese stilt grass (*Microstegium vimineum*) are abundant. Christmas

fern (*Polystichum acrostichoides*) and sedges (*Carex* spp.) are common. One patch of the nonnative Mariana Maiden Fern (*Macrothelypteris torresiana*) was noted as well. The Watch List heartleaf skullcap (*Scutellaria ovata*) occurs near the boundary where this community joins the floodplain.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs in disjunct patches on many of the moderate slopes found at this site. The canopy is dominated by white oak (*Quercus alba*). Northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), and mockernut hickory (*Carya tomentosa*) are common, in the southernmost portion. Shumard oak (*Quercus shumardii*) is more abundant. Some live white ash (*Fraxinus americana*) remains in the canopy even though dead snags are common. The condition and maturity of the canopy is variable as this appears to be second or third generation forests over much of the site. In the most mature section canopy trees average 16–18 inches in diameter. Trees in other areas are 12–14 inches in diameter. The largest oaks and hickories are 32–33 inches in diameter. The understory is fairly



dense and diverse with abundant Florida maple (*Acer floridanum*), American beech (*Fagus grandifolia*), and American holly (*Ilex opaca*). Eastern hop-hornbeam (*Ostrya virginiana*) and eastern red cedar (*Juniperus virginiana*) are common. The shrub layer is dominated by the nonnative invasive autumn olive (*Elaeagnus umbellata*). Regenerating white ash (*Fraxinus americana*) and patches of painted buckeye (*Aesculus sylvatica*) are common. One narrow ridge facing the Haw River is dominated by mountain laurel (*Kalmia latifolia*). The herbaceous layer is fairly sparse except for the more mesic regions. The nonnative invasive Japanese stilt grass (*Microstegium vimineum*), little brown jug (*Hexastylis arifolia*), and Christmas fern (*Polystichum acrostichoides*) are abundant. Species suggestive of a more basic affiliation are scattered throughout, such as lopseed (*Phryma leptostachya*) and eastern redbud (*Cercis canadensis*) seedlings. This community was likely more extensive in the past; timber harvests and other land uses have reduced the total acreage that remains in good condition.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on a north facing slope along an unnamed tributary of the Haw River. The canopy is dominated by American beech (*Fagus grandifolia*) with tulip tree (*Liriodendron tulipifera*) present as well. This community is in good condition with an average canopy of 16–18 inches in diameter and some larger American beeches reaching 22–24 inches in diameter. The understory is fairly open with red maple (*Acer rubrum*) most frequent. The shrub layer is also open and sparse with the dominant being the nonnative autumn olive (*Elaeagnus umbellata*), which is dense along the stream corridor. The herbaceous layer is patchy with the dominant Christmas fern (*Polystichum acrostichoides*), which often covers the slope. There seems to be a small area with less acidic soils near the location of a small seep, with associated herbaceous indicators of beech fern (*Phegopteris hexagonoptera*), common black-cohosh (*Actaea racemosa*), and lopseed (*Phryma leptostachya*). This community exists in a broader mosaic of past timber projects and likely remains due to some combination of slope and less marketable timber.

Piedmont Alluvial Forest occurs on the floodplain of the Haw River, including small islands within the river, and a narrow band along Dry Creek. Along the Haw River, many upland-associated species grade right down the riverbanks. The canopy is fairly open and contains abundant Florida maple (*Acer floridanum*), with scattered sycamore (*Platanus occidentalis*), water oak (*Quercus nigra*), and green ash (*Fraxinus pennsylvanica*). Some areas have younger canopies comprised of species such as sweet gum (*Liquidambar styraciflua*), eastern hop-hornbeam (*Ostrya virginiana*), and American holly (*Ilex opaca*). Canopy trees average 14–16 inches in diameter along the Haw River and 10–12 inches in diameter along Dry Creek. The largest trees observed reach up to 30 inches in diameter. The understory is open with patches of species such as pawpaw (*Asimina triloba*), American beech (*Fagus grandifolia*), and American hornbeam (*Carpinus caroliniana*). The dominant shrub is the nonnative invasive autumn olive (*Elaeagnus umbellata*). The herbaceous layer is sparse to dense and fairly diverse. Several alluvial species are common, including river oats (*Chasmanthium latifolium*), common bottlebrush grass (*Elymus hystrix*), Virginia wild-rye (*Elymus virginicus*), and yellow crownbeard (*Verbesina occidentalis*). Nonnative invasives are present in moderate to high levels, including Japanese stilt grass (*Microstegium vimineum*), ground ivy (*Glechoma hederacea*), Japanese honeysuckle (*Lonicera japonica*), and Chinese privet (*Ligustrum sinense*). Vines are common. Common greenbrier (*Smilax rotundifolia*) is the most abundant vine.

Rocky Bar and Shore (Southern Wild Rice Subtype) occurs on the rocky, cobbled margins of the Haw River and associated islands. Southern wildrice (*Zizaniopsis miliacea*) was the only species noted where this community was accessed. Downriver, it appears that some of the small islands mapped with Piedmont Alluvial Forest might now be better classified as Rocky Bar and Shore (Mixed Bar Subtype) as much of the canopy has been lost due to frequent flooding. Additional acreage of all subtypes and occurrence of the Rocky Bar and Shore (Water Willow Subtype) is likely but could not be confirmed from this survey's river access point.

**PROTECTION:** Only a small portion of this site is protected by conservation easements. Natural communities and the riparian zone of the site would be important targets for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Rocky Bar and Shore (Southern Wild Rice Subtype).

**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*), Watch List heartleaf skullcap (*Scutellaria ovata sensu lato*).

**RARE ANIMALS:** The Significantly Rare Septima's Clubtail (*Gomphurus septima*) occurs at the site. Four rare aquatic species have been documented in the adjacent Haw River: the State and Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*), and the State Special Concern Carolina darter (*Etheostoma collis*), and two Significantly Rare species, Carolina ladle crayfish (*Cambarus davidii*) and Eastern Creekshell (*Villosa delumbis*).

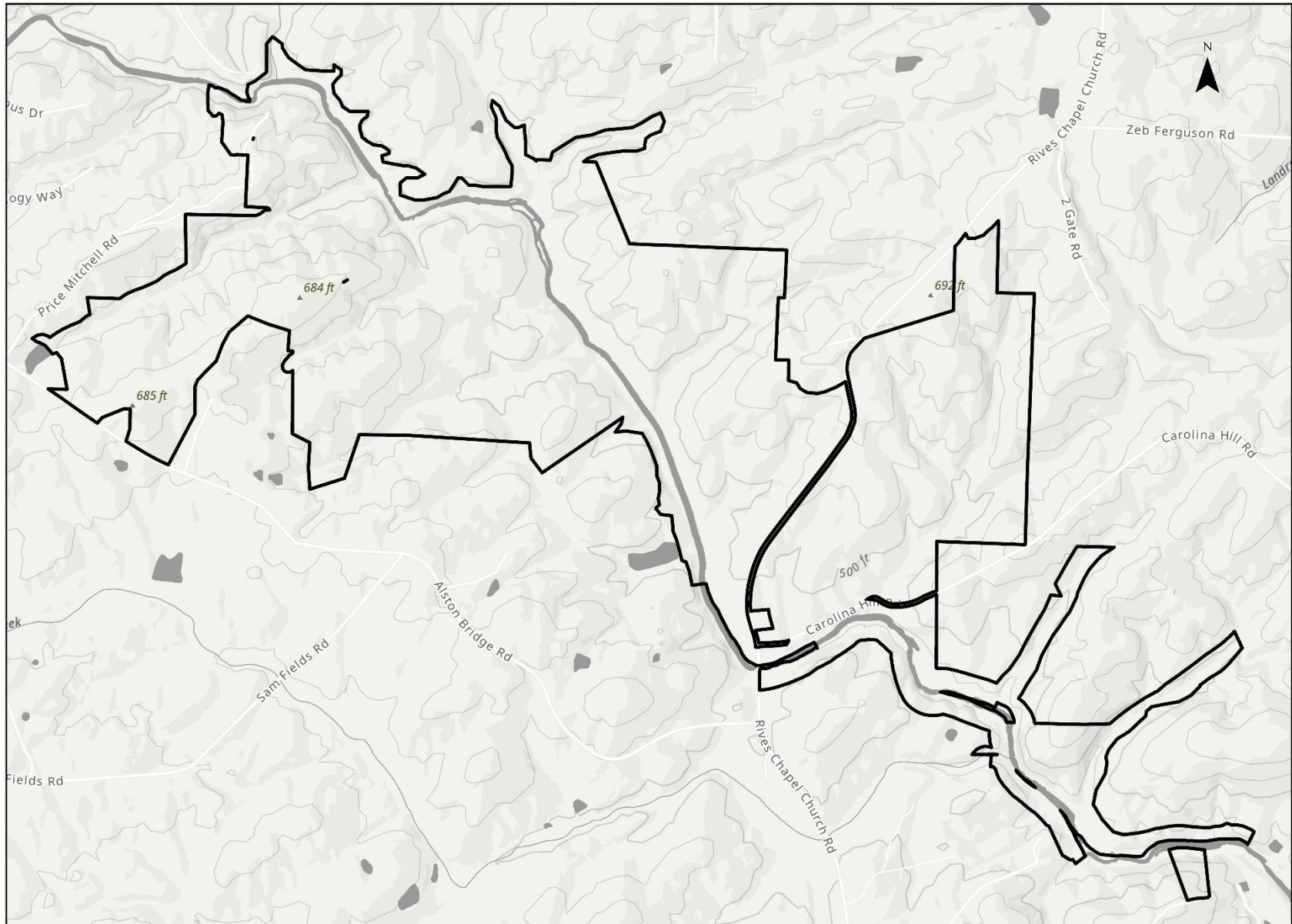


Rocky Bar and Shore (Southern Wild Rice Subtype) in the Haw River at Rock Rest Mafic Islands and Shore Natural Area. Photo by: Merry Conlin.

**REFERENCES:**

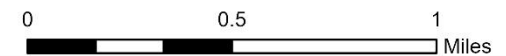
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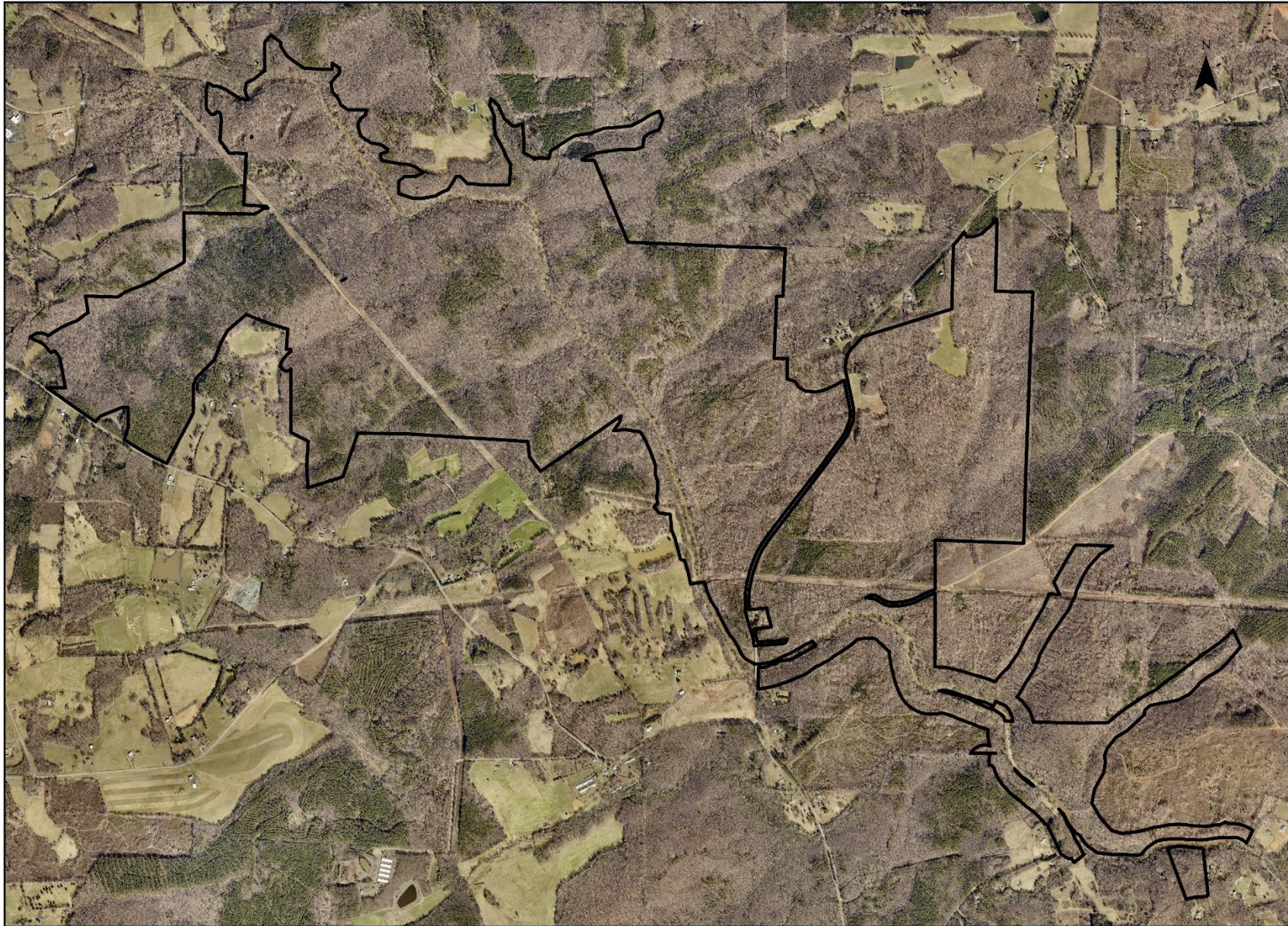


## Rocky River Basalt Bluffs and Levees

N.C. Natural Heritage Program  
June 2025

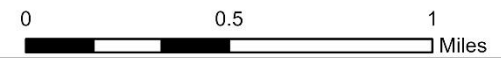






## Rocky River Basalt Bluffs and Levees

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Rocky River Basalt Bluffs and Levees

<b>Site Significance:</b> Very High	<b>Size:</b> 1,873 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> Triangle Land Conservancy Easement, NC Agricultural Development and Farmland Preservation Trust Fund Easement, Private
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Siler City, Siler City NE

**SIGNIFICANT FEATURES:** Rocky River Basalt Bluffs and Levees natural area is of Very High significance for its protection of one of the top five known examples of Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) in the state. An additional nine natural communities occur at this diverse site. Many rare aquatic species, including the Federally Endangered Cape Fear Shiner, occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat flows through the site. Woods Mill Bend is 0.7 miles downstream. Rocky River and Nick Creek Slopes is 3 air miles northwest, and upstream.

**SITE DESCRIPTION:** This site consists of dissected uplands and bluffs, along with the narrow floodplain of the Rocky River. A large flow of basalt rock crosses the Rocky River just upstream from SR 2170, and mafic rocks appear to influence significant parts of the site. The upland parts of the site are a mosaic of mature forests interspersed with successional or planted pine forests. Dry-Mesic Basic Oak—Hickory Forest, dominated by white oak, red oak, and hickories, is the most extensive natural community type. Extensive patches are very mature and are excellent examples, while a large area is in less, but still good, condition after recent selective timber harvest. Good examples of Dry Basic Oak—Hickory Forest, Basic Mesic Forest, Mesic Mixed Hardwood Forest, and smaller amounts of other upland communities are also present. The floodplain of the Rocky River and tributary streams supports a good example of Piedmont Alluvial Forest, narrow but covering more than 100 acres. The forest is mature overall but has extensive invasion by nonnative plants. The forest is diverse, and some species, such as southern shagbark hickory (*Carya carolinae-septentrionalis*), American bladdernut (*Staphylea trifolia*), and coralberry (*Symphoricarpos orbiculatus*) may reflect the rich upland soils in the area. Small patches of additional communities are also present in the site, including Low Elevation Seep (Floodplain Subtype), Floodplain Pool, and Piedmont/Coastal Plain Heath Bluff, making for a very diverse site overall.

Basic Mesic Forest (Piedmont Subtype) occurs in limited areas on sheltered slopes and ravines. The canopy is dominated by varying mixtures of tulip tree (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), and American beech (*Fagus grandifolia*), with some mockernut hickory (*Carya tomentosa*), southern shagbark hickory (*Carya carolinae-septentrionalis*), white oak (*Quercus alba*), and white ash (*Fraxinus americana*). Much of the community is very mature, with canopy trees averaging 14 inches in diameter, and trees 18–20 inches in diameter common. The understory includes most of the canopy species, along with flowering dogwood (*Benthamidia florida*), American hornbeam (*Carpinus caroliniana*), Florida maple (*Acer floridanum*), eastern redbud (*Cercis canadensis*), and winged elm (*Ulmus alata*). Shrubs are naturally sparse to moderate, with spicebush (*Lindera benzoin*) and painted buckeye (*Aesculus sylvatica*) often present, sometimes with coral-berry (*Symphoricarpos orbiculatus*). Some areas had dense nonnative invasive autumn olive (*Elaeagnus umbellata*). Most of this has been removed on these tracts through considerable effort by the landowner and land managers, greatly enhancing the condition of the communities. The herb layer is moderate to dense. Christmas fern (*Polystichum acrostichoides*) is abundant in patches. Dimpled fawn-lily (*Erythronium umbilicatum*), slender toothwort (*Cardamine angustata*), windflower (*Thalictrum*



*thalictroides*), may apple (*Podophyllum peltatum*), bloodroot (*Sanguinaria canadensis*), and narrow-leaved spring beauty (*Claytonia virginica*) are abundant. Virginia wild-rye (*Elymus virginicus*), round-lobe hepatica (*Hepatica americana*), and yellow corydalis (*Corydalis flavula*) are also common. Other patches contain abundant common bottlebrush grass (*Elymus hystrix*). Other herbs include lopseed (*Phryma leptostachya*), downy rattlesnake-plantain (*Goodyera pubescens*), hairy wood brome (*Bromus pubescens*), little brown jug (*Hexastylis arifolia*), broad beech fern (*Phegopteris hexagonoptera*), crested dwarf iris (*Iris cristata*), wild licorice (*Galium circaezans*), sedges (*Carex* spp.), and Solomon's-plume (*Maianthemum racemosum*).

**Dry Basic Oak—Hickory Forest** occurs on dry ridge tops and steep west-facing slopes. The most abundant canopy species is white oak (*Quercus alba*), with southern red oak (*Quercus falcata*), mockernut hickory (*Carya tomentosa*), southern shagbark hickory (*Carya carolinae-septentrionalis*), white ash (*Fraxinus americana*), and shortleaf pine (*Pinus echinata*) sometimes abundant, and some post oak (*Quercus stellata*) present. Canopy trees average 12–14 inches in diameter, and trees up to 16–18 inches in diameter are common. The understory includes eastern redbud (*Cercis canadensis*), winged elm (*Ulmus alata*), eastern red cedar (*Juniperus virginiana*), and flowering dogwood (*Benthamia florida*). Shrubs are generally sparse. In the southern occurrence farkleberry (*Vaccinium arboreum*) is abundant and some deerberry (*Vaccinium stamineum*) is present. Herbs are generally sparse, but little-headed nutrush (*Scleria oligantha*), common bottlebrush grass (*Elymus hystrix*), and, in places, blackseed needlegrass (*Piptochaetium avenaceum*) are widespread.

**Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype)** occupies most of the upland ridges and higher slopes and extends down to lower slopes on warm aspects. Some areas are metabasalt and others are probably basic meta-mudstone. The canopy is dominated by white oak (*Quercus alba*), northern red oak (*Quercus rubra*), and varying amounts of mockernut hickory (*Carya tomentosa*), southern shagbark hickory (*Carya carolinae-septentrionalis*), and white ash (*Fraxinus americana*) or Biltmore ash (*Fraxinus biltmoreana*). Tulip tree (*Liriodendron tulipifera*) and shortleaf pine (*Pinus echinata*) are present in small numbers in more mature forest; they are abundant, along with loblolly pine (*Pinus taeda*), sweet gum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*) in the younger, more heavily logged, areas. The maturity of the canopy is variable; some portions have been more recently cut and average 10–12 inches in diameter. Other parts are mature and average 14 inches in diameter with trees 18–20 inches in diameter common. The understory is open in the most mature areas but is dense in areas that were selectively logged. Species include most of the canopy species, along with flowering dogwood (*Benthamia florida*), red maple (*Acer rubrum*), eastern redbud (*Cercis canadensis*), eastern red cedar (*Juniperus virginiana*), wild black cherry (*Prunus serotina*), and a few sourwood (*Oxydendrum arboreum*). The natural shrub layer is sparse, and most shrubs were not identifiable at the time of survey. Substantial portions had a fairly dense shrub layer of nonnative invasive autumn olive (*Elaeagnus umbellata*). There were a few painted buckeye (*Aesculus sylvatica*). Muscadine grape (*Vitis rotundifolia*) formed tangles on the ground in places. In most of these tracts, the exotic shrubs had been cut and treated with herbicide, removing this detractor. The herb layer is generally sparse. It contains typical upland species such as little brown jug (*Hexastylis arifolia*), poverty oat-grass (*Danthonia spicata*), and downy rattlesnake-plantain (*Goodyera pubescens*), but also contains species not typically found in dry uplands other than on base-rich soils, such as slender toothwort (*Cardamine angustata*), dimpled fawn-lily (*Erythronium umbilicatum*), windflower (*Thalictrum thalictroides*), Christmas fern (*Polystichum acrostichoides*), bloodroot (*Sanguinaria canadensis*), common bottlebrush grass (*Elymus hystrix*), wild geranium (*Geranium maculatum*), star chickweed (*Stellaria pubera*), rattlesnake-fern (*Botrypus virginianus*), and wild comfrey (*Andersonglossum virginianum*). Exotic species more typical of bottomlands, such as Japanese honeysuckle (*Lonicera japonica*), Japanese stilt grass (*Microstegium vimineum*), and common starwort (*Stellaria media*), were also abundant in places.

The Floodplain Pool community occurs as a blocked overflow channel, cut off from the river by a natural levee, which may have been deposited fairly recently. A tributary creek flows into part of the overflow channel and flows down it to the river, but the pool is separated from that part by another barrier of fairly

recent sediment. The pool is about 20–30 x 5 meters in size, with water at least 1 foot deep at the time of the visit. Its banks are fairly steep. At the time of survey, there was no vegetation visible within the pool. Egg masses, apparently from salamanders, were present.

Low Elevation Seep (Floodplain Subtype) communities are present in three areas, all with somewhat different character. The first occurs on the edge of the floodplain of the main creek, about 50 meters long and 2–5 meters wide. It has obvious ground water discharge and some patches of very shallow standing water. The canopy is American elm (*Ulmus americana*) and ash, presumably green ash (*Fraxinus pennsylvanica*). The dense herbaceous layer includes at least two species of sedge (*Carex* spp.), cardinal flower (*Lobelia cardinalis*), pale avens (*Geum virginianum*), and halberd-leaved yellow violet (*Viola hastata*). Two springs at the head of a small tributary stream form another patch. Stream flow and well-developed stream channels start from the seeps, which have cobble and even boulder substrate. The small seeps are shaded by American elm, sweet gum (*Liquidambar styraciflua*), green ash, and box-elder (*Acer negundo*) rooted in the edges. The vegetation consists primarily of sedges (*Carex* spp.) and broadleaf arrowhead (*Sagittaria latifolia*). These seeps are just below a road, and likely are affected by it to some degree. The third occurs along a small stream. At the time of survey, ground water discharge was evident and there was shallow surface water. It has a canopy of tulip tree (*Liriodendron tulipifera*), green ash (*Fraxinus pennsylvanica*), and shag-bark hickory (*Carya ovata*), with an understory of American hornbeam (*Carpinus caroliniana*) and tulip tree. The herb layer includes abundant cinnamon fern (*Osmundastrum cinnamomeum*), Japanese stilt grass (*Microstegium vimineum*), and Japanese honeysuckle (*Lonicera japonica*). This patch had been selectively logged, with some large trees removed.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs along upland slopes above the Rocky River and in dissected bluff lands. The canopy is a mix of American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and lesser amounts of tulip tree (*Liriodendron tulipifera*), white oak (*Quercus alba*), shag-bark hickory (*Carya ovata*), and mockernut hickory (*Carya tomentosa*). Canopy trees average 10–12 inches in diameter, with trees up to 16 inches common. The understory includes flowering dogwood (*Benthameidia florida*), American holly (*Ilex opaca*), sourwood (*Oxydendrum arboreum*), eastern red cedar (*Juniperus virginiana*), American hornbeam (*Carpinus caroliniana*), as well as canopy species. Shrubs include fringe tree (*Chionanthus virginicus*), American hazelnut (*Corylus americana*), American witch-hazel (*Hamamelis virginiana*), smooth black-haw (*Viburnum prunifolium*), and American strawberry-bush (*Euonymus americanus*). A great diversity of herbs is present, including Christmas fern (*Polystichum acrostichoides*), may apple (*Podophyllum peltatum*), little brown jug (*Hexastylis arifolia*), round-lobe hepatica (*Hepatica americana*), narrow-leaved spring beauty (*Claytonia virginica*), cutleaf toothwort (*Cardamine concatenata*), spotted wintergreen (*Chimaphila maculata*), Solomon's-plume (*Maianthemum racemosum*), Canada sanicle (*Sanicula canadensis*), bloodroot (*Sanguinaria canadensis*), beechdrops (*Epifagus virginiana*), dimpled fawn-lily (*Erythronium umbilicatum*), star chickweed (*Stellaria pubera*), round-lobe hepatica (*Hepatica americana*), and perfoliate bellwort (*Uvularia perfoliata*).

Piedmont Alluvial Forest occurs on a narrow floodplain of the Rocky River and the bottoms of larger tributary creeks. The Rocky River floodplain has substantial microtopography, with a high terrace present in some places, and with flood channels and intervening ridges several feet high in some spots. All but the highest parts of the high terraces had flooded before one survey. The vegetation is remarkably similar throughout. Tulip tree (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), sugarberry (*Celtis laevigata*), box-elder (*Acer negundo*), sweet gum (*Liquidambar styraciflua*), and sycamore (*Platanus occidentalis*) are the most abundant trees, and black walnut (*Juglans nigra*) is fairly common. Less frequent species include river birch (*Betula nigra*), American beech (*Fagus grandifolia*), swamp chestnut oak (*Quercus michauxii*), northern red oak (*Quercus rubra*), bitter-nut hickory (*Carya cordiformis*), and white oak (*Quercus alba*). The canopy is mature in most parts examined, with trees averaging 12–14 inches in diameter. Some areas are younger where recently logged. The understory includes abundant American hornbeam (*Carpinus caroliniana*), along with most of the common canopy species. The shrub layer varies. Some areas

were dense thickets of the nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*), which have been effectively removed. Spicebush (*Lindera benzoin*) and painted buckeye (*Aesculus sylvatica*) are abundant in portions. Vines, including grape (*Vitis* sp.) and common greenbrier (*Smilax rotundifolia*), are prominent but not dense. The herb layer is generally dense. Parts are dominated by nonnative invasives such as common starwort (*Stellaria media*), ivy-leaf speedwell (*Veronica hederifolia*), Japanese honeysuckle (*Lonicera japonica*), or Japanese stilt grass (*Microstegium vimineum*). Native narrow-leaved spring beauty (*Claytonia virginica*), dimpled fawn-lily (*Erythronium umbilicatum*), bluegrass (*Poa* sp.), Virginia wild-rye (*Elymus virginicus*), and common bottlebrush grass (*Elymus hystrix*) can form dense cover as well. Other species include slender toothwort (*Cardamine angustata*), yellow corydalis (*Corydalis flavula*), violets (*Viola* sp.), catchweed bedstraw (*Galium aparine*), field garlic (*Allium vineale*), and star chickweed (*Stellaria pubera*).

Piedmont Cliff (Basic Subtype) occurs on a moderately steep north-facing bluff above the Rocky River. The outcrop slopes at about 45 degrees and is curved and relatively unfractured, about 25 meters long and up to 10 meters high. Vegetation is sparse, but woody species rooted in crevices and on ledges include white ash (*Fraxinus americana*), American bladdernut (*Staphylea trifolia*), Florida maple (*Acer floridanum*), and eastern redbud (*Cercis canadensis*). Black walnut (*Juglans nigra*) and Carolina broomwood (*Tilia americana* var. *caroliniana*) are rooted at the base. The sparse herbs on the rock include alumroot (*Heuchera* sp.), snakeroot (*Sanicula* sp.), common bottlebrush grass (*Elymus hystrix*), slender dayflower (*Commelina erecta*), and Christmas fern (*Polystichum acrostichoides*). Moss cover is fairly high, and, surprisingly, includes some American tree moss (*Climacium americanum*) despite not appearing wet. The community is barely large enough to form a canopy break and so is marginally developed.

Piedmont/Coastal Plain Heath Bluff occurs on steep north-facing bluffs above the river. The canopy includes white oak (*Quercus alba*), American beech (*Fagus grandifolia*), and mockernut hickory (*Carya tomentosa*). Sourwood (*Oxydendrum arboreum*) is prominent in the understory, along with American beech. Mountain laurel (*Kalmia latifolia*) forms a dense but not impenetrable shrub layer. Herbs are low in density but are less sparse than typical. Species include dimpled fawn-lily (*Erythronium umbilicatum*), little heartleaf (*Hexastylis minor*), bluegrass (*Poa* sp.), and a few Christmas fern (*Polystichum acrostichoides*).

Rocky Bar and Shore (Water Willow Subtype) occurs as a rock garden of bedrock outcrops and gravel/cobble bars within the river and on its banks. Common water-willow (*Justicia americana*) dominates, growing in the water amid the rocks. Some flood-battered and young sycamore (*Platanus occidentalis*) occur.

**PROTECTION:** This entire site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Dry Basic Oak—Hickory Forest, Floodplain Pool, Low Elevation Seep (Floodplain Subtype), Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Cliff (Basic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Water Willow Subtype).

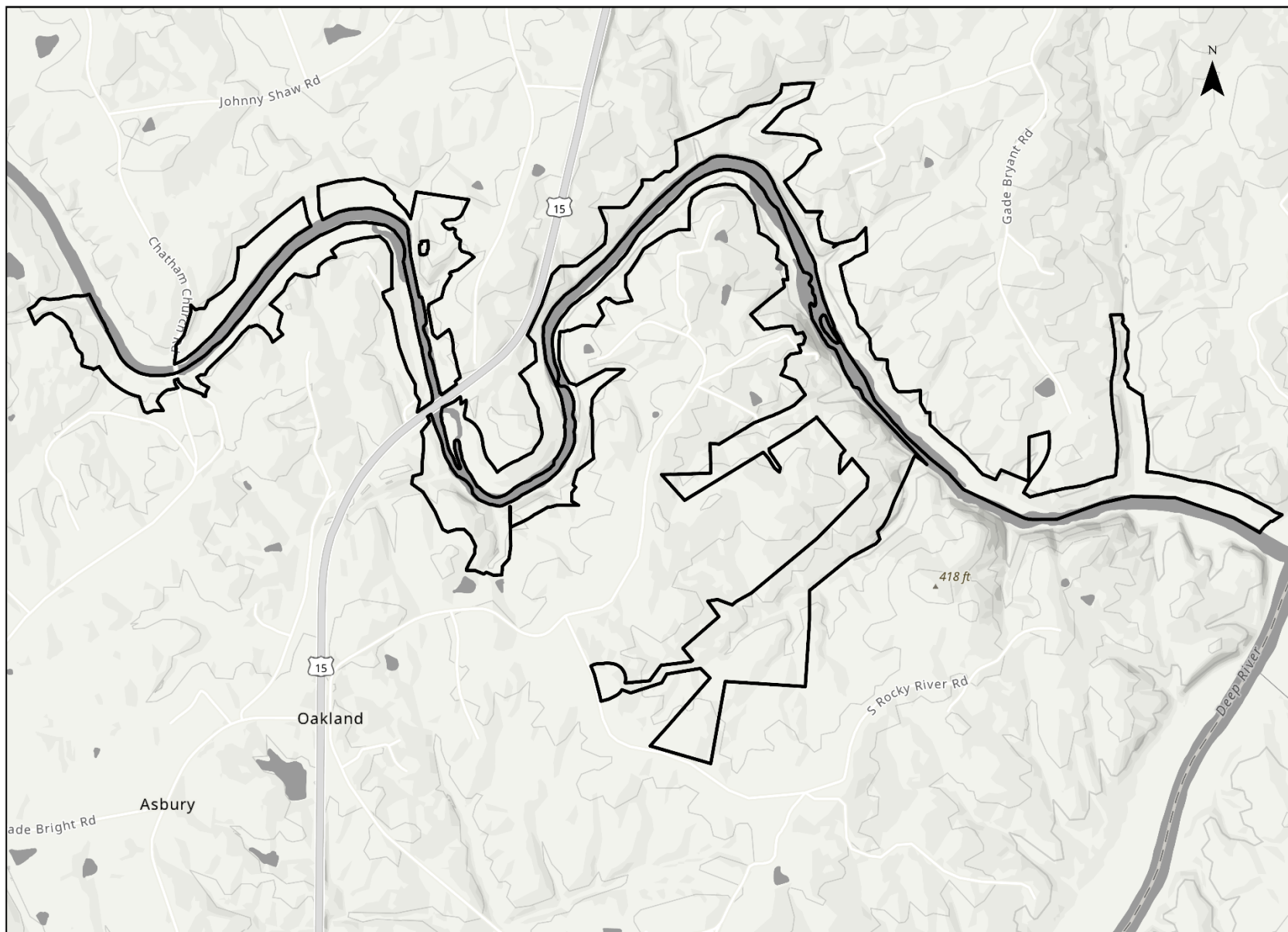
**RARE PLANTS:** None observed.

**RARE ANIMALS:** Five rare aquatic species have been documented in the adjacent Rocky River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), three species state listed as Endangered or Threatened - brook floater (*Alasmodonta varicosa*), triangle floater (*Alasmodonta undulata*), Carolina creekshell (*Sagittunio vaughaniana*), and Significantly Rare eastern creekshell (*Villosa delumbis*).

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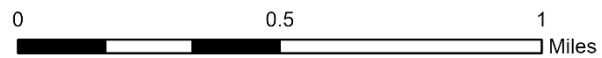


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## Rocky River Dragonfly Riffles

N.C. Natural Heritage Program  
June 2025







## Rocky River Dragonfly Riffles

N.C. Natural Heritage Program  
June 2025

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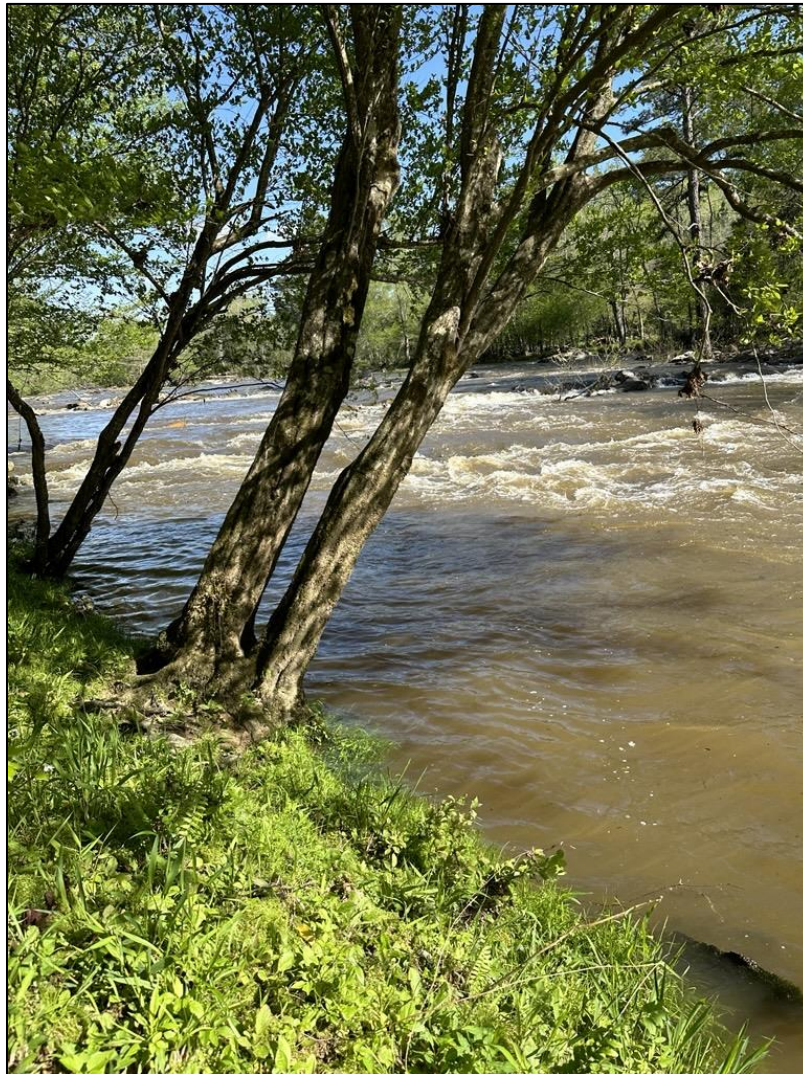


## Chatham County Natural Area Inventory

### Rocky River Dragonfly Riffles

<b>Site Significance:</b> Very High	<b>Size:</b> 453 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> NC Division of Parks and Recreation, Triangle Land Conservancy, Private
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Colon, Pittsboro

**SIGNIFICANT FEATURES:** Rocky River Dragonfly Riffles is of Very High significance for its protection of two high-quality examples of rare communities, Rocky Bar and Shore (Mixed Bar Subtype) and Rocky Bar and Shore (Southern Wild Rice Subtype). Also, this site supports nine additional elements of biodiversity including eight natural communities and the Significantly Rare buttercup phacelia (*Phacelia covillei*). Many rare aquatic species, including the Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*), occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.



The Rocky River Near the Southern End of Rocky River Dragonfly Riffles Natural Area. Photo by: Merry Conlin.

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat flows through the site. White Pines natural area joins in the south. Lower Bear Creek Slopes is adjacent in the north along the Rocky River.

**SITE DESCRIPTION:** This site lies along a stretch of the Rocky River that is unusually rocky, with extensive rapids, shoals, and rock bars. Excellent Rocky Bar and Shore communities are shared between the site and the riverbed itself. A narrow floodplain is present along the river and supports Piedmont Alluvial Forest that is generally quite mature and in excellent condition. The rare buttercup phacelia (*Phacelia colvillei*) is present in several places in the alluvial forest. Moderate to steep bluffs make up the largest portion of the site acreage. They support Mesic Mixed Hardwood Forest communities that are also in excellent condition. Two small patches of Upland Depression Swamp Forest in the uplands are also included within the site. Three rare dragonfly species inhabit this stretch of the Rocky River: Septima's clubtail (*Gomphurus septima*), rapids clubtail (*Gomphurus quadricolor*), and spine-crowned clubtail (*Gomphurus abbreviatus*). They are primarily associated with the river but use the adjacent uplands to some degree. The site also protects substantial frontage along the Deep River-Rocky River Aquatic Habitat site and helps to protect the Cape Fear shiner (*Notropis mekistocholas*) and rare mussel populations in this reach.

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs on upper slopes and upland ridges and can extend to the edge of the floodplain in a few places. The canopy is dominated by white oak (*Quercus alba*) with some northern red oak (*Quercus rubra*) and hickories (*Carya tomentosa* and *Carya ovata*) scattered throughout. Loblolly pine (*Pinus taeda*) is present in some patches. The canopy is fairly mature with trees averaging 12–14 inches in diameter, in the most mature places trees 20 inches in diameter are common. The understory contains abundant red maple (*Acer rubrum*), American holly (*Ilex opaca*), and few shrubs. Some shrubby American beech (*Fagus grandifolia*) and deerberry (*Vaccinium stamineum*) can be locally abundant, and a few bigleaf snowbell (*Styrax grandifolius*) are present as well. The nonnative invasive autumn olive (*Elaeagnus umbellata*) appears occasionally, with the densest patches observed in the southern portion of the site. The herbaceous layer is likewise sparse with Christmas fern (*Polystichum acrostichoides*) the most abundant. Some additional scattered herbs include Virginia snakeroot (*Endodeca serpentaria*), violet wood-sorrel (*Oxalis violacea*), and, in the drains and seepy areas, atamasco lily (*Zephyranthes atamasco*).

Floodplain Pool community occurs as an elongate overflow channel, with substantial segments that hold water when the river is not in flood. The overflow is rocky, with cobbles and small boulders in the bed, comparable to the adjacent river channel. Sparse plants from the adjacent Piedmont Alluvial Forest are present in the pool.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs in the ravine bottoms, lower to mid slopes, and is transitional to other communities along the slopes adjacent to the Rocky River. The canopy contains a mixture of white oak (*Quercus alba*), northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), American beech (*Fagus grandifolia*), and hickories. A few individuals of the regionally uncommon eastern white pine (*Pinus strobus*) are present. One of larger white pines measures 29.5 inches in diameter. This community is in good condition with some mixed aged patches. Overall, the canopy averages 14–16 inches in diameter. The understory contains abundant American holly (*Ilex opaca*), some tulip tree (*Liriodendron tulipifera*), and American beech (*Fagus grandifolia*). Near the water bodies American hornbeam (*Carpinus caroliniana*) is more common. The shrub layer is sparse and generally consists of regenerating canopy species. Some painted buckeye (*Aesculus sylvatica*), American witch-hazel (*Hamamelis virginiana*), and Florida maple (*Acer floridanum*) are present as well. The herbaceous layer is diverse overall, but not dense. Christmas fern (*Polystichum acrostichoides*) is dominant. Additional species visible during a spring survey include dimpled fawn-lily (*Erythronium umbilicatum*),



Catesby's trillium (*Trillium catesbyi*), heart-leaved foam-flower (*Tiarella cordifolia*), and windflower (*Thalictrum thalictroides*) among others.

Piedmont Alluvial Forest occurs in multiple patches in the floodplain of the Rocky River and adjacent tributaries. The canopy is a mixture with sycamore (*Platanus occidentalis*) and green ash (*Fraxinus pennsylvanica*) most abundant. Other species include sugarberry (*Celtis laevigata*), sweet gum (*Liquidambar styraciflua*), box-elder (*Acer negundo*), loblolly pine (*Pinus taeda*), black walnut (*Juglans nigra*), and a few oaks, including willow oak (*Quercus phellos*), swamp chestnut oak (*Quercus michauxii*), and even white oak (*Quercus alba*). The canopy varies in maturity. Trees are large in most parts averaging 14–16 inches, with some to 20 inches in diameter. The understory includes American hornbeam (*Carpinus caroliniana*), Florida maple (*Acer floridanum*), and various canopy species. The shrub layer is variable but generally not dense. Species include spicebush (*Lindera benzoin*), giant cane (*Arundinaria gigantea*), deciduous holly (*Ilex decidua*), coralberry (*Symphoricarpos orbiculatus*), black haw (*Viburnum prunifolium*), and dwarf buckeye (*Aesculus sylvatica*) and some nonnative invasive Chinese privet (*Ligustrum sinense*) and autumn olive (*Elaeagnus umbellata*). Vines are diverse but generally not dense, though nonnative invasive Japanese honeysuckle (*Lonicera japonica*) and wisteria (*Wisteria* sp.) are abundant in some areas. The herb layer is dense and lush in most parts. Much is heavily dominated by nonnative invasive plants, especially ground ivy (*Glechoma hederacea*), common starwort (*Stellaria media*), and Japanese stilt grass (*Microstegium vimineum*). A high diversity of native species is present, however, including abundant small-flower baby-blue-eyes (*Nemophila aphylla*), a large dense patch of green dragon (*Arisaema dracontium*), and one area with a large population of the Significantly Rare buttercup phacelia (*Phacelia covillei*). Other species include river oats (*Chasmanthium latifolium*), Virginia wild-rye (*Elymus virginicus*), common bottlebrush grass (*Elymus hystrix*), Asa Gray sedge (*Carex grayi*), Virginia knotweed (*Persicaria virginiana*), false nettle (*Boehmeria cylindrica*), lopseed (*Phryma leptostachya*), pale avens (*Geum virginianum*), atamasco lily (*Zephyranthes atamasco*), violet wood-sorrel (*Oxalis violacea*), and many others. Yellow crownbeard (*Verbesina occidentalis*) dominates in areas where the canopy is broken by wind throw, as well as on the opposite side of the river where the understory was cleared.



A Portion of the Piedmont Cliff (Acidic Subtype) at Rocky River Dragonfly Riffles Natural Area with Blooming Fringe Tree (*Chionanthus virginianus*). Photo by: Mike Schafale.



Piedmont Cliff (Acidic Subtype) occurs as a steep west-facing bluff above the Rocky River. Small outcrops of rock, most nearly vertical, are extensive enough to create open canopy conditions and heterogeneous physical environment and vegetation characteristic of cliffs, though the opening is limited in extent. The vegetation is a complex mix of patches and individual trees, shrubs, herbs, and sparse plants on rock. A large diversity of plants is present, reflecting the range from dry to moist pockets created by varying soil depth, water runoff, and seepage. Trees are primarily those shared with the adjacent upland forests—white oak (*Quercus alba*), loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), American holly (*Ilex opaca*), but also include winged elm, fringe tree (*Chionanthus virginianus*), a notable shortleaf pine (*Pinus echinata*) 20 inches in diameter, and the uncommon Carolina broomwood (*Tilia americana* var. *caroliniana*). Shrubs are similarly a mix of species typical of dry and moist conditions, including farkleberry (*Vaccinium arboreum*), fragrant sumac (*Rhus aromatica*), mountain laurel (*Kalmia latifolia*), and witch-hazel (*Hamamelis virginiana*). Several vines are prominent on the cliff, including poison ivy (*Toxicodendron radicans*) and the native coral honeysuckle (*Lonicera sempervirens*). Some nonnative vines have heavily invaded this community, especially wisteria, and including Japanese honeysuckle (*Lonicera japonica*). Herbs are fairly diverse and again include some nonnative species. As in the other strata, they include a range of moisture tolerances, from mesic species such as Christmas fern (*Polystichum acrostichoides*) to dry, such as oat grass (*Danthonia spicata*).

Piedmont/Coastal Plain Heath Bluff occurs on a steep north and east facing bluff along the Rocky River. Along the river it includes rocky outcrops that are not large and distinct enough to be separately classified as Piedmont Cliffs. In some places at the base of the slope this community grades rather abruptly and narrowly to a scoured floodplain, which is also not large enough to separately classify. The canopy contains abundant white oak (*Quercus alba*) with an understory of sourwood (*Oxydendrum arboreum*), tulip tree (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). One individual Carolina broomwood (*Tilia americana* var. *caroliniana*) was observed, along with a small grove of pawpaw (*Asimina triloba*). The shrub layer is dominated by mountain laurel (*Kalmia latifolia*). On the rocky outcrop additional shrub species include fringe tree (*Chionanthus virginicus*), American witch-hazel (*Hamamelis virginiana*), fetter-bush (*Eubotrys racemosus*), and maple-leaf viburnum (*Viburnum acerifolium*). Vines are dense, particularly along the river and include crossvine (*Bignonia capreolata*), poison ivy (*Toxicodendron radicans*), and coral honeysuckle (*Lonicera sempervirens*). Herbaceous species are sparse and found primarily near the bluff base. Some of the species present include Christmas fern (*Polystichum acrostichoides*), purple bluet (*Houstonia purpurea*), and common greenbrier (*Smilax rotundifolia*). A few patches of the uncommon southern barren-strawberry (*Waldsteinia doniana*) are present in the rock outcrops as well.

Rocky Bar and Shore (Mixed Bar Subtype) occurs on the higher cobble bars and limited scoured bedrock areas. The vegetation is sparse, consisting mainly of flood-battered, shrub-size sycamore (*Platanus occidentalis*) and box-elder (*Acer negundo*). Herbs in somewhat sheltered portions include lizard's tail (*Saururus cernuus*), smartweed (*Persicaria* sp.), witchgrass (*Dichanthelium* sp.), and common water-willow (*Justicia americana*). Other species may be apparent later in the season.

Rocky Bar and Shore (Southern Wild Rice Subtype) occurs as dense patches of southern wildrice (*Zizaniopsis miliacea*) in the middle of the river, among rocks. Southern wildrice dominates, in open to dense stands. No other associated plants were noted, but some of the Significantly Rare dragonfly Septima's clubtail (*Gomphurus septima*) were seen perched on the grasses.

Rocky Bar and Shore (Water Willow Subtype) Occurs on lower cobble bars and riffles, shallowly submerged at the time of survey. Common water-willow (*Justicia americana*) dominates, in sparse to moderate density stands. No other species were noted.

Upland Depression Swamp Forest occurs around two upland depressions just off of River Forks Road. These depressions, flooded during this spring survey, are approximately 100' long by 50' and 300' long by 150' wide. They are likely only 1–2 feet deep at the center. Canopy trees around the exterior are primarily sweet gum (*Liquidambar styraciflua*) and farther out loblolly pine (*Pinus taeda*). Some younger white oak (*Quercus alba*) is present as well. The most common shrub in the pool margins is fetter-bush (*Eubotrys racemosus*) with a few farkleberry (*Vaccinium arboreum*) and hairy highbush blueberry (*Vaccinium fuscatum*). Some patches of *Sphagnum* sp. occur along portions of the pool. A few clumps of what resembles cypress-swamp sedge (*Carex* cf. *joorii*) are the only herbaceous species present. These pools are found inside a successional forest. It is unclear whether historical timber harvest or road creation might have initially formed these depressions. The Cid-Lignum soils of the area could feasibly create an acidic hardpan, suggesting the treatment of this pool as a natural occurrence.

**PROTECTION:** Much of this site is protected via conservation easement and within a Natural Heritage Program Registered Heritage Area.

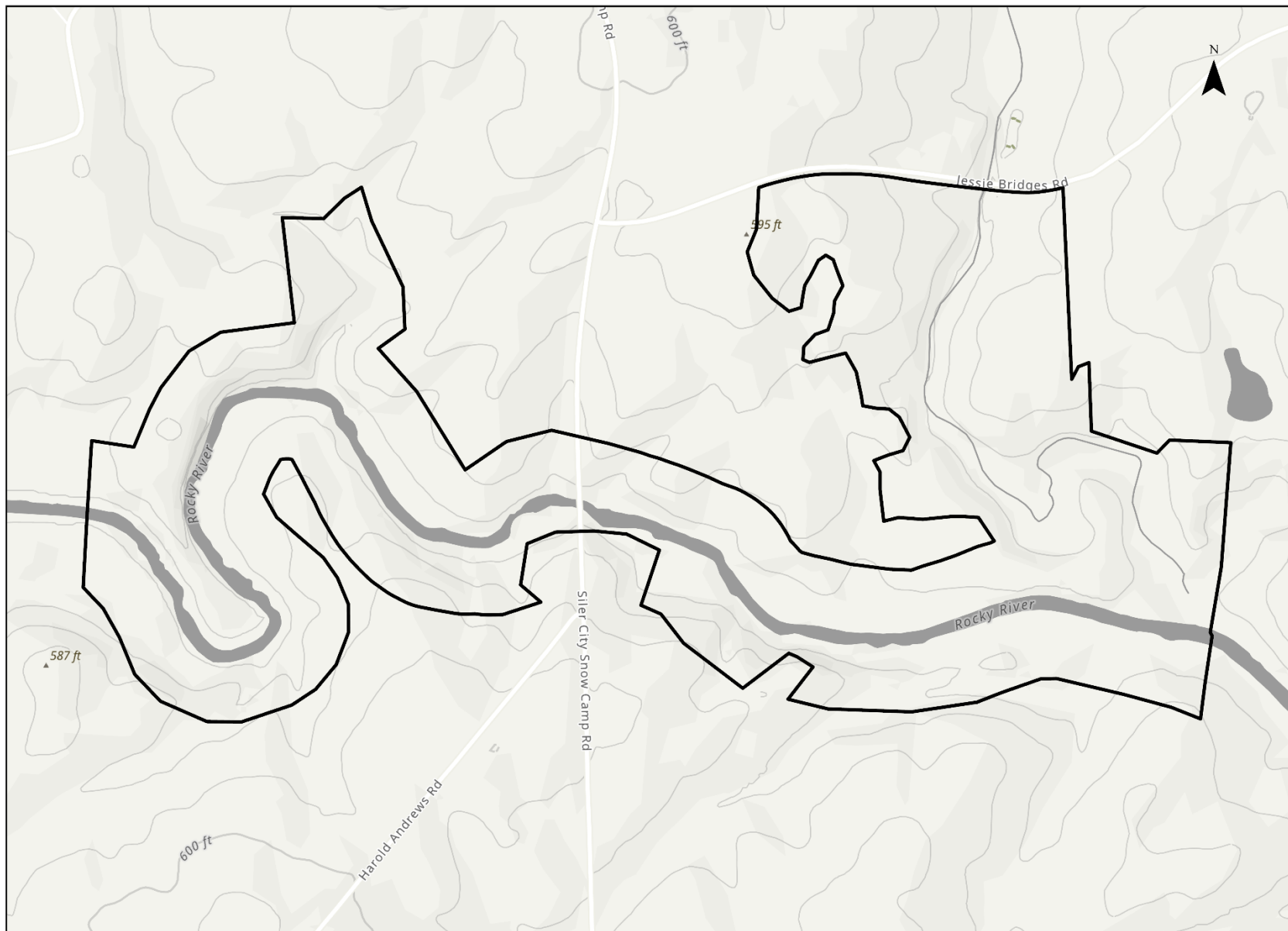
**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont Cliff (Acidic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Mixed Bar Subtype), Rocky Bar and Shore (Southern Wild Rice Subtype), Rocky Bar and Shore (Water Willow Subtype), Upland Depression Swamp Forest.

**RARE PLANTS:** Significantly Rare buttercup phacelia (*Phacelia covillei*).

**RARE ANIMALS:** Sixteen rare aquatic species have been documented in the adjacent Rocky River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and eight additional species state listed as Endangered, Threatened, or Special Concern including, brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vauhanianus*), Carolina redhorse (*Moxostoma* sp. 3), creeper (*Strophitus undulatus*), eastern pondmussel (*Sagittunio nasutus*), notched rainbow (*Venustaconcha constricta*), Savannah lilliput (*Toxolasma pullus*), and triangle floater (*Alasmidonta undulata*). Six species are Significantly Rare including, chameleon lampmussel (*Lampsilis* sp. 2), eastern creekshell (*Villosa delumbis*), panhandle pebblesnail (*Somatogyrus virginicus*), rapids clubtail (*Phanogomphus quadricolor*), rayed pink fatmucket (*Lampsilis splendida*), and Septima's clubtail (*Gomphurus septima*). One Watch List species, spine-crowned clubtail (*Hylogomphus abbreviatus*) has been historically documented.

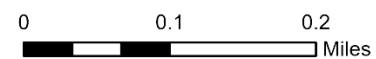
## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Rocky River Dragonfly Riffles. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. 2014, 2016, 2018. Site Survey Reports: Rocky River Dragonfly Riffles. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.



## Rocky River and Nick Creek Slopes

N.C. Natural Heritage Program  
June 2025







## Rocky River and Nick Creek Slopes

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



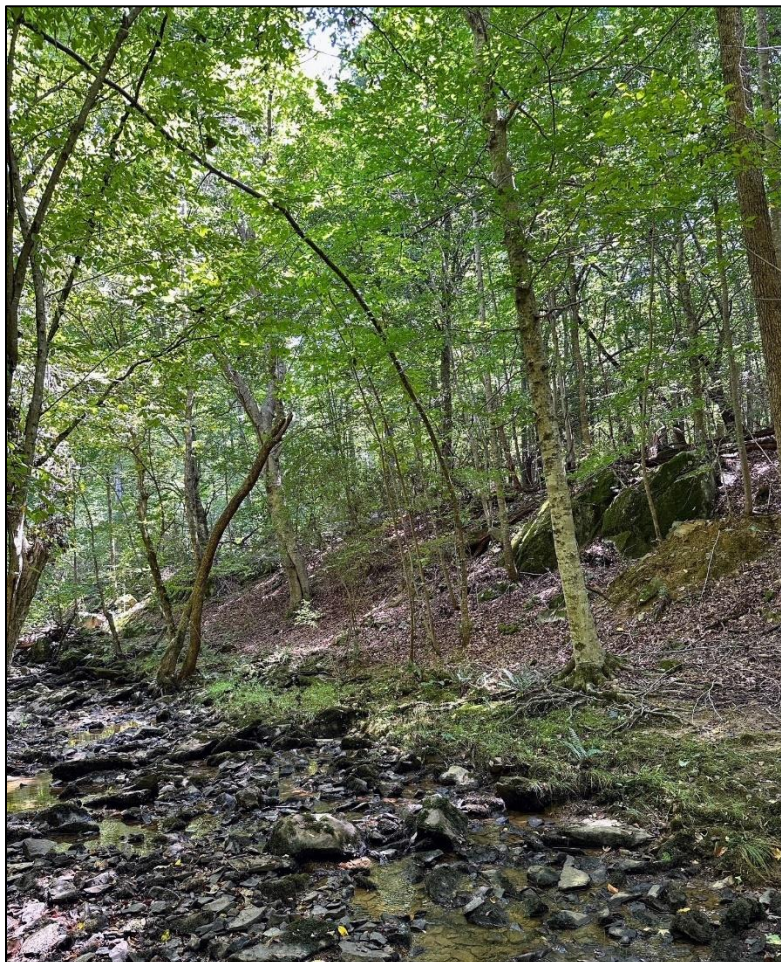
## Chatham County Natural Area Inventory

### Rocky River and Nick Creek Slopes

<b>Site Significance:</b> Moderate	<b>Size:</b> 163 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Crutchfield Crossroads

**SIGNIFICANT FEATURES:** Rocky River and Nick Creek Slopes natural area is of Moderate significance for supporting four natural communities including good quality examples of Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Piedmont/Coastal Plain Heath Bluff, and Piedmont Alluvial Forest. Many rare aquatic species, including the State Endangered Carolina creekshell, occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Deep River-Rocky River Aquatic Habitat flows through the site. Rocky River Basalt Bluffs and Levees is 3 air miles southeast, downstream. Donnelly Hardpan is 2.4 miles to the southwest.



Rocky River Tributary Downslope of a Piedmont/Coastal Plain Heath Bluff at Rocky River and Nick Creek Slopes Natural Area. Photo by: Merry Conlin.

**SITE DESCRIPTION:** Rocky River and Nick Creek Slopes is the northernmost terrestrial natural area on the Rocky River. This site occupies an approximately 1.5-mile reach of the Rocky River corridor and dissected uplands and bluffs along the river valley. Several well-developed tributary valleys are present across the site. This site reflects a mixed use with areas of mature forested hardwoods, fairly recently harvested successional forests and fields. Dry-Mesic Basic Oak—Hickory Forest and Basic Mesic Forest are the most extensive natural communities in the uplands, and a much smaller area of Mesic Mixed Hardwood Forest is present. Some Piedmont Alluvial Forest is present along both the Rocky River and tributary creeks. The site also protects substantial frontage along the Deep River-Rocky River Aquatic Habitat and helps to protect rare mussel populations in this reach.

Basic Mesic Forest (Piedmont Subtype) occurs on mesic slopes along the creek. The predominant canopy trees are American beech (*Fagus grandifolia*), tulip tree (*Liriodendron tulipifera*), and northern red oak (*Quercus rubra*). The most mature parts of this community have canopy trees averaging 14-16 inches in diameter and trees up to 24 inches in diameter. The understory includes Florida maple (*Acer floridanum*) in some places, white ash (*Fraxinus americana*), American beech (*Fagus grandifolia*), and other canopy species in other places. Shrubs are sparse but include spicebush (*Lindera benzoin*). The herb layer is fairly diverse, though not generally dense. Species include common black-cohosh (*Actaea racemosa*), wild comfrey (*Andersonglossum virginianum*), Bosc's witchgrass (*Dichanthelium boscii*), common bottlebrush grass (*Elymus hystrix*), sweet-scent bedstraw (*Galium triflorum*), broad beech fern (*Phegopteris hexagonoptera*), and Christmas fern (*Polystichum acrostichoides*). The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is dense in some areas.

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs on upland flats and upper slopes. The canopy is closed with abundant white oak (*Quercus alba*), northern red oak (*Quercus rubra*), tulip tree (*Liriodendron tulipifera*), and hickories. Some living white ash (*Fraxinus americana*) and dead snags are present as well. The canopy is mature averaging 14–16 inches in diameter. A large mockernut hickory (*Carya tomentosa*) measures 33.7 inches in diameter. The understory is fairly open, and includes American hornbeam (*Carpinus caroliniana*), eastern redbud (*Cercis canadensis*), American holly (*Ilex opaca*), black cherry (*Prunus serotina*), and winged elm (*Ulmus alata*) in addition to canopy species. The shrub layer is sparse with some American beech (*Fagus grandifolia*), deerberry (*Vaccinium stamineum*), and the nonnative invasives autumn olive (*Elaeagnus umbellata*) and Chinese privet (*Ligustrum sinense*). In one portion some spicebush (*Lindera benzoin*) is present. The herbaceous layer is likewise sparse and variable with ebony spleenwort (*Asplenium platyneuron*), wild licorice (*Galium circaeazans*), little brown jug (*Hexastylis arifolia*), lopseed (*Phryma leptostachya*), Christmas fern (*Polystichum acrostichoides*), and some coral-berry (*Symphoricarpos orbiculatus*), common bottlebrush grass (*Elymus hystrix*), yellow crownbeard (*Verbesina occidentalis*), and broad beech fern (*Phegopteris hexagonoptera*), among others.

Piedmont Alluvial Forest occurs in the floodplain of the Rocky River, of Nick Creek, and of the other tributary creek on the site. The canopy is dominated by tulip tree (*Liriodendron tulipifera*) and sweet gum (*Liquidambar styraciflua*), with a diversity of other species present, including green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), willow oak (*Quercus phellos*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), American beech (*Fagus grandifolia*), sycamore (*Platanus occidentalis*), and black walnut (*Juglans nigra*). The forest is mature over substantial areas, with canopy trees averaging 14 inches in diameter and trees 18–24 inches in diameter present in many places. The understory includes box-elder (*Acer negundo*), American hornbeam (*Carpinus caroliniana*), and many of the canopy species. Shrubs range from sparse to dense. Nonnative invasives autumn olive (*Elaeagnus umbellata*), Chinese privet (*Ligustrum sinense*), Beale's Oregon-grape (*Mahonia bealei*) are present in some portions. Spicebush (*Lindera benzoin*) and coral-berry (*Symphoricarpos orbiculatus*) are also abundant. The herb layer is generally dense. The nonnative invasive Japanese stilt grass (*Microstegium vimineum*) is strongly dominant in parts,



but there is high diversity elsewhere. Species include sedges (*Carex* spp.), common bottlebrush grass (*Elymus hystrix*), Virginia wild-rye (*Elymus virginicus*), Virginia cutgrass (*Leersia virginica*), Christmas fern (*Polystichum acrostichoides*), false nettle (*Boehmeria cylindrica*), white avens (*Geum canadense*), wood-rush (*Luzula* sp.), Virginia bugleweed (*Lycopus virginicus*), cutleaf grape-fern (*Sceptridium dissectum*), cardinal flower (*Lobelia cardinalis*), yellow crownbeard (*Verbesina occidentalis*), river oats (*Chasmanthium latifolium*), and violet (*Viola* sp.), among others.

Piedmont/Coastal Plain Heath Bluff occurs on steep slopes and a narrow ridge and above a Rocky River tributary. The canopy contains a mixture of oaks. White oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), and northern red oak (*Quercus rubra*) are common and mature. The closed canopy averages 16–18 inches in diameter. The understory is sparse and open with sourwood (*Oxydendrum arboreum*) and downslope some tulip tree (*Liriodendron tulipifera*). The shrub layer is dominated by mountain laurel (*Kalmia latifolia*). Some deerberry (*Vaccinium stamineum*) is present as well. Virtually no species were observed in the herbaceous layer. Only spotted wintergreen (*Chimaphila maculata*) was present.

**PROTECTION:** Much of this site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Piedmont Alluvial Forest, Piedmont/Coastal Plain Heath Bluff.

**RARE PLANTS:** None observed.

**RARE ANIMALS:** Three rare aquatic species have been documented in the adjacent Rocky River: two state listed as Endangered or Threatened including the Carolina creekshell (*Sagittunio vaughanians*) and notched rainbow (*Venusta concha constricta*). One species, eastern creekshell (*Villosa delumbis*) is Significantly Rare.

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: Rocky River and Nick Creek Slopes, central tract. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. and A.E. (Schwarz) Weakley. 2014. Site Survey Report: Rocky River. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. 2017. Site Survey Report: Rocky River Subbasin Aquatic Habitat. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Terrells Creek Galax Bluffs

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Terrells Creek Galax Bluffs

<b>Site Significance:</b> General	<b>Size:</b> 59 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Terrells Creek Galax Bluffs is of General significance for its support of a high-quality example of Piedmont/Coastal Plain Heath Bluff and an associated flora that is very uncommon in the county. This site also supports the State Threatened bald eagle (*Haliaeetus leucocephalus*). Many rare aquatic species, including the species of Special Concern Carolina darter (*Etheostoma collis*), occur within Terrells Creek and the Very High rated Haw River Aquatic Habitat adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Haw River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** The Haw River Aquatic Habitat is adjacent to this site. Castle Rock Forests is approximately 2.6 air miles west and upstream along Terrells Creek. Rock Rest Mafic Islands and Shore is 1.6 miles southeast and downstream along the Haw River.

**SITE DESCRIPTION:** Terrells Creek is a medium-sized tributary of the Haw River but has cut deeply along a ridge of resistant rock; the cliffs on the east side of this stream rise more than fifty feet straight up from the channel. The steepness of this site and numerous rock outcrops prevent the formation of a closed forest canopy. This site was originally described by Hall and Boyer (1992) and has not been accessed on the ground by NCNHP biologists since their survey. Updates to the natural area boundary have been made based on satellite imagery where disturbances have visibly reduced hardwood forested acres. The main natural community described to the site is a Piedmont/Coastal Plain Heath Bluff community. This community supports an extensive population of galax (*Galax aphylla*), one of the few known for Chatham County. Wintergreen (*Gaultheria procumbens*) is also present. A small ravine that cuts through the lower part of this site contains a small area of Basic Mesic Forest, rich in wildflowers such as bloodroot (*Sanguinaria canadensis*), mayapple (*Podophyllum peltatum*), black cohosh (*Cimicifuga racemosa*), blue star (*Amsonia tabernaemontana*), and bulbous bittercress (*Cardamine bulbosa*) (Hall and Boyer 1992).

Piedmont/Coastal Plain Heath Bluff occurs on steep, rocky, northwest-facing bluffs above Terrells Creek. The scattered trees forming the canopy are dominated by mesic species such as American beech (*Fagus grandifolia*), northern red oak (*Quercus rubra*), and white oak (*Quercus alba*). The shrub layer is dominated by mountain laurel (*Kalmia latifolia*). In addition to the galax and wintergreen, characteristic species present at this site include trailing arbutus (*Epigaea repens*) and partridge-berry (*Mitchella repens*).

**PROTECTION:** This site is under no formal conservation and would be a worthy target for a registry, easement, or similar conservation agreement.

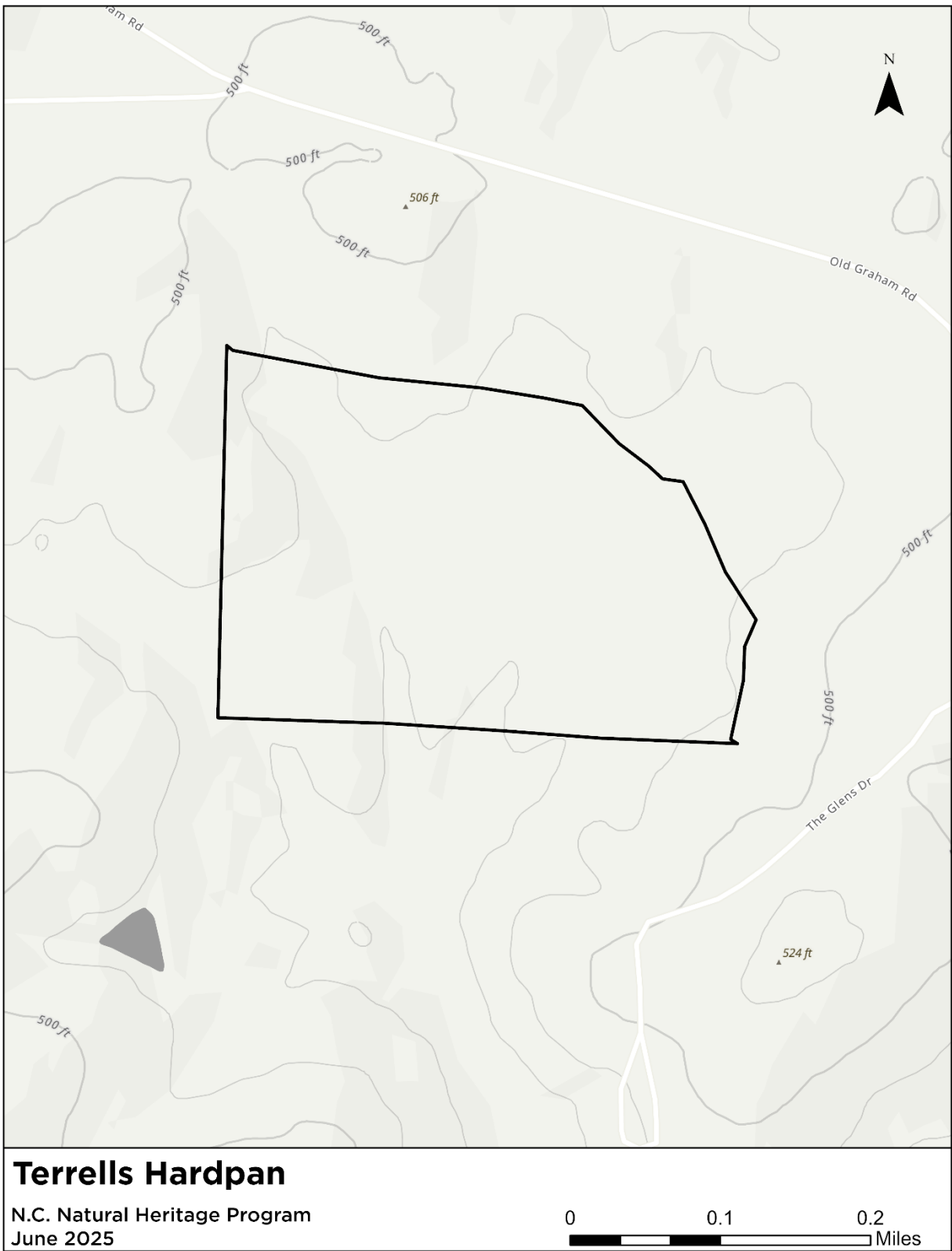
**NATURAL COMMUNITIES:** Piedmont/Coastal Plain Heath Bluff.

**RARE PLANTS:** None reported.

**RARE ANIMALS:** State Threatened bald eagle (*Haliaeetus leucocephalus*) and Significantly Rare Septima's Clubtail (*Gomphurus septima*) occur at the site. Three rare aquatic species have been documented in the adjacent Terrells Creek—two state listed as Endangered or Threatened including the Carolina creekshell (*Sagittunio vaughanians*) and creeper (*Strophitus undulatus*). One species, eastern creekshell (*Villosa dumilis*), is Significantly Rare.

**REFERENCES:**

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.







## Terrells Hardpan

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Terrells Hardpan

<b>Site Significance:</b> High	<b>Size:</b> 47 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Terrells Hardpan is of High significance for its protection of the rare Mixed Moisture Hardpan Forest natural community. In addition, this site supports high-quality examples of three more natural communities: Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), and the rare Upland Depression Swamp Forest.

**LANDSCAPE RELATIONSHIPS:** The Dry Creek boundary of Rock Rest Mafic Islands and Shore is 0.75 miles east. Terrells Creek Galax Bluffs is one mile north.

**SITE DESCRIPTION:** The site consists of gentle upland slopes and a headwater stream drainage in an area of clay-rich metasedimentary rocks. At the center of the site is an area of hardpan or shrink/swell soils which supports a Mixed Moisture Hardpan Forest community. This is visible on the ground as localized ponded water or depressions in microsites with some wetland flora. As is typical for this community, it supports a mix of trees that include willow oak (*Quercus phellos*) along with more upland species such as white oak (*Quercus alba*) and shag-bark hickory (*Carya ovata*). A small area of Upland Depression Swamp, where there are somewhat deeper water pools, is dominated by willow oak. One end of the site supports Dry-Mesic Basic Oak—Hickory Forest occurring on similar, but less extreme, soils. The other end has more common Dry Oak—Hickory Forest, without evidence of basic influence in the soil. All of these forest communities are mature and in good condition.

Dry Oak—Hickory Forest (Piedmont Subtype) occurs on upland slopes and a ridge top. This mature community has a canopy dominated by white oak (*Quercus alba*), with black oak (*Quercus velutina*), shag-bark hickory (*Carya ovata*), scarlet oak (*Quercus coccinea*), and sweet gum (*Liquidambar styraciflua*) also occurring in this community. This community is in good condition and the average for canopy trees is 12 inches in diameter. Eastern red cedar (*Juniperus virginicus*), American holly (*Ilex opaca*) and flowering dogwood (*Benthamidia florida*) dominate the understory. The shrub layer is absent. The herb layer consists of poverty oat-grass (*Danthonia spicata*), sedges (*Carex* spp.), rattlesnake root (*Nabalus* sp.), and potato dandelion (*Krigia dandelion*).

Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype) occurs on gentle upland slopes and ridge top. This mature community has a canopy dominated by white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*), with shag-bark hickory (*Carya ovata*), white ash (*Fraxinus americana*), American elm (*Ulmus americana*), and other hickory species (*Carya* spp.). The average for dominant canopy trees is 12 inches in diameter. Sweet gum (*Liquidambar styraciflua*), American hophornbeam (*Carpinus caroliniana*), painted buckeye (*Aesculus sylvatica*), and American holly (*Ilex opaca*) occur in the understory. The shrub layer is dominated by invasive exotic autumn olive (*Elaeagnus umbellata*). The herb layer consists of pointed blue-eyed grass (*Sisyrinchium angustifolium*), little brown jug (*Hexastylis arifolia*), black-edge sedge (*Carex nigromarginata*), and common bottlebrush grass (*Elymus hystrix*).

Mixed Moisture Hardpan Forest has a canopy dominated by willow oak (*Quercus phellos*) with red maple (*Acer rubrum*), shag-bark hickory (*Carya ovata*), white oak (*Quercus alba*), and sweet gum (*Liquidambar styraciflua*). This community is in good condition and the average for dominant canopy trees is 12 inches in diameter. Eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), red maple (*Acer rubrum*), and flowering dogwood (*Benthamidia florida*) make up the understory. The shrub layer is absent.

The herb layer consists of poverty oat-grass (*Danthonia spicata*), sedges (*Carex* spp.), rattlesnake root (*Nabalus* sp.), potato dandelion (*Krigia dandelion*), and sphagnum moss.

Upland Depression Swamp Forest This mature community has a canopy dominated by willow oak (*Quercus phellos*), with red maple (*Acer rubrum*) also occurring in this community. This community is in good condition and the average of canopy trees is 10 inches in diameter. The understory and shrub layers are absent. Along the pool margins, the herb layer consists of sedges (*Carex* spp.) and sphagnum moss.

**PROTECTION:** This site is under no formal conservation. This site is under consideration for a conservation subdivision plan, which might protect part of the area while other sections are developed.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Basic Oak—Hickory Forest (Piedmont Subtype), Mixed Moisture Hardpan Forest, Upland Depression Swamp Forest.

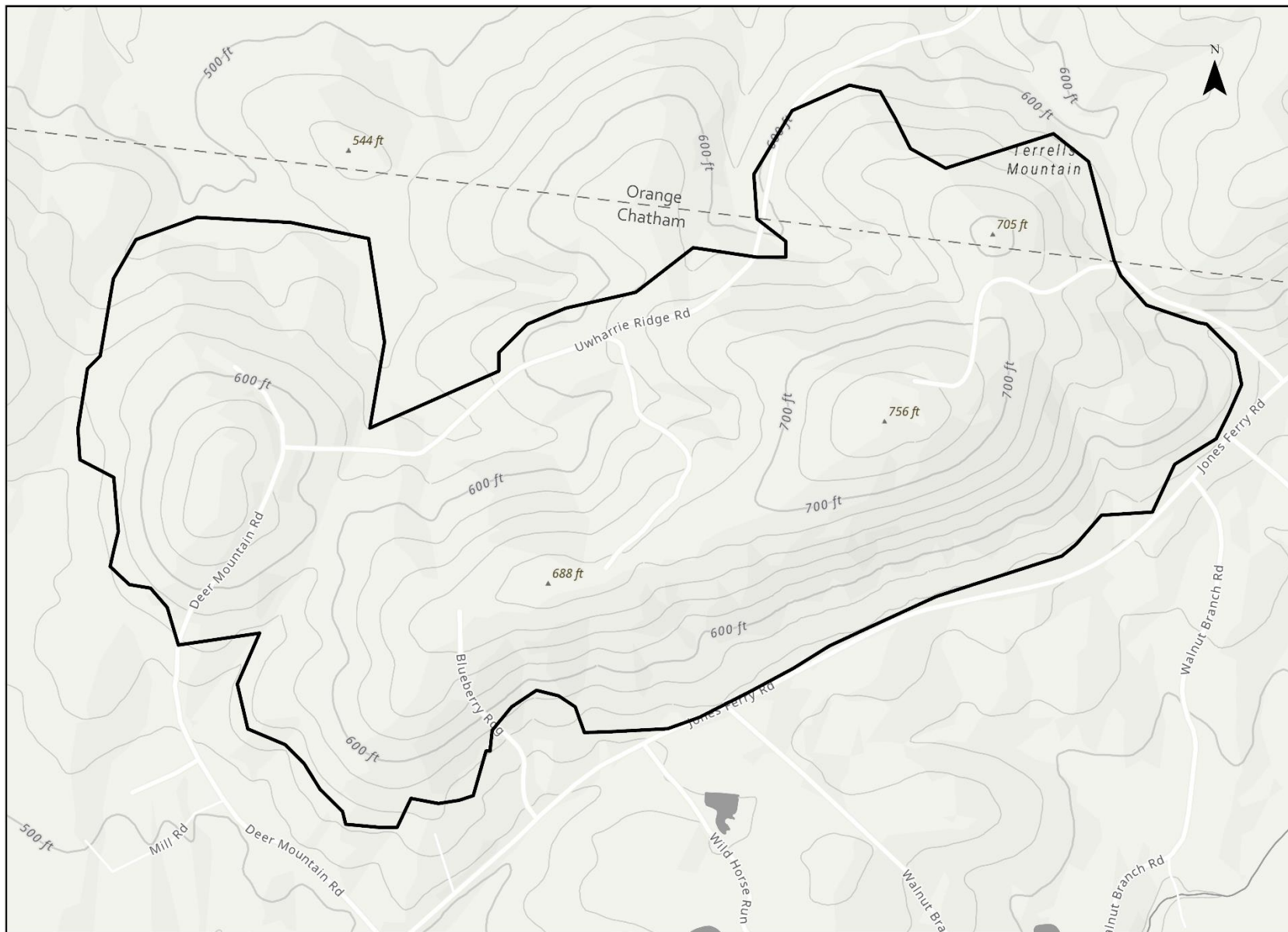
**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

**REFERENCES:**

Robinson, T. J. and J. Ratcliffe. 2024. Site Survey Report: Terrells Hardpan Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.





## Terrells Mountain

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June 2025

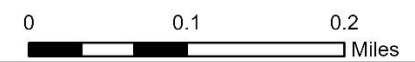
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## Terrells Mountain

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### Terrells Mountain

<b>Site Significance:</b> General	<b>Size:</b> 201 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private, University of North Carolina
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Terrells Mountain natural area is of General significance for its support of three natural communities: Dry Oak—Hickory Forest (Piedmont Subtype), Piedmont Monadnock Forest (Typic Subtype)—both among the 20 best known remaining examples of these natural community types in the state—and a small patch of Dry-Mesic Oak—Hickory Forest (Piedmont Subtype).

**LANDSCAPE RELATIONSHIPS:** Morgan Ridge is 0.5 miles east. Collins Mountain is 1.8 miles west.



Terrells Mountain Natural Area Piedmont Monadnock Forest (Typic Subtype) with Characteristic Chestnut Oak (*Quercus montana*). Photo by: Merry Conlin.



**SITE DESCRIPTION:** This site occurs on one of the highest points in the county on a large rocky peak and ridge. Elevations above 600 feet are rare in the county. This formation was shaped by the slow weathering of the underlying dacite that remains exposed after surrounding rock has eroded away. This has led to exposed boulders and outcrops along the ridge and generally acidic and dry soils. This has also resulted in the regionally uncommon Piedmont Monadnock Forest (Typic Subtype) that is found along much of the ridge and north-facing slopes. The south-facing slopes are predominantly Dry Oak–Hickory Forest (Piedmont Subtype). Within a few sheltered slopes and associated ravine drains are patches of Dry-Mesic Oak–Hickory Forest (Piedmont Subtype). Several of these drains contain micro seepage areas with associated mesic species. Scattered houses and a communications tower are embedded within the forest.

Dry Oak–Hickory Forest (Piedmont Subtype) is largely found on the south facing slopes. The canopy is closed and dominated by white oak (*Quercus alba*). Shortleaf pine (*Pinus echinata*), mockernut hickory (*Carya tomentosa*), post oak (*Quercus stellata*), and Spanish oak (*Quercus falcata*) are common. This community is in good to excellent condition with canopy trees averaging 16–18 inches in diameter. Canopy gaps, formed from blowdowns on the southeast side of the slope, have left large white oaks, with one measuring 34.5 inches in diameter. One canopy black tupelo (*Nyssa sylvatica*) measures 19.5 inches in diameter. The understory is fairly sparse with sourwood (*Oxydendrum arboreum*) and American holly (*Ilex opaca*). The shrub layer is likewise sparse with a few ericaceous species including farkleberry (*Vaccinium arboreum*), hairy highbush blueberry (*Vaccinium fuscum*), and dangle-berry (*Gaylussacia frondosa*). The herbaceous layer is mostly sparse and open. Small black blueberry (*Vaccinium tenellum*) and common greenbrier (*Smilax rotundifolia*) are common.

Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) occurs in a few small patches, found along sheltered slopes and associated ravines on both sides of the ridge. The canopy is closed and dominated by white oak (*Quercus alba*). Northern red oak (*Quercus rubra*), mockernut hickory (*Carya tomentosa*), and tulip tree (*Liriodendron tulipifera*) are common. A few black oak (*Quercus velutina*) are scattered throughout as well. Canopy trees average 12–14 inches in diameter across the patches. In the most mature section oaks range 24–26 inches in diameter. The understory is variably dense with red maple (*Acer rubrum*), American holly (*Ilex opaca*), and canopy species most abundant. The shrub layer is sparse and contains regenerating canopy species as well as white ash (*Fraxinus americana*), sweet gum (*Liquidambar styraciflua*), and some nonnative invasive autumn olive (*Elaeagnus umbellata*). The herbaceous layer is also variably sparse to dense, with increased diversity within the wetter seeps and ravines. Within these areas ferns are more common, including Christmas fern (*Polystichum acrostichoides*), netted chainfern (*Lorinseria areolata*), southern lady fern (*Athyrium asplenoides*), and patches of New York fern (*Amauropelta noveboracensis*). Scattered individuals of Solomon's-plume (*Maianthemum racemosum*), little brown jug (*Hexastylis arifolia*), and wild licorice (*Galium circaezans*) are present. Muscadine grape (*Vitis rotundifolia*) is common in this community.

Piedmont Monadnock Forest (Typic Subtype) occurs along the ridge and north facing slopes. The canopy is mostly closed and dominated by mature chestnut oak (*Quercus montana*) and white oak (*Quercus alba*). This community remains in good to excellent condition with canopy trees averaging 18–20 inches in diameter. Large oaks are scattered throughout. A chestnut oak measures 32 inches, and white oak 29.6 inches in diameter. Unusually, at least one canopy sourwood is 18.6 inches in diameter. The understory is sparse and open with sourwood (*Oxydendrum arboreum*) the most common. The shrub layer is likewise sparse with scattered species such as smooth black-haw (*Viburnum prunifolium*), white ash (*Fraxinus americana*), and sweet gum (*Liquidambar styraciflua*). The herbaceous layer is sparse throughout with patches of wild oregano (*Cunila origanoides*), early lowbush blueberry (*Vaccinium pallidum*), little brown jug (*Hexastylis arifolia*), and white oak seedlings most common. Surprisingly, given the lack of evidence for prescribed fire, muscadine grape (*Vitis rotundifolia*) is not a large component in the vine stratum which is sparse overall.

**PROTECTION:** This site is under no formal conservation. This site would be a worthy target for a registry, easement, or similar conservation agreement.

**NATURAL COMMUNITIES:** Dry Oak—Hickory Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Piedmont Monadnock Forest (Typic Subtype).

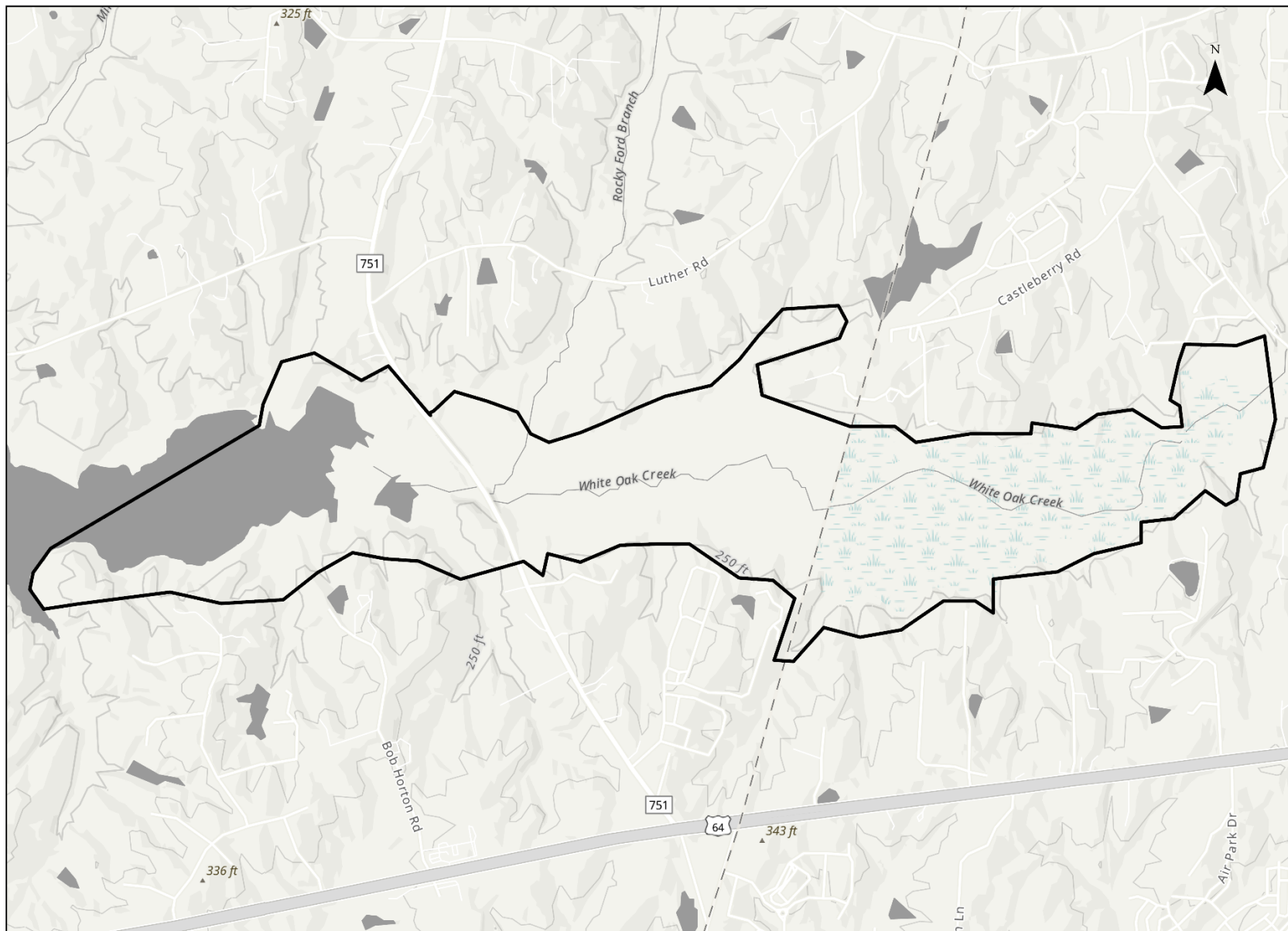
**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

**REFERENCES:**

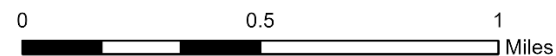
Conlin, M.R. 2024. Site Survey Report: Terrells Mountain Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.

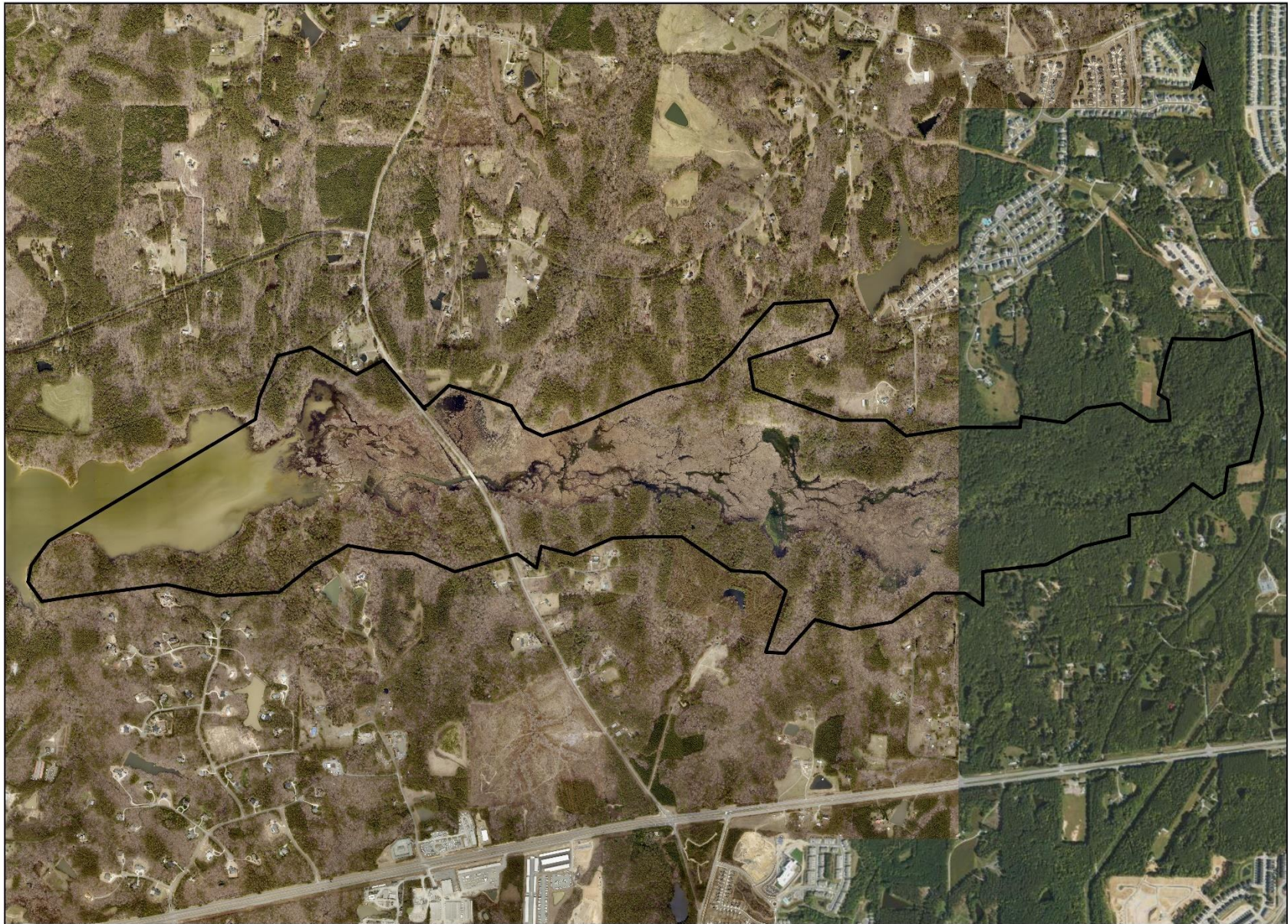


## White Oak Creek Floodplain

N.C. Natural Heritage Program  
June 2025







## White Oak Creek Floodplain

N.C. Natural Heritage Program  
June 2025

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## Chatham County Natural Area Inventory

### White Oak Creek Floodplain

<b>Site Significance:</b> Very High	<b>Size:</b> 928 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> US Army Corps of Engineers
<b>Collective Value:</b> Moderate (C4)	<b>Chatham Quadrangle:</b> Green Level

**SIGNIFICANT FEATURES:** White Oak Creek Floodplain natural area is of Very High significance for its support of some of the best known examples of Piedmont/Mountain Semipermanent Impoundments of Open Water Subtype and Piedmont Marsh Subtype in the state. This site also supports five additional elements of biodiversity, three more natural communities, a waterbird colony, and the State Threatened bald eagle (*Haliaeetus leucocephalus*).

**LANDSCAPE RELATIONSHIPS:** Parkers Creek Ridges and Big Woods Road Slopes are both approximately 4 miles west across Jordan Lake.

**SITE DESCRIPTION:** The natural area is a moderately wide floodplain along the westward flowing White Oak Creek. As the creek lies in the Triassic Basin, the floodplain is wide for the rather small size and length of the creek. There is occasional flooding from high water levels in Jordan Lake, but such events are rare or of brief duration. Thus, the impact from impoundment of the lake downstream is low. A portion of the site extends eastward into Wake County. The site consists of a good example of Piedmont Bottomland Forest (Typic Low Subtype), with one or two well-defined Floodplain Pools and an uncommon example of Mesic Mixed Hardwood Forest. The site contains one of the larger Piedmont/Mountain Semipermanent Impoundments in the region, with an extensive beaver pond and cattail marsh complex over 0.8 miles long. A waterbird colony occupies the site.

Floodplain Pools are scattered throughout the floodplain. At least five pools are present on the south side of the creek, and one occurs on the north side. The expanding beaver pond is pushing farther eastward and probably has eliminated one or two older pools. Willow oak (*Quercus phellos*) is common around and in most pools. Some overcup oak (*Quercus lyrata*) is present. Shrubs are typically fetter-bush (*Eubotrys racemosus*) and southern highbush blueberry (*Vaccinium formosum*); some black holly (*Ilex verticillata*) is present. Moss (*Sphagnum* sp.) was not seen in or near most pools, but a good variety of sedges (*Carex* spp.) are present. Most pools had less than 1 foot of standing water during a winter survey.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on slightly raised ridges just above the floodplain. The canopy contains a considerable amount of American beech (*Fagus grandifolia*), and horse-sugar (*Symplocos tinctoria*) is a common shrub. Noteworthy plants include cucumber magnolia (*Magnolia acuminata*), mountain holly (*Ilex montana*), and Carolina lily (*Lilium michauxii*). The Watch List Lewis's heartleaf (*Hexastylis lewisii*) is abundant as a ground cover.

Piedmont Bottomland Forest (Typic Low Subtype) is extensive within the White Oak Creek floodplain. Swamp chestnut oak (*Quercus michauxii*) and cherry-bark oak (*Quercus pagoda*) are quite common, as is willow oak (*Quercus phellos*). There is a surprising amount of white oak (*Quercus alba*), hence the name of the creek. Green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*) are also common. American holly (*Ilex opaca*) is locally common. Some stands of cane (*Arundinaria* sp.) are present. Various grasses and sedges are present. Patches of the Watch List Lewis's heartleaf (*Hexastylis lewisii*) and little brown jug (*Hexastylis arifolia*) are common.

Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) and (Piedmont Marsh Subtype) occur in a matrix. At least two sizable beaver ponds are present at the western end and the ponding has flooded dozens of acres of good bottomland forest since 1998. The upper 60–70 acres is now an extensive cattail marsh, with an abundance of dead standing trees. Shrubs have not yet invaded the marsh. Carolina mosquito-fern (*Azolla caroliniana*), duckweeds (*Lemna* spp.), and the nonnative invasive parrot-feather (*Myriophyllum aquaticum*) are visible on the pond surface. Several beaver lodges have been observed.

**PROTECTION:** Much of this site is protected within a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Bottomland Forest (Typic Low Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype).

**RARE PLANTS:** Watch List Lewis's heartleaf (*Hexastylis lewisii*).

**RARE ANIMALS:** Waterbird colony, State Threatened bald eagle (*Haliaeetus leucocephalus*).

#### **REFERENCES:**

LeGrand, H E. 2006. Site Note: White Oak Creek Floodplain (Two visits). North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

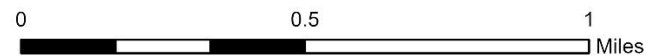
LeGrand, H.E., Jr. 1999. B. Everett Jordan Lake Project: Inventory for rare, threatened, and endangered species and natural community inventory. Unpublished report for U.S. Army Corps of Engineers - Wilmington District, Natural Resource Management Section. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.





## White Pines Natural Area

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June 2025

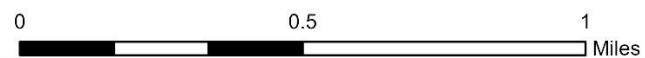






## White Pines Natural Area

N.C. Natural Heritage Program  
June 2025





## Chatham County Natural Area Inventory

### White Pines Natural Area

<b>Site Significance:</b> Very High	<b>Size:</b> 629 acres
<b>Representational Value:</b> Very High (R2)	<b>Ownership:</b> NC Division of Parks and Recreation, Triangle Land Conservancy, NC Department of Environmental Quality Stewardship Program Easement, NC Division of Mitigation Services Easement, Private
<b>Collective Value:</b> High (C3)	<b>Quadrangle:</b> Colon

**SIGNIFICANT FEATURES:** White Pines natural area is of Very High significance for the occurrence of the Federally Endangered Harperella (*Ptilimnium nodosum*). Even though the original population is considered historical, and a recent transplant seems to have failed, the natural area retains importance as a reference site and possible future restoration location. The terrestrial natural area is diverse and supports a number of locally rare montane disjuncts as well as a collection of 15 rare species or high-quality natural communities. This site is unique in that it is bordered on two sides by the Deep River-Rocky River Aquatic Habitat. These rivers support numerous rare aquatic species, including the Federally Endangered Cape Fear Shiner (*Notropis mekistocholas*). Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.



The Rocky River with the Steep Slopes of White Pines Natural Area in the Background. Photo by: Merry Conlin.



**LANDSCAPE RELATIONSHIPS:** The Deep River-Rocky River Aquatic Habitat goes through the site. Rocky River Dragonfly Riffles is adjacent to the north. Lower Deep River Slopes is east, downstream, along the Deep River.

**SITE DESCRIPTION:** The White Pines natural area is a particularly scenic region of bluffs and bottomlands at the confluence of the Rocky and Deep Rivers. The stream-cutting action of these two rivers have carved out some particularly rocky and steep walled bluffs, not observed elsewhere in the county. These bluffs and their northerly aspect have created a microclimate that supports a flora better known in the mountains. These species are believed to be relicts from the Pleistocene when conditions across the Piedmont were much cooler. Indicative species are visible along the steepest slopes in the Piedmont/Coastal Plain Heath Bluff natural community and include the regionally rare eastern white pine (*Pinus strobus*) and a shrub layer dominated by mountain laurel (*Kalmia latifolia*) and Catawba rhododendron (*Rhododendron catawbiense*), among others. Additional natural communities found at the site in Chatham County include Mesic Mixed Hardwood Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest in the uplands, and Piedmont Levee Forest (Typic Subtype), Floodplain Pool, and Rocky Bar and Shore (Water Willow Subtype) in the floodplain. Several rare species are known from this site and the adjacent rivers, including two Federally Endangered or Threatened species—Harperella (*Ptilimnium nodosum*) as a historical occurrence and the endemic Cape Fear Shiner (*Notropis mekistocholas*). Significantly Rare large witch-alder (*Fothergilla major*), buttercup phacelia (*Phacelia covillei*), sweet pinesap (*Monotropsis odorata*) and Watch List leatherwood (*Dirca palustris*) have been observed in recent surveys. This natural area includes approximately three miles of Deep River frontage and extends into the neighboring uplands in Lee County. It also includes approximately one mile of Rocky River frontage at its southern terminus. These reaches are part of the Exceptional rated Deep River-Rocky River Aquatic Habitat and support ten rare aquatic species locally.



A Namesake Mature White Pine (*Pinus strobus*) at the White Pines Natural Area. Photo by: Merry Conlin.

This site is the location of a 2024-2025 biodiversity survey conducted by members of the North Carolina Biodiversity Project. Unlike the surveys conducted during single or occasional return visits for much of the Chatham County inventory, this survey effort sampled for taxa during different seasons. At the time of this publication, group members have recorded observations for 2,389 taxa in 34 groups. The results will be described and available through [nc-biodiversity.com](https://nc-biodiversity.com).

Dry-Mesic Oak—Hickory Forest (Piedmont Subtype) occurs along the upper slopes and ridge tops. The canopy is dominated by white oak (*Quercus alba*), northern red oak (*Quercus rubra*), and hickories (*Carya* spp.), with some red maple (*Acer rubrum*), scarlet oak (*Quercus coccinea*), and chestnut oak (*Quercus montana*). The understory includes sourwood (*Oxydendrum arboreum*), American holly (*Ilex opaca*), and



red maple. Shrubs include pinxterflower (*Rhododendron periclymenoides*), deerberry (*Vaccinium stamineum*), early lowbush blueberry (*Vaccinium pallidum*), and some mountain laurel (*Kalmia latifolia*). Herbs include spotted wintergreen (*Chimaphila maculata*), little brown jug (*Hexastylis arifolia*), downy rattlesnake orchid (*Goodyera pubescens*), ebony spleenwort (*Asplenium platyneuron*), and poverty oat-grass (*Danthonia spicata*). Some of the disjunct white pine (*Pinus strobus*) trees are in this community. There are small patches of Dry Oak—Hickory Forest and small rock outcrops included within this community mapping and description, particularly along the ridge summit, as well as successional areas.

Floodplain Pools are found intermixed within the Piedmont Levee Forest (Typic Subtype) on a terrace of the Deep River. These pools are



Floodplain Pool Found in White Pines Natural Area. Photo by: Merry Conlin.

entirely shaded by bordering canopy trees or have one or two oaks within them. Willow oak (*Quercus phellos*) is abundant, cherry-bark oak (*Quercus pagoda*) and sweet gum (*Liquidambar styraciflua*) are common. American hornbeam (*Carpinus caroliniana*) is abundant in the surrounding understory and shrub layer. Sedges (*Carex* spp.) are common, many of which were undiagnostic in this early season survey. Fringed sedge (*Carex crinita*), rosy sedge (*Carex rosea*), squarrose sedge (*Carex squarrosa*), stalk-grain sedge (*Carex stipata*), bladder sedge (*Carex intumescens*), and Asa Gray sedge (*Carex grayi*) have been observed in similar settings. Greenbrier (*Smilax* sp.) are present along the pool margins. These pools are in good condition, found at varying depths from approximately 1 foot to 3 feet deep. They have mucky bottoms with water colored by tannins. Tadpoles were observed in one pool.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on the lower slopes and ravines. The canopy contains abundant

tulip tree (*Liriodendron tulipifera*), white oak (*Quercus alba*), northern red oak (*Quercus rubra*), and American beech (*Fagus grandifolia*). Less frequent are shag-bark hickory (*Carya ovata*) and sweet gum (*Liquidambar styraciflua*). A few individuals of the regionally rare eastern white pine (*Pinus strobus*) occur in this community. The canopy is mature and in several locations trees average 16–18 inches in diameter. The understory is diverse and contains abundant red maple (*Acer rubrum*) and young American beech. Less commonly American hornbeam (*Carpinus caroliniana*) and flowering dogwood (*Benthamidia florida*) can



be found. In some patches, species suggestive of less acidic soils are mixed in this layer, including American basswood (*Tilia americana*), fringe tree (*Chionanthus virginicus*), and some eastern redbud (*Cercis canadensis*). A few eastern white pine are regenerating as well. The shrub layer is sparse to moderate with American strawberry-bush (*Euonymus americanus*), smooth black-haw (*Viburnum prunifolium*), maple-leaf viburnum (*Viburnum acerifolium*), deerberry (*Vaccinium stamineum*), and mountain laurel (*Kalmia latifolia*) and some localized patches of painted buckeye (*Aesculus sylvatica*) but most frequently shrubby American beech. A few stems of the nonnative invasive autumn olive (*Elaeagnus umbellata*) were noted as well. The herbaceous layer is also sparse to dense, but diverse, with the overall abundant Christmas fern (*Polystichum acrostichoides*), and several spring associates including windflower (*Thalictrum thalictroides*), round-lobed hepatica (*Hepatica americana*), and smoother sweet-cicely (*Osmorhiza longistylis*), among others.

Along the Rocky River a small area of transitional Basic Mesic Forest to Mesic Mixed Hardwood Forest occurs. American beech (*Fagus grandifolia*) is dominant, with lesser amounts of northern red oak (*Quercus rubra*). Mature trees are impressively tall and up to 48 inches in diameter. The understory is open with few eastern hop-hornbeam (*Ostrya virginiana*) and American holly (*Ilex opaca*). Christmas fern (*Polystichum acrostichoides*) is common. Locally there is star chickweed (*Stellaria pubera*), black-cohosh (*Actaea racemosa*), northern maidenhair-fern (*Adiantum pedatum*), a large colony of Willdenow's sedge (*Carex willdenowii*) and some American trout lily (*Erythronium americanum*) (B. Sorrie, personal communication, May 2025).



Beech Slope and Transitional Basic Mesic Forest at White Pines Natural Area. Photo by: Bruce Sorrie. Used with Permission.



Piedmont Levee Forest (Typic Subtype) occurs along the terraced floodplain of the Deep River. The canopy contains a mixture of species—commonly sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), and tulip tree (*Liriodendron tulipifera*). Some of the largest trees are cherry-bark oaks (*Quercus pagoda*). The largest observed measures 43.5 inches in diameter. A few American beech (*Fagus grandifolia*) make it into the canopy. Slightly farther in along the terrace the canopy is more variable with abundant sweet gum, willow oak (*Quercus phellos*), cherry-bark oak, and a few loblolly pine (*Pinus taeda*). The canopy is mature across much of the site with canopy trees averaging 16–18 or 18–20 inches in diameter in various patches. The understory is fairly open and is dominated by American hornbeam (*Carpinus caroliniana*) and contains Florida maple (*Acer floridanum*), box-elder (*Acer negundo*), swamp chestnut oak (*Quercus michauxii*) and a few black walnut (*Juglans nigra*). The shrub layer is sparse with spicebush (*Lindera benzoin*). Nonnative invasive Chinese privet (*Ligustrum sinense*) is common in patches, along with some autumn olive (*Elaeagnus umbellata*). American hazelnut (*Corylus americana*) and deciduous holly (*Ilex decidua*) are present as well. The herbaceous layer contains abundant nonnative exotic species, primarily Japanese stilt grass (*Microstegium vimineum*) and ground ivy (*Glechoma hederacea*). In some sections, patches of blunt-leaf bedstraw (*Galium obtusum*) are common, as well as small-flower baby-blue-eyes (*Nemophila aphylla*), sensitive fern (*Onoclea sensibilis*), and Virginia knotweed (*Persicaria virginiana*). Sedges (*Carex* spp.) are abundant, one of the most common being Asa Gray sedge (*Carex grayi*). River oats (*Chasmanthium latifolium*), narrow-leaved spring beauty (*Claytonia virginica*), and greenbriers (*Smilax* sp.) are common. Strikingly large and mature vines of trumpet-creeper (*Campsis radicans*) are common.



Piedmont Levee Forest (Typic Subtype) Along the Deep River in White Pines Natural Area. Photo by: Merry Conlin.

Piedmont/Coastal Plain Heath Bluff occurs on the steep north-facing river bluffs and rock outcrops. Canopy species in this community include white oak (*Quercus alba*), chestnut oak (*Quercus montana*), white pine (*Pinus strobus*), American beech (*Fagus grandifolia*), sourwood (*Oxydendrum arboreum*), and northern red oak (*Quercus rubra*). Mountain laurel (*Kalmia latifolia*) is abundant in the dense midstory/shrub layer, with American holly (*Ilex opaca*), Catawba rhododendron (*Rhododendron catawbiense*), and witch hazel (*Hamamelis virginiana*). Vines include muscadine grape (*Vitis rotundifolia*). The herb layer is sparse, with Christmas fern (*Polystichum acrostichoides*), partridgeberry (*Mitchella repens*), little brown jug (*Hexastylis arifolia*), and little heartleaf (*Hexastylis minor*). The rocky areas of the lower ledges contained numerous interesting plants, including Significantly Rare large witch-alder (*Fothergilla major*), marginal wood fern (*Dryopteris marginalis*), cutleaf goldenrod (*Solidago arguta*), southern barren-strawberry (*Waldsteinia downiana*), and American hazelnut (*Corylus americana*).

Rocky Bar and Shore (Water Willow Subtype) occurs along gravel bars. Tag alder (*Alnus serrulata*), river birch (*Betula nigra*), common buttonbush (*Cephalanthus occidentalis*), sycamore (*Platanus occidentalis*), and black willow (*Salix nigra*) are established on the more stable portions. Herbs include false nettle (*Boehmeria cylindrica*), Virginia day-flower (*Commelina virginica*), straw-colored flatsedge (*Cyperus strictus*), larger button-weed (*Diodia virginiana*), blunt spike-rush (*Eleocharis obtusa*), prostrate eryngo (*Eryngium prostratum*), common water-willow (*Justicia americana*), rice cutgrass (*Leersia oryzoides*), bushy seedbox (*Ludwigia alternifolia*), sharp-wing monkeyflower (*Mimulus alatus*), mild water-pepper (*Persicaria hydropiperoides*), dotted smartweed (*Persicaria punctata*), and historically, the Federally Endangered Harperella (*Ptilimnium nodosum*).

**PROTECTION:** The majority of this site is protected, as a Dedicated Nature Preserve, in conservation easements, or as a Natural Heritage Program Registered Heritage Area.

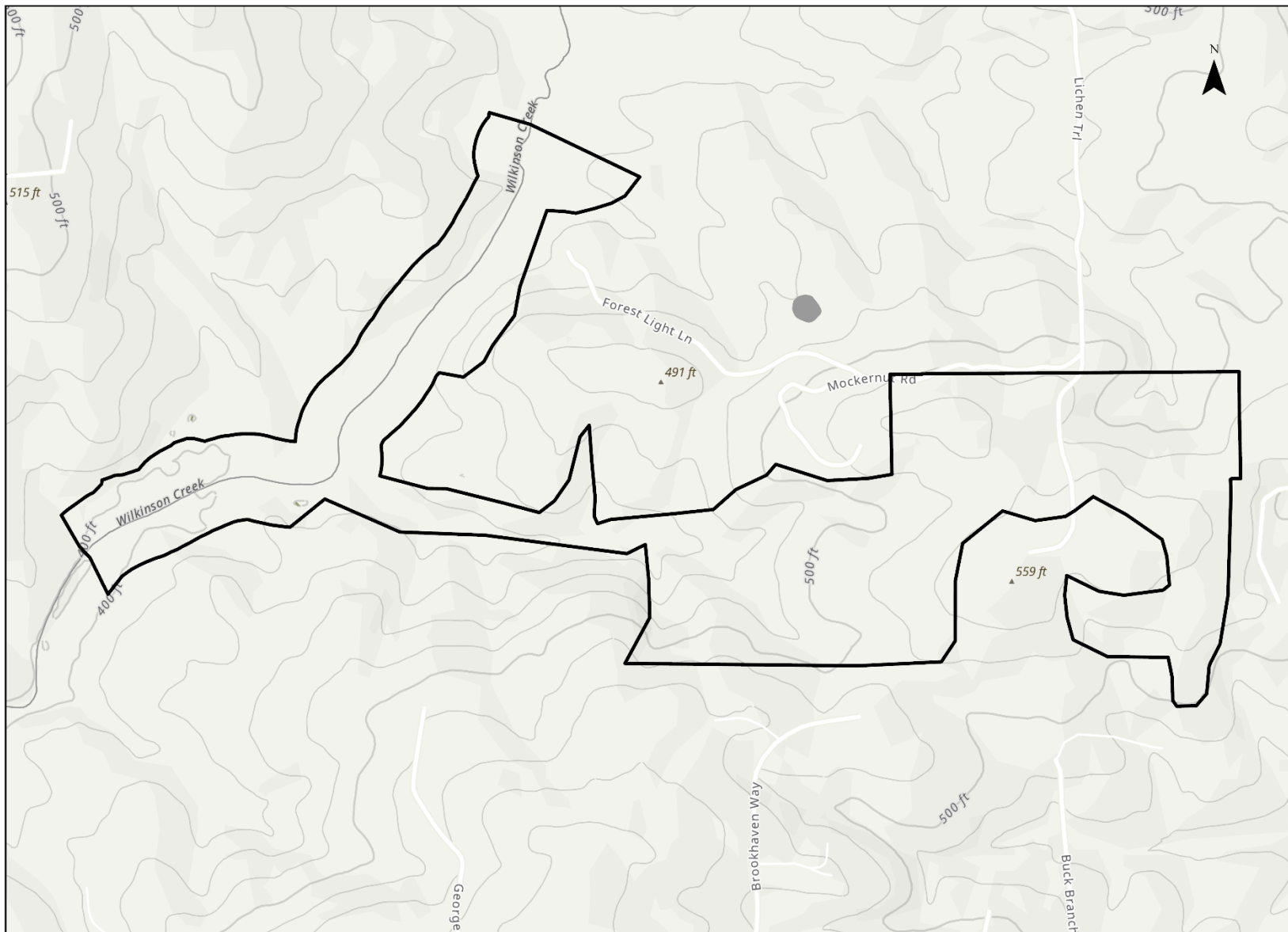
**NATURAL COMMUNITIES:** Basic Mesic Forest (Piedmont Subtype), Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Levee Forest (Typic Subtype), Piedmont/Coastal Plain Heath Bluff, Rocky Bar and Shore (Water Willow Subtype).

**RARE PLANTS:** Federally Endangered: Harperella (*Ptilimnium nodosum*), historical. Significantly Rare: buttercup phacelia (*Phacelia covillei*), large witch-alder (*Fothergilla major*), sweet pinesap (*Monotropsis odorata*), and Watch List leatherwood (*Dirca palustris*).

**RARE ANIMALS:** Ten rare aquatic species have been documented in the adjacent Rocky and Deep Rivers: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and five additional species state listed as Endangered, Threatened or Special Concern including, brook floater (*Alasmidonta varicosa*), Carolina redhorse (*Moxostoma* sp. 3), creeper (*Strophitus undulatus*), notched rainbow (*Venustaconcha constricta*), and triangle floater (*Alasmidonta undulata*). Four species are Significantly Rare including Septima's clubtail (*Gomphurus septima*), chameleon lampmussel (*Lampsilis* sp. 2), the historical coppery emerald (*Somatochlora georgiana*), and eastern creekshell (*Villosa delumbis*).

## REFERENCES:

- Conlin, M.R. 2024. Site Survey Report: White Pines Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.
- Pohlman, S. M. and M.R. Conlin. 2024. Site Note: White Pines Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.
- Schafale, M.P. 2018. Site Note: White Pines Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.



## Wilkinson Creek Marshes

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles





## Wilkinson Creek Marshes

N.C. Natural Heritage Program  
June 2025

0 0.1 0.2  
Miles



## Chatham County Natural Area Inventory

### Wilkinson Creek Marshes

<b>Site Significance:</b> General	<b>Size:</b> 98 acres
<b>Representational Value:</b> General (R5)	<b>Ownership:</b> Private
<b>Collective Value:</b> General (C5)	<b>Quadrangle:</b> Bynum

**SIGNIFICANT FEATURES:** Wilkinson Creek Marshes is of General significance for its support of four natural communities: Piedmont Headwater Stream Forest (Piedmont Subtype), which is among the 10 best remaining examples of this natural community type in the state; Dry-Mesic Oak—Hickory Forest (Piedmont Subtype); Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype); and Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype).

**LANDSCAPE RELATIONSHIPS:** The Haw River Aquatic Habitat is approximately one mile downstream. Rock Rest Mafic Islands and Shore is approximately one air mile to the west. Bennett Mountain is approximately two air miles to the northeast.



Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype) in Wilkinson Creek Marshes Natural Area. Photo by: Merry Conlin.



**SITE DESCRIPTION:** This site represents an approximately 2.5 mile stretch of Wilkinson Creek (a tributary of the Haw River) and associated uplands. This reach of Wilkinson Creek is towards the downstream end of its watershed. The headwaters are found just south of Morgan Ridge natural area, and it flows through mostly developed land all the way to its terminus. There at its mouth, approximately one mile south of this site, it joins the Haw River Aquatic Habitat. One notable element occurs in the northern portion of this site where an expansive series of beaver dams have created an approximately 15-acre patch of Piedmont/Mountain Semipermanent Impoundment natural communities. These impoundments act as filters for upstream inflows. Bordering the creek and in neighboring uplands are patches of Dry-Mesic Oak–Hickory Forest (Piedmont Subtype). A few areas of well-developed Piedmont Headwater Stream Forest (Typic Subtype) and associated intermittent streams drain into the creek. The Wilkinson Creek riparian zone outside this site has been severely degraded in many spots, with few canopy trees remaining and heavy loads of nonnative invasive species.

Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) occurs on a few slight slopes directly along Wilkinson Creek as well as neighboring ridges. The most extensive and mature portion occurs in the northern



Dry-Mesic Oak–Hickory Forest (Piedmont Subtype) Uplands of Wilkinson Creek Marshes. Photo by: Merry Conlin.

part of the site on the rocky upland slopes. The canopy is closed and dominated by white oak (*Quercus alba*) with abundant northern red oak (*Quercus rubra*). Shortleaf pine (*Pinus echinata*), tulip tree (*Liriodendron tulipifera*), and sweet pignut hickory (*Carya glabra*) are common. The canopy is mature, averaging 18–20 inches in diameter. One mature black tupelo (*Nyssa sylvatica*) measures 22 inches, and the largest white oak is 36.7 inches in diameter. The understory is fairly sparse with sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), mockernut hickory (*Carya tomentosa*), and American holly (*Ilex opaca*), and regenerating canopy species the most common. The shrub layer is likewise sparse with increased abundance of species like spicebush (*Lindera benzoin*), hairy highbush blueberry (*Vaccinium fuscatum*), and pinxterflower (*Rhododendron periclymenoides*) within the ravines and stream banks. The herbaceous layer is sparse overall with mesic slopes dominated by Christmas fern (*Polystichum acrostichoides*). Additional common mesic associates include Solomon's-plume (*Maianthemum racemosum*), wild licorice (*Galium circaezans*), little brown jug (*Hexastylis arifolia*), bare-stemmed tick-trefoil (*Hylodesmum*



*nudiflorum*) and Virginia snakeroot (*Endodeca serpentaria*). Small patches of short heath shrubs are common including dangle-berry (*Gaylussacia frondosa*), early lowbush blueberry (*Vaccinium pallidum*), and small black blueberry (*Vaccinium tenellum*). Muscadine grape (*Vitis rotundifolia*) is common throughout.

Piedmont Headwater Stream Forest (Typic Subtype) is found along the seepy heads of three narrow ravines in the site. The canopy is mostly closed with species occurring primarily on the sloping ravine banks. White oak (*Quercus alba*) dominates, with abundant tulip tree (*Liriodendron tulipifera*) and red maple (*Acer rubrum*). The canopy is relatively mature averaging 16–18 inches in diameter. The largest white oak is 26.6 inches in diameter. The understory is fairly open, American holly (*Ilex opaca*) is abundant. In one ravine the locally uncommon umbrella magnolia (*Magnolia tripetala*) dominates in a small grove. Within the stream channel and along the banks possum-haw viburnum (*Viburnum nudum*) is an abundant shrub. Spicebush (*Lindera benzoin*) and hairy highbush blueberry (*Vaccinium fuscatum*) are common along the banks. In the herbaceous layer, ferns are common including, Christmas fern (*Polystichum acrostichoides*), netted chainfern (*Lorinseria areolata*), cinnamon fern (*Osmundastrum cinnamomeum*), southern lady fern (*Athyrium asplenoides*), and some royal fern (*Osmunda spectabilis*). A few of the stream heads have small patches of moss (*Sphagnum* sp.). Additional common species include common greenbrier (*Smilax rotundifolia*), Indian cucumber-root (*Medeola virginiana*), leathery rush (*Juncus coriaceus*), and common jack-in-the-pulpit (*Arisaema triphyllum*). These areas likely support a diverse assemblage of spring ephemerals, but were not surveyed during the spring. Some nonnative invasive Japanese stilt grass (*Microstegium vimineum*) lines the drains but is not overly abundant.



Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) occurs in flooded patches of Wilkinson Creek upstream of a series of beaver dams.

Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype) in Wilkinson Creek Marshes Natural Area. Photo by: Merry Conlin.

In these areas the water is still enough for floating aquatic vegetation. It establishes under an open canopy of snags and scattered hummocks of emergent marsh species and shrubs. Notable aquatic species include watershield (*Brasenia schreberi*), bladderwort (*Utricularia* cf. *gibba*), yellow cowlily (*Nuphar advena*),

American water-lily (*Nymphaea odorata*), and what resembles common water-flaxseed (*Spirodela polyrrhiza*). Species of the marsh subtype occur along the margins or hummocks and commonly include American bur-reed (*Sparganium americanum*), cottongrass bulrush (*Scirpus cyperinus*), lizard's tail (*Saururus cernuus*), and nonnative invasives common water-primrose (*Ludwigia hexapetala*) and marsh dewflower (*Murdannia keisak*). This community is in good condition and fairly extensive for such a small creek. Nonnative invasive herbaceous species are common but not currently dominant.

Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype) occurs in several sections of Wilkinson Creek in between a series of beaver dams and open water. The canopy is sparse and open with many snags left from the impoundment's creation. Scattered immature red maple (*Acer rubrum*), tulip tree (*Liriodendron tulipifera*), river birch (*Betula nigra*), and sycamore (*Platanus occidentalis*) are still living on the margins. Hummocks of tag alder (*Alnus serrulata*), broad-leaf cattail (*Typha latifolia*), and cottongrass bulrush (*Scirpus cyperinus*) break up the open water with small islands in places. Herbaceous species are variable and dense. American bur-reed (*Sparganium americanum*), smartweeds (*Persicaria* spp.), soft rush (*Juncus effusus*), and green arrow-arum (*Peltandra virginica*) are abundant. Nonnative invasives including common water-primrose (*Ludwigia hexapetala*), marsh dewflower (*Murdannia keisak*), and Japanese stilt grass (*Microstegium vimineum*) are common. Along the margins some white turtlehead (*Chelone glabra*), swamp beggar-ticks (*Bidens discoidea*), Virginia day-flower (*Commelina virginica*), and deer-tongue witchgrass (*Dichanthelium clandestinum*) are more prevalent. This community is in good condition with moderate to high levels of invasion.

**PROTECTION:** This site is under no formal conservation and would be a worthy target for a registry, easement, or similar conservation agreement.

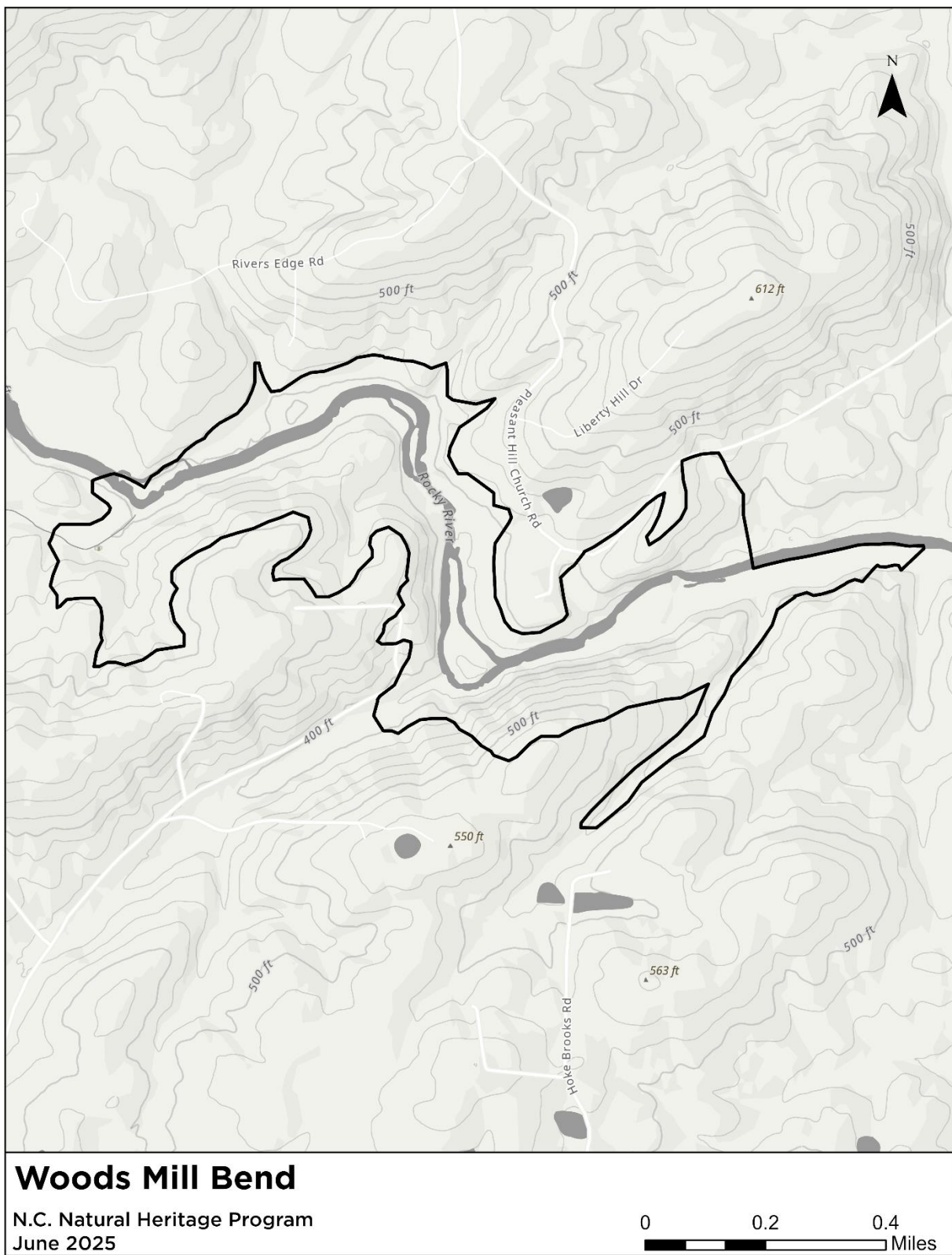
**NATURAL COMMUNITIES:** Dry-Mesic Oak—Hickory Forest (Piedmont Subtype), Piedmont Headwater Stream Forest (Typic Subtype), Piedmont/Mountain Semipermanent Impoundment (Open Water Subtype), Piedmont/Mountain Semipermanent Impoundment (Piedmont Marsh Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** None observed.

#### **REFERENCES:**

Conlin, M.R. 2024. Site Survey Report: Wilkinson Creek Marshes Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.







## Woods Mill Bend

N.C. Natural Heritage Program  
June 2025

0 0.2 0.4  
Miles



## Chatham County Natural Area Inventory

### Woods Mill Bend

<b>Site Significance:</b> Moderate	<b>Size:</b> 245 acres
<b>Representational Value:</b> Moderate (R4)	<b>Ownership:</b> Triangle Land Conservancy, Private
<b>Collective Value:</b> Moderate (C4)	<b>Quadrangle:</b> Siler City NE

**SIGNIFICANT FEATURES:** Woods Mill Bend natural area is of Moderate significance for its support of two Rocky Bar and Shore natural community subtypes, Mixed Bar and Water Willow, both among the top ten known examples in the state. This site protects three additional communities: Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, and Floodplain Pools. Many rare aquatic species, including the Federally Endangered Cape Fear shiner, occur within the Rocky River adjacent to this natural area. Intact forests along the riverbanks help maintain water quality and habitat integrity for the aquatic species within the Deep River-Rocky River Aquatic Habitat.

**LANDSCAPE RELATIONSHIPS:** Deep River-Rocky River Aquatic Habitat flows through the site. NC 902 Laurel Bluffs adjoins to the east, downstream.

**SITE DESCRIPTION:** Woods Mill Bend lies along the narrow floodplain and steep slopes on both sides of the Rocky River in a reach where it bends in a zigzag. An apparent diabase dike runs through the site, producing an area of boulders and bedrock outcrops that make a large rapid in the river and a large rocky bar. The bluffs support mature Mesic Mixed Hardwood Forest in good condition. The floodplain has mature Piedmont Alluvial Forest and well-developed Rocky Bar and Shore communities. A small Floodplain Pool is also present. Parts of the site are successional pine and hardwood forests.

Floodplain Pool occurs on the upland edge of the floodplain, occupying an abandoned channel segment. The standing water area is about 5 meters wide. It is connected to the river by an overflow channel at each end. It presumably is flooded by the river at moderate to high floods, perhaps even at low floods, but is isolated and controlled by rainfall and evaporation the rest of the time. Small beds of lizard's tail (*Saururus cernuus*) are present along the shallow edges in a few places, and American holly (*Ilex opaca*), American hornbeam (*Carpinus caroliniana*), and American beech (*Fagus grandifolia*) rooted at the edge overhang it. The pool is bordered by Basic Mesic Forest on the upland side, but the floodplain side is a cleared field. The water is fairly sunlit. At the time of survey, the water was muddy, with numerous ripples suggesting much activity by aquatic animals that were not visible.

Mesic Mixed Hardwood Forest (Piedmont Subtype) occurs on lower slopes on the south side of the river. The canopy is dominated by American beech (*Fagus grandifolia*) and northern red oak (*Quercus rubra*), with sweet pignut hickory (*Carya glabra*) and tulip tree (*Liriodendron tulipifera*) also present. The maturity of the canopy is patchy. The most mature areas are 12–14 inches in diameter. The understory includes Florida maple (*Acer floridanum*), as well as canopy species. Some low-density mountain laurel (*Kalmia latifolia*) and American witch-hazel (*Hamamelis virginiana*) are present, but the area is not as dense as a Heath Bluff. The herb layer is sparse with common jack-in-the-pulpit (*Arisaema triphyllum*), common Solomon's-seal (*Polygonatum biflorum*), smoother sweet-cicely (*Osmorhiza longistylis*), crested dwarf iris (*Iris cristata*), and Christmas fern (*Polystichum acrostichoides*).

Piedmont Alluvial Forest occupies most of the floodplain. Most of it is a low floodplain and is typical, but there are small areas of higher terrace, and one distinctive area near the bar that has very high boulder cover. The low floodplain has a typical mixed canopy that includes tulip tree (*Liriodendron tulipifera*), sweet gum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), willow oak (*Quercus phellos*), river birch (*Betula nigra*), and a few white oak (*Quercus alba*) and American beech

(*Fagus grandifolia*). The forest is mature across much of this community with canopy trees averaging 14 inches in diameter. Trees 18–24 inches in diameter are common. The understory includes American hornbeam (*Carpinus caroliniana*), Florida maple (*Acer floridanum*), box-elder (*Acer negundo*), winged elm (*Ulmus alata*), pawpaw (*Asimina triloba*), and some very large eastern red cedar (*Juniperus virginiana*). Spicebush (*Lindera benzoin*) is the dominant shrub in some portions, the nonnative invasive autumn olive (*Elaeagnus umbellata*) elsewhere. Other shrubs include painted buckeye (*Aesculus sylvatica*), deciduous holly (*Ilex decidua*), shrubby St. John's-wort (*Hypericum prolificum*), coral-berry (*Symphoricarpos orbiculatus*), southern arrow-wood (*Viburnum dentatum*), and nonnative invasive rambler rose (*Rosa multiflora*). There are some prominent vines, including grape (*Vitis* sp.), poison ivy (*Toxicodendron radicans*), and nonnative invasive Japanese honeysuckle (*Lonicera japonica*). The herb layer is dense and includes typical species such as common bottlebrush grass (*Elymus hystrix*), false nettle (*Boehmeria cylindrica*), Virginia Knotweed (*Persicaria virginiana*), sedges (*Carex* spp.), bluegrass (*Poa* sp.), and in the spring, narrow-leaved spring beauty (*Claytonia virginica*), dimpled fawn-lily (*Erythronium umbilicatum*), catchweed bedstraw (*Galium aparine*), hairy woodrush (*Luzula acuminata*), wood rush (*Luzula echinata*), and yellow corydalis (*Corydalis flavula*). Nonnative invasive species are dominant in large patches, especially Japanese stilt grass (*Microstegium vimineum*), and also ground ivy (*Glechoma hederacea*), and in the spring, common starwort (*Stellaria media*).

Rocky Bar and Shore (Mixed Bar Subtype) occurs on a large boulder bar present on a diabase dike. It grades into the odd forested boulder bed but is closer to the river and is kept open by flood scouring. It has some sparse sycamore (*Platanus occidentalis*) and box-elder (*Acer negundo*), plus a few stems of other species. Flood-battered nonnative invasive Chinese privet (*Ligustrum sinense*) is common. Vines are abundant, including poison ivy (*Toxicodendron radicans*), trumpet-creeper (*Campsis radicans*), nonnative invasive Japanese honeysuckle (*Lonicera japonica*), and abundant bare vines stripped by the winter's flood. Herbs are generally sparse, and many species were not identifiable during an early spring visit.

Rocky Bar and Shore (Water Willow Subtype) occurs on rocky shoals and riffles that are shallowly flooded most of the time. Common water-willow (*Justicia americana*) dominates, and only stray individuals of other species are present.

**PROTECTION:** A small portion of this site is protected with is protected with a Natural Heritage Program Registered Heritage Area.

**NATURAL COMMUNITIES:** Floodplain Pool, Mesic Mixed Hardwood Forest (Piedmont Subtype), Piedmont Alluvial Forest, Rocky Bar and Shore (Mixed Bar Subtype), Rocky Bar and Shore (Water Willow Subtype).

**RARE PLANTS:** None observed.

**RARE ANIMALS:** Six rare aquatic species have been documented in the adjacent Rocky River: the State and Federally Endangered Cape Fear shiner (*Notropis mekistocholas*), and four additional species state listed as Endangered, Threatened or Special Concern including brook floater (*Alasmidonta varicosa*), Carolina creekshell (*Sagittunio vauhanianus*), creeper (*Strophitus undulatus*), and triangle floater (*Alasmidonta undulata*). One species, the eastern creekshell (*Villosa delumbis*) is Significantly Rare.

## REFERENCES:

Hall, S.P. and M.W. Boyer. 1992. Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina. Department of Natural and Cultural Resources, Raleigh, NC.



Schafale, M.P. 2014. Site Survey Report: Woods Mill Bend Natural Area. North Carolina Natural Heritage Program, Division of Land and Water Stewardship, Department of Natural and Cultural Resources, Raleigh, NC.

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