AN INVENTORY OF THE SIGNIFICANT NATURAL AREAS OF RUTHERFORD COUNTY, NORTH CAROLINA

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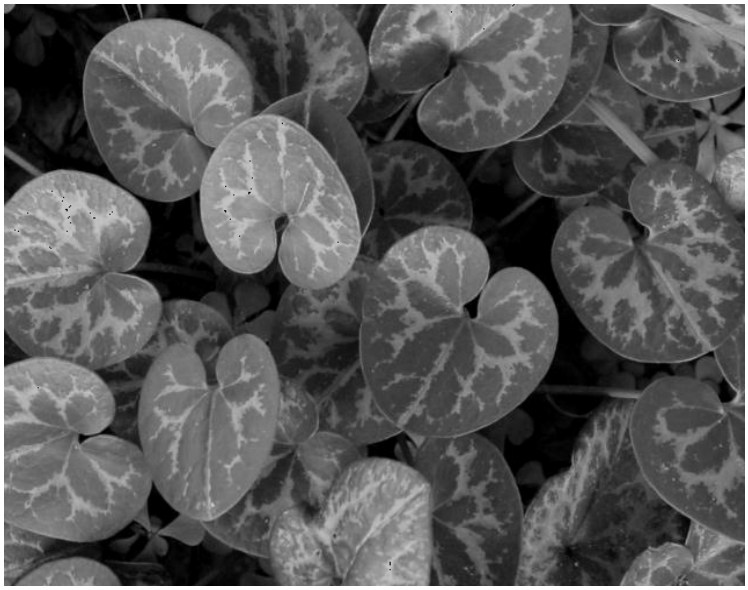

Dwarf-flowered heartleaf
Hexastylis naniflora

North Carolina Natural Heritage Program
Office of Conservation and Community Affairs
Department of Environment and Natural Resources
Raleigh, N.C.

Funding provided by the North Carolina Natural Heritage Trust Fund

June 2006

ABSTRACT

This inventory of the significant natural areas, ecological communities, and rare plant and animal species of Rutherford County was funded by the North Carolina Natural Heritage Trust Fund. Of the 100 counties in the state, Rutherford County ranks in the top third in terms of total numbers of rare species and community types within North Carolina. This report provides background information on the county as a whole and descriptions of 46 Significant Natural Heritage Areas (SNHAs), including one aquatic habitat and four large landscape-scale sites. The descriptions of SNHAs include information on their significance (national, state, regional, and county), viability, natural community types, rare species, management needs, and protection status. This report is designed in part to provide guidance for land use decisions by private landowners, conservation and land management agencies, and county government. The North Carolina Natural Heritage Program (NC NHP) supervised the field work conducted during the 2004-2005 growing seasons.

A large portion of the surveys were conducted in three localized regions of the county. The first region is the South Mountains that lie in the north and northeastern sections of the county. This region contains some of the most significant natural areas in the foothills region of the state. The next region is the Blue Ridge Front/Hickorynut Gorge region that lies in the northwestern part of the county. It contains some of the best examples of rare natural communities and rare species in the nation. The third region is located in the southern part of the county in association with the Broad River valley. This area contains some very large undisturbed tracts of land along the Broad River along with several unique natural communities and rare species.

ACKNOWLEDGMENTS

In the course of this inventory, many agencies, organizations, and individuals contributed to the planning, progress, and completion of the work. I am very appreciative of the assistance and support provided by the staff of the Foothills Conservancy of North Carolina and the Carolina Mountain Land Conservancy, with a special thanks to Tom Kenney, Mike Price, Jerry Stensland, Kieran Roe, and Reggie Hall whom have provided information and insight to natural areas within Rutherford County. There are many various groups and agencies that provided assistance and information, which made this inventory possible. The Nature Conservancy and their work in Hickorynut Gorge have contributed greatly to this report. The work, written contributions, knowledge, and experience by botanist William (Bill) Moye on the rare flora found in the South Mountains have provided much information and insight to this report. Clint Calhoun with the Upper Broad River Watershed Protection Program has provided large amounts of input and information regarding the Hickorynut Gorge area. The Rutherford County government (especially the County Planner, Mr. Danny Searcy), the North Carolina Division of Water Quality, the North Carolina Cooperative Extension Agency, and the Rutherford County GIS Office have been supportive and provided landowner contact information. I am grateful to the various herbaria that allowed for the repository of plant specimens, as well as provided information regarding distribution information. Those herbaria include the Duke Herbarium, Appalachian State University Herbarium, the Gardner-Webb University Herbarium, and the University of North Carolina at Chapel Hill Herbarium.

I am very appreciative and grateful to all of the landowners who permitted me access to their lands for this survey. This inventory would not be possible without the recognition of the importance of identifying the significant natural areas within the county. I would like to express my thanks to the citizens of Rutherford County, the North Carolina Natural Heritage Trust Fund, and the many other agencies and individuals involved for recognizing the need and the importance of conducting this survey. I would like to thank Harry LeGrand and Kristen Sinclair of the North Carolina Natural Heritage Program for editing and reviewing this document. Kristen Sinclair also assisted with the preparation of several figures in the report. Finally, I would like to thank the rest of my colleagues at the North Carolina Natural Heritage Program who provided valuable information and critical insight to this project.

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INTRODUCTION

OBJECTIVES

The primary objective of the Rutherford County Natural Areas Inventory was to identify and describe the most significant ecological sites in the county. Significant sites contain good examples of natural community types, rare plant and animals, or both. Significant natural areas are critical to the overall ecological, scientific, aesthetic, environmental health, recreational, educational, and cultural values that they provide for the human community. Natural areas are reservoirs for biodiversity and contain habitats that are crucial to the long-term survival of species present within them. These natural areas also provide buffers and play a significant role in groundwater recharge and pollution control. Recent increase in land development seen throughout the state and within Rutherford County in the last few years threatens, and in many cases, has reduced or eliminated natural areas and repositories of natural diversity. It is crucial that the high quality natural areas that remain be identified and that an effort is made to protect them, with the willing cooperation of the landowners and surrounding communities.

This introduction provides an overview of the inventory methods, descriptions of the county's environmental features, and a listing of natural communities, rare plants and rare animals documented from the community. The introductory section is followed by a map and description of each Significant Natural Heritage Area (SNHA), including any rare species and natural communities found there, and information on the landscape context, protection status, and management needs of these areas.

METHODS

The methods used in this inventory are those established by the North Carolina Natural Heritage Program (NC NHP), part of the Office of Conservation and Community Affairs (OCCA), within the North Carolina Department of Environment and Natural Resources (NC DENR). The NC NHP maintains the state's primary database and geographic information for rare species (both plant and animal), as well as exemplary natural community types and significant SNHAs. The primary focus of this inventory was the identification and description of SNHAs in the Blue Ridge Front (Blue Ridge Escarpment), Foothills, and Piedmont sections of the county, with emphasis placed on surveying privately owned lands. Field surveys of plant species and natural community types were conducted during the spring and summer of 2004 and 2005 by the author. Specific surveys for animal habitats and rare animals were not conducted in the course of this inventory; however, information from previous animal surveys and chance discoveries made during this survey are included.

The goals of this inventory were to identify and rank high quality natural areas qualifying as SNHAs. Natural areas, which are often somewhat disturbed, retain a substantial amount of their original composition and character. This inventory used data maintained by the NC NHP about

previously identified SNHAs and rare species occurrences, as well as previous reports on natural areas, topographic, soil, and geologic maps, and aerial photographs. Criteria used to determine significance of the various sites visited include quality and importance as well as the overall integrity of the site and areas surrounding it. For each site, natural communities and rare species were described using report formats developed by the NC NHP. SNHAs are rated as nationally, state, regional, or county significant using the criteria established by the NC NHP and The Nature Conservancy (TNC), which accesses statewide and global rarity for species and communities.

For a number of various reasons, this inventory is not a complete record of all natural areas in Rutherford County. Although thousands of acres were identified, surveyed, and found to be significant, this only represents a fraction of the land area within the county. Some potential areas were not surveyed due to lack of landowner permission. Smaller, fragmented tracts in less pristine condition precluded survey in other areas. It is almost certain that additional natural areas will be found in due time as areas once inaccessible become available for biological survey.

DESCRIPTION OF THE STUDY AREA

STUDY AREA

Rutherford County is located in the southwestern portion of the North Carolina Inner Piedmont. Burke, McDowell, and Buncombe Counties border it to the north. To the east it shares a border with Cleveland County, and to the west with Henderson and Polk Counties. To the south it borders South Carolina counties Cherokee and Spartanburg. Rutherford County has an area of 565.90 square miles (361,791 acres). Of that, approximately 271,343 acres lie within the inner Piedmont while the remaining 90,448 acres make up the Blue Ridge Front (Blue Ridge Escarpment) and the South Mountains within Rutherford County. The human population from the 2002 census was 63,345, ranking it 37th in the state. The 2007 projected population is 66,744.

Figure 1 shows the municipalities and major roads of the county. The county seat is the town of Rutherfordton with a population of 4,131 (2002 census data). The largest municipality is the town of Forest City with a current population of 7,549 (2005-2006 demographic information from the Rutherford County Chamber of Commerce). Most of the county's municipalities are found along US 74 (Alternative, Business, and Bypass highway routes). This area includes the larger towns of Forest City, Rutherfordton, Spindale, Ruth, and in the northwest section of the county, Lake Lure. Other smaller municipalities scattered throughout the county along secondary roads include Caroleen, Chimney Rock, Cliffside, Harris, Henrietta, Ellenboro, Bostic, Sunshine, Shingle Hollow, and Gilkey. Even more numerous smaller communities exist throughout the county.

CLIMATE

Rutherford County has four distinct seasons. The average winter daytime temperature is 49.6 degrees Fahrenheit, while the average daytime summer temperature reaches 89.5 degrees Fahrenheit. The average annual rainfall is 50.34 inches, with snowfall accounting for 5.6 inches of that total.

TOPOGRAPHY AND PHYSIOGRAPHY

Physiographic provinces are expanses of land with similar geomorphic and geological features. Rutherford County lies in two physiographic provinces: The Blue Ridge and the Piedmont. In order to facilitate the process of ranking SNHAs, the NC NHP has divided the physiographic provinces into small regional units known as NC NHP Aquatic and Terrestrial Regions. These regions are also used here to discuss physiography and topography. The Middle Mountains Terrestrial Region is part of the larger Blue Ridge physiographic province. The Southern Foothills and Southern Charlotte Belt Terrestrial Regions are part of the larger Piedmont physiographic province. Figure 2 shows the NC NHP Terrestrial and Aquatic Regions in Rutherford County.

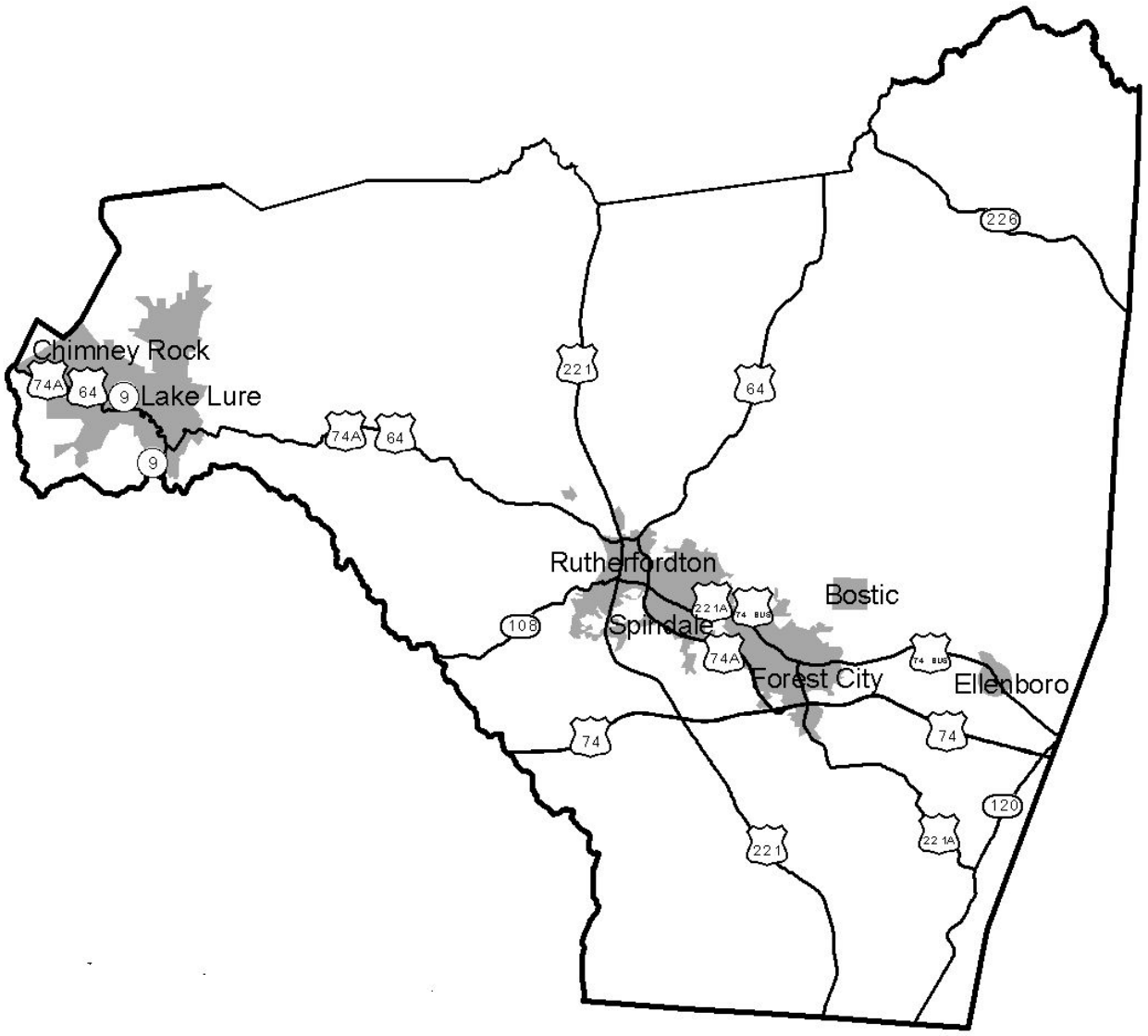

Figure 1. Municipalities and Roads of Rutherford County, North Carolina.

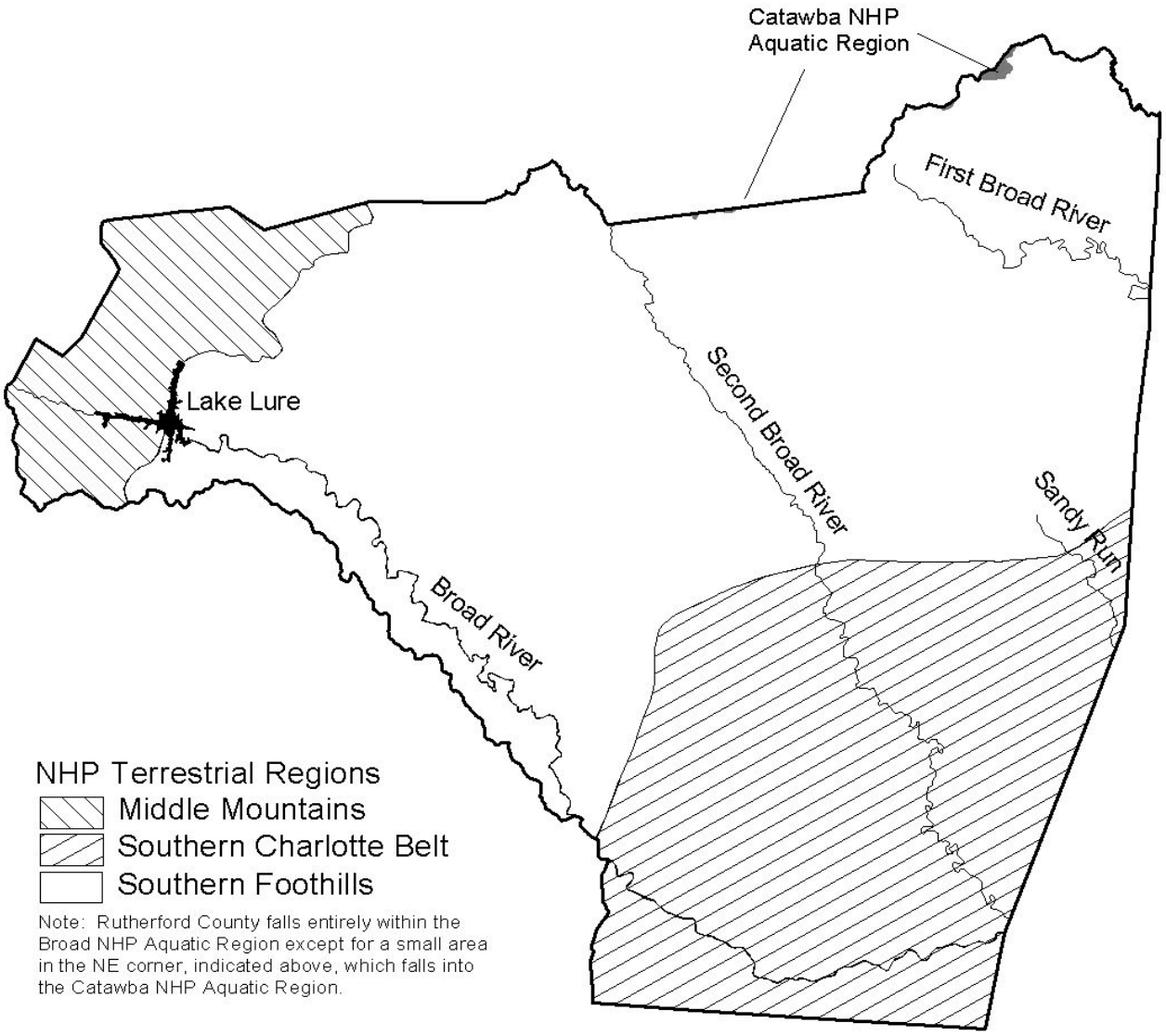

Figure 2. NC NHP Terrestrial Regions, Aquatic Regions, and Waterways of Rutherford County, North Carolina.

The western fourth of Rutherford county is included in the Middle Mountains Terrestrial Region. This region is characterized by a rugged topography of high peaks, ridges, coves and small valleys extending western from the slopes of the Blue Ridge Escarpment to the state line with Tennessee. The Broad River is responsible for carving out the seven mile-long Hickorynut Gorge (Figure 2). The river originates in Buncombe County and flows into Lake Lure near the bottom of the escarpment. From Lake Lure, the Broad River flows almost due south before making a turn and flows east across the southern part of the county into Cleveland County. The highest peak in the county, 3,967 ft., lies south of Hickorynut Gorge along the escarpment at Sugarloaf Mountain.

The middle half of Rutherford County falls within the Southern Foothills Terrestrial Region. This area runs southwest to northeast through the middle portion of Rutherford County, and consists of rolling hills and small mountainous areas (South Mountains) with steep slopes and narrow ridges less than 3000 feet in elevation. The location and geology of the South Mountains places them within the Inner Piedmont physiographic province, although they are often considered to be outliers of the Blue Ridge. Elevations in the South Mountains in Rutherford County range from just under 1200 ft. to approximately 2600 ft.

The southeastern third of Rutherford County lies in the Southern Charlotte Belt Terrestrial Region. In Rutherford County this region has very similar characteristics to those found in the Southern Foothill Terrestrial Region, except it lacks the taller foothills. This region has a rolling topography with broad valleys that have a moderate to low relief. One topographic feature that helps to distinguish this province from the Southern Foothills Terrestrial Region is the presence of Granitic Flatrocks that occur in scattered localities. One example is the Sandy Mush Granitic Flatrock, the largest Granitic Flatrock in the state. A large portion of this Terrestrial Region lies in the Broad River valley. The lowest elevation in the county, 806 ft., occurs within this region near the town of Caroleen.

Over 99 percent of Rutherford County is located within the Broad River basin, with less than one percent along the northern part of the county in the Catawba River basin. Three major rivers flow across Rutherford County. They are the Broad River, the First Broad River, and the Second Broad river (Figure 2). The Broad River crosses Rutherford County from a general northwest to southeast direction with a large section of it flowing more southerly along the western border with Polk County. The Second Broad River flows out of McDowell County near the north-central county line. It flows north to south and joins with the Broad River just inside of Cleveland County at the site of the large hydroelectric plant operated by Duke Power. The First Broad River starts in the northeastern part of the county and flows into Cleveland County. It joins with the Broad River in Cleveland County near the North Carolina/South Carolina state line. Several impoundment lakes have been created along both Broad River and Second Broad River. The Lake Lure dam is the largest in the county, with hydroelectric power generating capabilities. Along the Second Broad River, many small dams were built as textile plants sprang up along the river in the late 1800's and early 1900's. Several of those dams are still in use today. Sediment control dams are also located in the South Mountains portion of the county to control sedimentation along the smaller creeks flowing into the Second Broad River. The United States

Department of Agriculture constructed these erosion control dams 1981 (USDA-SCS and USFS, 1981).

GEOLOGY

Figure 3 shows the 12 major rock types found in Rutherford County (North Carolina Geologic Survey, 1985). The eastern four-fifths of the county is underlain mostly with biotite, gneiss, and schist, migmatitic granitic gneiss, biotite gneiss, schist, and mica schist. To a lesser degree amphibolite biotite gneiss and metamorphosed granite are present. These rock types are associated with the Inner Piedmont Region of the Piedmont physiographic province and include the South Mountain range.

In the upper far western portion of the county the geology of the Blue Ridge escarpment changes dramatically, as the elevation rises. This part of the county is underlain with amphibolite, porphyroblastic gneiss, and Henderson gneiss. Rock types found in lesser amounts in this region include garnet-mica schist, granitic gneiss, and Caesars Head granitic gneiss. The occurrences of minor amounts of amphibolite, a metamorphic mafic rock type, are mapped for Rutherford County. Mafic rock types generally weather into nutrient-rich, high pH soils that are habitat for numerous rare plant species associated with unusual community types.

LAND USE

Rutherford County consists of a mosaic of forests, farms, numerous towns, and residential communities. The majority of the land is in private ownership. Public lands within the county are concentrated in the northeastern part of the county in game lands owned by the state of North Carolina Wildlife Resources Commission (Figure 4). In the northwestern portion of the county, the North Carolina Division of Parks and Recreation is purchasing tracts for the establishment of a new state park at Hickorynut Gorge. Although many areas remain forested (often 2nd growth forest) logging activities are extensive in the western, central, and northern portions of the county. According to a report from the county ranger from March 2006, roughly 65% of the land in Rutherford County is forested, with the majority of that forest land being privately owned (North Carolina Division of Forest Resources, 2006). Together, the Forest Land Group, John Hancock Forest Management, as well as a number of smaller forestry subsidiaries own about 8% of the land in the county. Agricultural activities have declined in last few decades throughout the county. There are still a large number of pastureland, crop land, and orchards still in use. According to a Rutherford County Chamber of Commerce demographic report published July 2004, 505 farms exist in the county and account for 17% of the land area in Rutherford County.

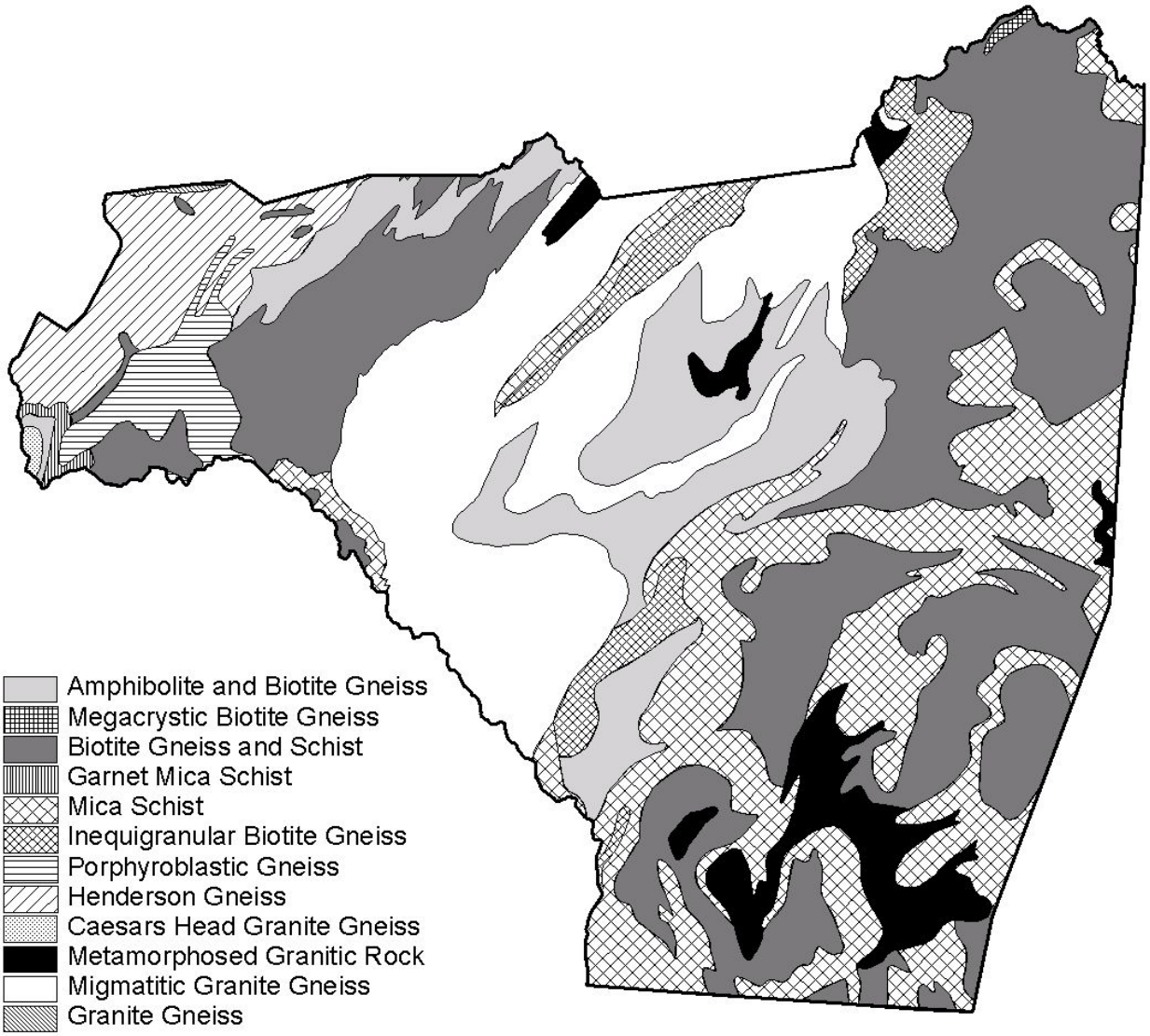

Figure 3. Geologic Map of Rutherford County, North Carolina.

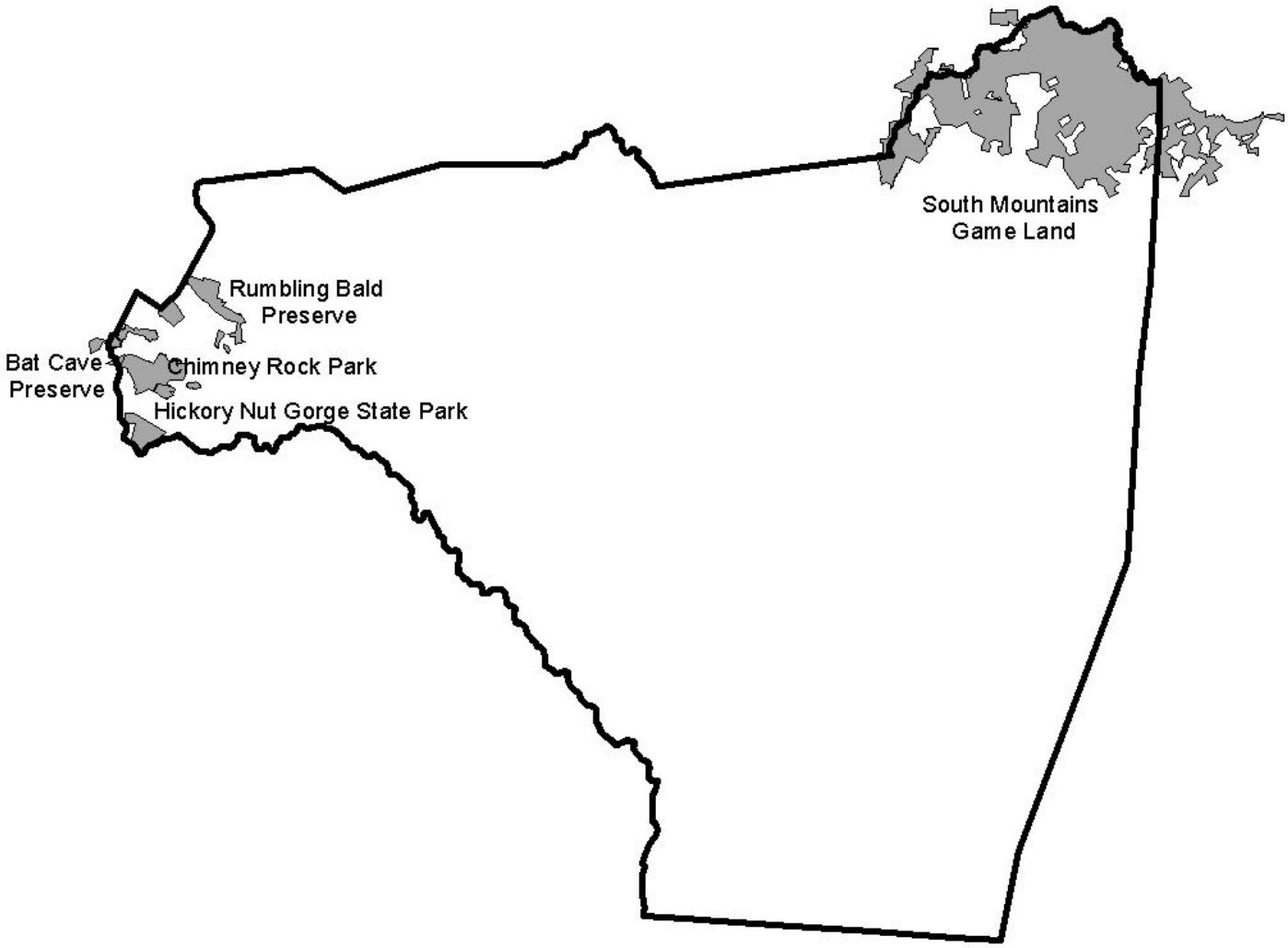

Figure 4. Public and Private Conservation Lands of Rutherford County, North Carolina.

THE BIODIVERSITY OF RUTHERFORD COUNTY

NATURAL COMMUNITY TYPES

Natural community types described in this report correspond to those described in the *Classification of the Natural Communities of North Carolina; Third Approximation* (Schafale and Weakley, 1990). Natural communities are characterized by vegetation composition and physiognomy, assemblages of animals or other organisms, topography, substrate, hydrology, soil characteristics, or other abiotic factors. Natural communities are distinct biological entities, which possess varying degrees of biological diversity. These ecological units are important because they house examples of unique species compositions and often rare species. The Natural Heritage Program is interested in protection of the highest quality examples of the many different natural communities found throughout the state. Natural communities exist across the state in various forms, including forests, rock outcrops, woodlands, scrublands, or a number of various wetland habitats ranging from tidal wetlands to mountain bogs. Although Significant Natural Heritage Areas are often recognized for the presence of rare species, most of our sites are comprised of one to several good quality examples of natural communities. The presence of rare species in a natural community type adds to but alone does not determine the final significance placed on a particular site. Of the 100 counties in North Carolina, Rutherford ranks near the middle in the number of natural community types present. In Rutherford County, 23 community types are known.

Natural communities often occur as mosaics within sites. In order to protect and conserve the different types of natural communities, it is necessary to define their boundaries, classify, and describe them as best as possible. Table 1 summarizes the natural communities documented from Rutherford County. The ranks given indicate their current global and state rarity status. Explanations of these ranks are given at the end of the table. NC NHP assigned the current state ranks for these natural community types based on information of community rarity across their range, both globally and within the state. In addition, NatureServe works with partners across the country and around the world to establish guidelines and rankings for natural communities at the global level. Additional information on these natural communities, their floristics can be found in Schafale and Weakley (1990).

Of the 23 natural community types documented from Rutherford County, some of the more uncommon types are rock outcroppings (Low Elevation Granitic Domes, Low Elevation Rocky Summits, and Granitic Flatrocks). Low Elevation Granitic Domes occur on both sides of Hickorynut Gorge, with the best-known examples occurring at Bald Mountain/Roundtop Mountain, Bluerock Mountain, Chimney Rock Park, and Rumbling Bald/Shumont Mountain/Cedar Knob. Examples of Low Elevation Rocky Summits occur in Hickorynut Gorge and throughout the South Mountains at Rocky Face Mountain/Cedar Knob and other locations. There are many Granitic Flatrocks located in the southeastern section of the county. The Sandy Mush Granitic Flatrock is considered to be the largest in the state and contains several rare plant species.

Another uncommon community type found in Rutherford County is the Spray Cliff. They are found in Hickorynut Gorge and the South Mountains of Rutherford County. Well known examples of these are found in Hickorynut Gorge at Hickorynut Falls and almost directly across the gorge at Rainbow Falls. Numerous smaller waterfalls are found throughout the upper portions of the county, possessing small Spray Cliff areas.

The Carolina Hemlock Bluff, a rare and threatened natural community type, is found in the county in Hickorynut Gorge and along the slopes of Pinnacle Mountain/Long Mountain just inside Rutherford County. Small examples are located on Rockey Face Mountain and along the Broad River at a rocky bluff near South Carolina.

Numerous small wetland areas in Rutherford County are found primarily along streams where seepage areas, side-channel depressions, and floodplain depressions/pools occur. In the mountainous areas within the county, wetlands are often found in association with Low Elevation Granitic Domes and Low Elevation Rocky Summits, forming along the margins of the exposed rock as seepage zones/areas.

Table 1. Ecological grouping of natural community types occurring in Rutherford County, North Carolina with state and global ranks.

ECOLOGICAL GROUPING	RANK	
	STATE	**GLOBAL**
Low Elevation Mesic Forest		
Rich Cove Forest	S4	G4
Acidic Cove Forest	S5	G5
Canada Hemlock Forest	S5	G5
Mesic Mixed Hardwood Forest (Piedmont Subtype)	S4	G5T5
Basic Mesic Forest (Piedmont Subtype)	S2	G5T3
Low Elevation Dry and Dry Mesic Forest and Woodlands		
Carolina Hemlock Bluff	S2	G2G3
Pine-Oak/Heath	S4	G5
Chestnut Oak Forest	S5	G5
Montane Oak-Hickory Forest	S5	G5
Montane Red Cedar-Hardwood Woodland	S1?	GNR
Dry-Mesic Oak-Hickory Forest	S5	G5
Dry Oak-Hickory Forest	S4	G5
Rock-Outcrop		
Low Elevation Granitic Dome	S1	G2
Low Elevation Rocky Summit	S2	G2
Granitic Flatrock	S2	G3
Montane Acidic Cliff	S3	G4
River Floodplain		
Rocky Bar and Shore	S5	G5
Piedmont/Low Mountain Alluvial Forest	S5	G5
Piedmont/Mountain Levee Forest	S3?	G5
Non Alluvial Wetlands		
Swamp Forest-Bog Complex (Typic Subtype)	S3	G2G3T2
Spray Cliff	S3	G2
Low Elevation Seep	S3	G4?
Southern Appalachian Bog (Southern Subtype)	S1S2	G1G2T1T2

1. T rank indicates rank for a subtype.
2. An S or G rank involving two numbers indicates uncertainty of rank. An example being a G2G3 rank, which indicates that, the species appears to warrant either a G2 or a G3 rank, but insufficient data exist to allow final determination of rank.

NATURAL COMMUNITY DESCRIPTIONS

Rich Cove Forest

Rich Cove Forest community types are widespread and abundant in the Southern Appalachians. In Rutherford County, this community type is found in the Hickorynut Gorge area and at a few localities in the South Mountains. Rich Coves are one of the most species-diverse community types in eastern North America, especially for the number of tree and herb species that can occur in them. These forests typically have a closed canopy dominated by a diverse mixture of species including sweet birch (*Betula lenta*), yellow buckeye (*Aesculus flava*), basswood (*Tilia heterophylla*), tulip poplar (*Liriodendron tulipifera*), cucumber tree (*Magnolia acuminata*), and black cherry (*Prunus serotina*) among others. In the best examples, the understory in really good examples is not dense and supports species including witch-hazel (*Hamamelis virginiana*), flowering dogwood (*Cornus florida*), and occasionally sourwood (*Oxydendrum arboreum*). The shrub layer is generally sparse with smooth hydrangea (*Hydrangea arborea*) and strawberry bush (*Euonymus americanus*). The herb layer is typically diverse and lush. Characteristic species include black cohosh (*Cimicifuga racemosa*), blue cohosh (*Caulophyllum thalictroides*), Northern horsebalm (*Collinsonia canadense*), wild geranium (*Geranium maculatum*), wild ginger (*Asarum canadense*), foamflower (*Tiarella cordifolia* var. *cordifolia*), bloodroot (*Sanguinaria canadensis*), ginseng (*Panax quinquefolius*), sweet cicely (*Osmorhiza claytonii*), violets (*Viola* spp.), goat's-beard (*Aruncus* sp.), marginal wood-fern (*Dryopteris marginalis*), southern lady fern (*Antheridium asplenioides*), silvery spleenwort (*Deparia acrostichoides*), maidenhair fern (*Adiantum pedatum*), stinging nettle (*Urtica dioica*), and frequently many others.

Acidic Cove Forest

This community type is common in the mountainous regions of North Carolina and in sheltered sites at low to moderate elevations outside of the mountains. In Rutherford County it often occurs in narrow rocky gorges, steep ravines, and sheltered valleys and slopes where it is generally moist and humid. These communities occur over more nutrient-poor soils than Rich Cove Forests, primarily due to the presence of relatively acidic soils. This community often grades into Rich Cove Forest or Canada Hemlock Forest downslope, and various oak-hickory forest types upslope. The forest canopy is closed and generally dense with dominant species typically being red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), Canada hemlock (*Tsuga canadensis*), and northern red oak (*Quercus rubra*). The understory is fairly open and generally dominated by saplings of canopy species with occasional flowering dogwood (*Cornus florida*), and sourwood (*Oxydendrum arboreum*). The shrub layer is often very dense with great laurel (*Rhododendron maximum*), gorge rhododendron (*R. minus*), and mountain laurel (*Kalmia latifolia*). The herb layer is typically sparse with dense beds of herbs occurring in canopy light gaps or along open stream channels. Characteristic herbs include galax (*Galax urceolata*), Christmas fern (*Polystichum acrostichoides*), Canada violet (*Viola canadensis*), bellwort (*Uvularia* spp.), Indian cucumber-root (*Medeola virginiana*), jack-in-the-pulpit (*Arisaema triphyllum*), false Solomon's seal (*Maianthemum racemosum*), trilliums (*Trillium* spp.), and sedges (*Carex* spp.).

Canada Hemlock Forest

This community is generally less mesic than cove forest sites and occurs in a variety of different locations and aspects including sheltered coves and slopes at middle to high elevations in the mountains and Piedmont. In Rutherford County this community occurs in Hickorynut Gorge and in isolated pockets in the South Mountains. The examples occurring at these locations are dominated by Canada hemlock (*Tsuga canadensis*), with a small number of cove hardwood species co-occurring. The understory may be sparse in the deep shade of the canopy or dominated by thick patches of great laurel or other evergreen heaths. Herbs are usually sparse. This community is now threatened by the presence of the invasive Hemlock Woolly Adelgid (*Adelges tsugae*), a small insect that feeds on the new growth of the trees by sucking sap from the base of the needles.

Mesic Mixed Hardwood Forest (Piedmont subtype)

This community type is common throughout the Piedmont In Rutherford County, it occurs along small stream drainages and along the lower and mid slopes of sheltered coves and valleys, notably along the river valleys of Broad and Second Broad Rivers. This community has a higher percentage of mesic canopy species such as beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), and white oak (*Quercus alba*). Understory species include flowering dogwood (*Cornus florida*), red maple (*Acer rubrum*), and American holly (*Ilex opaca*). The shrub layer includes blueberries (*Vaccinium* spp.), strawberry bush (*Euonymus americanus*), and occasionally mountain laurel (*Kalmia latifolia*). Herbs are moderately dense and include Christmas fern (*Polystichum acrostichoides*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), foamflower (*Tiarella cordifolia* var. *cordifolia*), alumroot (*Heuchera americana*), mayapple (*Podophyllum peltatum*), grape fern (*Botrychium* spp.), pipsissewa (*Chimaphila maculata*), and devil's-bit (*Chamaelirium luteum*).

Basic Mesic Forest (Piedmont Subtype)

This community is scattered throughout the Piedmont and lower parts of the Blue Ridge. In Rutherford County it occurs along the Broad River in several isolated pockets on north-facing lower slopes. The areas are generally small, occurring on less than three or four acres. This community type grades into Dry-Mesic Oak-Hickory above and Piedmont/Low Mountain Alluvial Forests below. It has a closed canopy dominated by tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubra*), scattered beech (*Fagus grandifolia*) and basswood (*Tilia heterophylla*). Along the uppermost boundary of the community type white oak (*Quercus alba*) occurs frequently. Understory and shrubs include numerous ironwood (*Carpinus caroliniana*), pawpaw (*Asimina trilobata*), redbud (*Cercis canadensis*), bladdernut (*Staphylea trifolia*), and sweet shrub (*Calycanthus floridus*). Herbs are dense and diverse, with species such as Christmas fern (*Polystichum acrostichoides*), wild ginger (*Asarum canadense*), little sweet Betsy (*Trillium cuneatum*), liver leaf (Hepatica americana), blood root (*Sanguinaria canadensis*) and sweet Cicely (*Osmorhiza claytonii*).

Carolina Hemlock Bluff

This community is considered rare because its dominant species, Carolina hemlock (*Tsuga caroliniana*), is restricted to southern Virginia, western North Carolina, eastern Tennessee, northwestern South Carolina, and northern Georgia. Sites where it is capable of becoming dominant are uncommon. Carolina Hemlock Bluffs usually occur on rocky acidic soils on steep slopes, bluffs, or gorge walls. This community may be fire dependent. Several examples of this community type

occur in Rutherford County and vary in quality. Hickorynut Gorge has several good examples of this community type on both sides of the gorge wall. One good example occurs along the steep northern slope of Long and Pinnacle Mountains. An atypical example occurs in southern Rutherford County along a bluff on the Broad River. Other canopy species occurring with the Carolina hemlock include tulip poplar (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), chestnut oak (*Q. montana*), and various hickories (*Carya* spp.). The understory is generally sparse with occasional canopy species or sourwood (*Oxydendrum arboreum*) present. Shrubs typically include mountain laurel (*Kalmia latifolia*), wild azalea (*Rhododendron periclymenoides*), and occasionally sparkleberry (*Vaccinium arboreum*) and blueberry (*V. pallidum*). Herbs are sparse under the hemlocks, with a few occurring along the margins such as partridgeberry (*Mitchella repens*), pipsissewa (*Chimaphila maculata*), Virginia snakeroot (*Aristolochia serpentaria*), and downy rattlesnake-plantain (*Goodyera pubescens*). Like the Canada hemlock, the Carolina hemlock is under attack by the invasive Hemlock Woolly Adelgid (*Adelges tsugae*), a small insect that feeds on the new growth of the trees by sucking sap from the base of the needles.

Pine-Oak/Heath

This community type occurs on very dry, acidic soils of exposed ridgetops and crests at low to middle elevations. The best examples of this community type in Rutherford County occurs in Hickorynut Gorge along a few prominent steep and rocky south-facing ridgelines. The canopy is fairly open and dominated by pitch pine (*Pinus rigida*), Table Mountain pine (*P. pungens*), as well as other pine and hardwood species of dry sites such as oaks (*Quercus* spp.), black gum (*Nyssa sylvatica*), persimmon (*Diospyros virginiana*), and sourwood (*Oxydendrum arboreum*). The understory is sparse, but the shrub layer is generally well developed and dominated by mountain laurel (*Kalmia latifolia*), fetterbush (*Leucothoe recurva*), low bush blueberry (*Vaccinium pallidum*), sparkleberry *(V. arboreum*) and black huckleberry (*Gaylussacia baccata*). Herbs are sparse, but include galax (*Galax urceolata*), rosinweed (*Silphium compositum* var. *reniforme*), eastern bracken fern (*Pteridium aquilinum*), Biltmore carrion flower (*Smilax biltmoreana*) and greenbrier (*S. glauca*).

Chestnut Oak Forest

This is one of the more common mountain forest communities at low to moderate elevations, and is found throughout Hickorynut Gorge and the South Mountains of Rutherford County. The canopy is generally closed, with canopy gaps occurring around rock outcrops. The dominant canopy species are chestnut oak (*Quercus montana*), and scarlet oak (*Q. coccinea*). Other species such as white oak (*Q. alba*), black oak (*Q. velutina*), southern red oak (*Q. falcata*), northern red oak (*Q. rubra*), mockernut hickory (*Carya alba*), and pignut hickory (*C. glabra*) are often present in the canopy as well. In areas of higher moisture and humidity, red maple (*Acer rubrum*) and tulip poplar (*Liriodendron tulipifera*) are common. American chestnut (*Castanea dentata*) was once an important tree in this forest community, but it now only occurs as an understory sprout. Other understory species include sourwood (*Oxydendrum arboreum*), red maple, flowering dogwood (*Cornus florida*), and downy serviceberry (*Amelanchier arborea*). The shrub layer may vary from sparse and open to very dense, with thickets of mountain laurel (*Kalmia latifolia*) and great laurel (*Rhododendron maximum*) present. Fetterbush (*Leucothoe recurva*), New Jersey tea (*Ceanothus americanus*), lowbush blueberry (*Vaccinium pallidum*), and black huckleberry (*Gaylussacia baccata*) are often present. The herb layer is generally sparse and of low diversity. Characteristic herbs include trailing

arbutus (*Epigaea repens*), galax (*Galax urceolata*), goldenrods (*Solidago* spp.), tickseed (*Coreopsis* spp.), eastern bracken fern (*Pteridium aquilinum*), and downy rattlesnake-plantain (*Goodyera pubescens*).

Montane Oak-Hickory Forest

This community type is widespread in the mountains of North Carolina, but it is limited to the Hickorynut Gorge area and in a few scattered localities in the South Mountains of Rutherford County. It occurs on dry to moist slopes and ridgetops that are somewhat exposed at low to high elevations. The soils it can range from acidic to basic, and composition may vary widely. The canopy is generally closed and dominated by a mixture of northern red oak (*Quercus rubra*), white oak (*Q. alba*), chestnut oak (*Q. montana*), scarlet oak (*Q. coccinea*), black oak (*Q. velutina*), mockernut hickory (*Carya alba*), and pignut hickory (*C. glabra*). The understory is moderately dense with saplings of canopy species, American chestnut (*Castanea dentata*) sprouts, flowering dogwood (*Cornus florida*), red maple (*Acer rubrum*), witch-hazel (*Hamamelis virginiana*), and black gum (*Nyssa sylvatica*). The shrub layer varies in density from sparse to occasional with patches of mountain laurel (*Kalmia latifolia*) and great laurel (*Rhododendron maximum*) present. Flame azalea (*Rhododendron calendulaceum*), lowbush blueberry (*Vaccinium pallidum*), and maple-leaf viburnum (*Viburnum acerifolium*) may also be present. The herb layer is moderately sparse and often contains false Solomon's seal (*Maianthemum racemosum*), Solomon's seal (*Polygonatum biflorum*), Indian cucumber-root (*Medeola virginiana*), hay-scented fern (*Dennstaedtia punctilobula*), New York fern (*Thelypteris noveboracensis*), and bellworts (*Uvularia* spp.).

Montane Red Cedar – Hardwood Woodland

This very rare community type occurs at Chimney Rock Natural Area in Hickorynut Gorge. It is dominated by a mixture of eastern red cedar (*Juniper virginiana*) and various hardwood species including chestnut oak (*Quercus montana*), northern red oak (*Q. rubra*), and hickory species (*Carya* spp.). This community supports spreading rockcress (*Draba ramosissima*), eastern shooting star (*Dodecatheon media* var. *media*), mountain cynthia (*Krigia montana*), granite goldenrod (*Solidago simulans*), and Biltmore sedge (*Carex biltmoreana*).

Dry-Mesic–Oak Hickory Forest

This community type is one of the most common forest communities in the Piedmont and is a common forest community type in Rutherford County. This community occurs from the lower slopes and ridges and generally grades into Dry Oak-Hickory upslope and Mesic Mixed Hardwood forests downslope. The canopy is typically closed and dominated by white oak (*Quercus alba*), post oak (*Q. stellata*), southern red oak (*Q. falcata*), mockernut hickory (*Carya alba*), pignut hickory (*C. glabra*), and occasionally bitternut hickory (*C. cordiformis*). The understory is sparse, with flowering dogwood (*Cornus florida)* and sourwood (*Oxydendrum arboreum*) common. Shrub species present include strawberry bush (*Euonymus americanus*), spicebush (*Lindera* benzoin), and occasionally small patches of mountain laurel (*Kalmia latifolia*) on sheltered slopes. Herbs are generally sparse to moderately dense with dwarf-flowered heartleaf (*Hexastylis naniflora*), pipsissewa (*Chimaphila maculata*), Virginia snakeroot (*Aristolochia serpentaria*), liverleaf (*Hepatica americana*), Christmas fern (*Polystichum acrostichoides*), and bloodroot (*Sanguinaria canadensis*) common.

Dry Oak-Hickory Forest

This is a common Piedmont natural community type and is often found on dry, generally south-facing slopes and ridges. The canopy is typically dominated by white oak (*Quercus alba*), southern red oak (*Q. falcata*), post oak (*Q. stellata*), mockernut hickory (*Carya alba*), pignut hickory (*C. glabra*), and various pine species (*Pinus* spp.). The understory generally has red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and occasionally flowering dogwood (*Cornus florida*). Shrubs are often diverse with deerberry (*Vaccinium stamineum*), sparkleberry (*V. arboreum*), and lowbush blueberry (*V. pallidum*) present. Other shrubs present include patches of mountain laurel (*Kalmia latifolia*), smooth sumac (*Rhus glabra*), and haw (*Viburnum prunifolium*). Herbs are generally sparse but might include pipsissewa (*Chimaphila maculata*), partridgeberry (*Mitchella repens*), yellow stargrass (*Hypoxis hirsuta*), golden aster (*Chrysopsis graminifolia*), rosinweed (*Silphium compositum* var. *reniforme*), and tickseed (*Coreopsis major* var. *major*).

Low Elevation Granitic Dome

This community type is distinguished from other rock community types by the absence of crevices and deep soil pockets, so that shallow soil mats determine vegetation. The rock surfaces are steep to gently sloping exposures of smooth, exfoliating granite or similar massive igneous or metamorphic rock, such as granitic gneiss. This community type is present in Rutherford County in Hickorynut Gorge. The canopy is generally absent, with marginal canopy species being primarily chestnut oak (*Quercus montana*), northern red oak (*Q. rubra*), and Carolina hemlock (*Tsuga caroliniana*). With no understory, the shrub layer can be dense in the soil mats with Georgia hackberry (*Celtis tenuifolia*), hairy mock-orange (*Philadelphus hirsutus*), gorge rhododendron (*Rhododendron minus*) , great laurel (*R. maximum*), and mountain laurel (*Kalmia latifolia*) common. The herb layer is sparse and limited to areas marginal to the rock or along soil mats. Common herb species include fall ladies-tresses (*Spiranthes cernua*), granite goldenrod (*Solidago simulans*), mountain cynthia (*Krigia montana*), big blue-stem (*Andropogon gerardii*), woolly lip-fern (*Cheilanthes tomentosa*), galax (*Galax urceolata*), and mountain spleenwort (*Asplenium montanum*).

Low Elevation Rocky Summit

The Low Elevation Rocky Summit occurs on exposed summits at moderate to low elevations in the mountains and the Piedmont. This community type is found across the northern third of Rutherford County in both Hickorynut Gorge and the South Mountains. These rare communities are structurally similar to High Elevation Rocky Summits, but are distinct due to the lower elevation and the flora assemblages, as they generally occur under 4000 ft. in elevation. They can be characterized by the presence of rugged uneven vertical and horizontal rock with little or no canopy present. Small islands of accumulated organic soils (soil mats) occur on the horizontal surfaces, on cliff bases, and in crevices. They are typically open, but occasionally a few will support scattered stunted trees around their margins and in deeper soil mats. Vegetation is typically a zoned collection of herbs including live forever (*Sedum telephioides*), fameflower (*Talinum teretifolium*), rock spikemoss (*Selaginella rupestris*), Appalachian bellflower (*Campanula divaricata*), blue curls (*Trichostema dichotomum*), noseburn (*Tragia urticifolia*), Godfrey's thoroughwort (*Eupatorium godfreyanum*), flowering spurge (*Euphorbia corollata*), pussytoes (*Antennaria plantaginifolia*), tickseed (*Coreopsis* spp.), white goldenrod (*Solidago bicolor*), marginal wood-fern (*Dryopteris marginalis*), summer bluets (*Houstonia cerulea*), broomsedge (*Andropogon virginicus*), oat grass (*Sphenopholis* sp.),

Indian grass (*Sorghastrum nutans*), panic grasses (*Panicum* spp.), ebony spleenwort (*Asplenium platyneuron*), and black-stemmed spleenwort (*Asplenium resiliens*). Numerous lichens and mosses also occur on the rock surfaces.

Granitic Flatrock

This rare community type consists of exfoliating granite, or other similar stone, that occurs on a level or gently sloping surface at about the same elevation as the surrounding land. Flatrocks can vary from bare rock to exposed rock with shallow mats of mineral or organic matter, or shallow rocky and sandy soils. Examples of this community type are found in the southeast corner of the county. One of the best examples of this community type in the state is found at the Sandy Mush Granitic Flatrock, which is reported as being the largest granitic flatrock in the state. The vegetation is characterized by soil mats undergoing succession in several zones. Generally, the soil mats have pioneering species on the edges with successional species towards the center as woody herbs or small trees. Granitic flatrocks often possess rare plant species endemic to this community type. Typical soil mats contain Virginia pine (*Pinus virginiana*), scarlet oak (*Quercus coccinea*), and southern red oak (*Q. falcata*) as canopy species. Understory and shrub species present are eastern red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*), downy serviceberry (*Amelanchier arborea*), fringe tree (*Chionanthus virginicus*), hawthorns (*Crataegus* sp), shrubby St. John's-wort (*Hypericum prolificum*), and Georgia hackberry (*Celtis tenuifolia*). Vines and herbs generally present include catbrier (*Smilax laurifolia, S..glauca, and S. bon-nox*), crossvine (*Bignonia capreolata*), virgin's bower (*Clematis virginianus*), fame flower (*Talinum teretifolium*), woolly lip fern (*Cheilanthes tomentosa*), single-flowered stitchwort (*Arenaria uniflora*), and false pimpernel (*Lindernia monticola*). In depression pools that are perennially filled with water, Piedmont quillwort (*Isoetes piedmontana*) and elf orpine (*Dimorpha smallii*) are often present.

Montane Acidic Cliff

This is an uncommon community that occurs on lower to mid slopes where steep to vertical rock is exposed over an area large enough to create a break in the surrounding forest canopy. In Rutherford County this community is found in Hickorynut Gorge at Chimney Rock and Round Top Mountain. Vegetation is limited to shallow soil accumulations at crevices and ledges and is typically sparse but often includes mountain spleenwort (*Asplenium montanum*), Michaux's saxifrage (*Saxifraga michauxii*), rockcap fern (*Polypodium virginianum*), and a variety of other opportunistic herbs and stunted trees.

Rocky Bar and Shore

This community is restricted to rock outcrops and gravel bars along rivers and streams that are too rocky, too wet, or too severely flooded to support trees. Vegetation on this community type is often variable, ranging from dense to sparse with shrubs or herbs and seldom with bottomland or mesophytic trees. Shrubs typical to this community type are tag alder (*Alnus serrulata*), button-bush (*Cehpalanthus occidentalis*), yellowroot (*Xanthorhiza simplicissima*), willow (*Salix* sp.), and silky dogwood (*Cornus amomum*). Characteristic herbs include jewelweed (*Impatiens* sp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), knot-weed (*Polygonum* spp.), and bluets (*Houstonia* spp.).

Piedmont/Low Mountain Alluvial Forest

This is a very common community type in the Piedmont and lower mountain areas of Rutherford County. It lies along most small streams, creeks, and rivers in the county. Most of this community type has been subject to past logging, so good examples oh this community are hard to find. One of the best example lies along lies a six-mile stretch of the Broad River near Polk County along about a six-mile stretch of the river. These community types lack natural levees and can possess both bottomland and upland canopy species. Plant species present are very similar to those found in a Piedmont Levee Forest, mentioned below.

Piedmont/Mountain Levee Forest

This community type is found along major creeks and rivers along the stream banks where sediment deposits from flood events have created a natural raised area (levee). The soils along these levees tend to be richer that those found in adjacent alluvial and bottomland forests. Typical species found on levee communities include box elder (*Acer negundo*), tulip poplar (*Liriodendron tulipifera*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*) and river birch (*Betula nigra*). The understory and shrub layer contains pawpaw (*Asimina triloba*), sugarberry (*Celtis* spp.), ironwood/muscle wood (*Carpinus caroliniana*), and often the invasive Chinese privet (*Ligustrum sinense*). Vines are often highly present with Virginia creeper (*Parthenocissus quinquefolia*), trumpet vine (Campsis radicans), Japanese honeysuckle (*Lonicera japonica*), and poison ivy (*Toxicodendron radicans*) common. The herb layer varies from sparse to dense depending on light availability and position on the levee. Typical herbs include jewelweed (*Impatiens* sp.), bottlebrush grass (*Hystrix patula*), river oats (*Chasmanthium latifolium*), and cardinal flower (*Lobelia cardinalis*).

Swamp Forest-Bog Complex (Typic Subtype)

Swamp Forest-Bog Complexes are wetland communities limited to depression areas and nearly flat bottomlands in the mountains and foothills. They differ from Southern Appalachian Bogs in structure, being a complex of forested thickets and small openings (less than one acre) with bog vegetation. Little is known about this community type, structure, and how it is maintained; however they appear somewhat less wet than bogs. Swamp Forest-Bog Complex communities are generally dominated by Canada hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*), and red maple (*Acer rubrum*). In the mountainous area Canada hemlock is absent and you pick up tulip poplar (*Liriodendron tulipifera*) and increased amounts of red maple and sycamore (*Platanus occidentalis*) occurs in the canopy. A dense thicket of great laurel (*Rhododendron maximum*), and/or mountain laurel (*Kalmia latifolia*) usually lies below the canopy. Boggy areas are open patches of wetland complexes that appear along depressions on some previous stream channel migration. They possess herbaceous cover with a more open shrub layer. Characteristic shrubs in the opening are elderberry (*Sambucus canadense*), hollies (*Ilex opaca,* and *I. montana*), viburnums (*Viburnum dentatum, V. nudum, V. prunifolium,* and *V. acerifolium*), and tag alder (*Alnus serrulata*). Herbs include manna grass (*Glyceria* sp.), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), turtleheads (*Chelone* spp.), partridgeberry (*Mitchella repens*), and swamp dewberry (*Rubus hispidus*).

Spray Cliff

This community type is rare in Rutherford County. Examples occur on steeply sloping to vertical rock faces that remain wet from the spray of waterfalls. They support a collection of nonvascular species (mosses and liverworts), as well as herbs scattered in small soil pockets. These highly

specialized habitats can contain rare vascular plants such as Carolina saxifrage (*Saxifraga caroliniana*) and Carey's saxifrage (*Saxifraga careyana*). Other species that may be present include maidenhair fern (*Adiantum pedatum*), galax (*Galax urceolata*), meadow rue (*Thalictrum* sp.), jack-in-the-pulpit (*Arisaema triphyllum*), sedges (*Carex* spp.), and species from surrounding forests.

Low Elevation Seep

This community type generally occurs along low lying areas along or near small streams with seepage generally flowing towards a larger stream adjacent to it in a bottomland or floodplain. They contrast with the adjacent floodplain or upland communities in vegetation and soils. These communities are usually saturated, mucky, and occur in small localized areas. The canopy is usually closed with open areas occurring in the wettest portions. Typical canopy species include tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), and box elder (*Acer negundo*). Canopy species appearing marginally include white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), northern red oak (*Q. rubra*), and beech (*Fagus grandifolia*). The understory has an occasional sourwood (*Oxydendrum arboreum*), silky dogwood (*Cornus amomum*) , American holly (*Ilex opaca*), and downy serviceberry (*Amelanchier arborea*). Shrubs within the seep include maleberry (*Lyonia* sp.), sparkleberry (*Vaccinium arboreum*), various viburnum species (*Viburnum dentatum, V. prunifolium*, and *V. nudum*), and the invasive Chinese privet (*Ligustrum sinense*). Along the margin and adjacent slopes, mountain laurel (*Kalmia latifolia*) and pinxter-flower (*Rhododendron periclymenoides*) are common. Vines and herbs include catbrier (*Smilax laurifolia* and *S. glauca*), Virginia creeper (*Parthenocissus quinquefolia*), and Carolina milkvine (*Matelea carolinensis*). Herbaceous species are uncommon in the seep with cane (*Arundinaria gigantea*), beard tongue (*Penstemon canescens*), cinnamon fern (*Osmunda cinnamomea*), pipsissewa (*Chimaphila maculata*), partridgeberry (*Mitchella repens*), rushes (*Juncus* spp.), and sedges (*Carex* spp.) most commonly found in the seep.

Southern Appalachian Bog (Southern Subtype)

This community has a deep wet organic mucky layer that stays saturated throughout the year. In Rutherford County, this community type occurs in one known location and grades more into a poor Fen rather than a typical bog, as it occurs in a small concentrated area in a fairly closed canopy along a stream. The surrounding canopy is dominated by beech, red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), and other mesic canopy species. Common shrubs present include sweet shrub (*Calycanthus floridus*), and spice bush (*Lindera benzoin*). The herb layer along the boggy area has golden saxifrage (*Chrysosplenium americana*), numerous sedges (*Carex* spp.), rushes (*Juncus* spp.), and orchids present.

FLORA AND FAUNA

Rutherford contains native plant and animal species from two different physiographic regions: the southern Blue Ridge Mountains which extend from Virginia to northern Alabama and the Piedmont which lies east of the Blue Ridge Mountains and extends from Southern New York to Alabama. With a substantial gradient in elevation, a varied topography, and the wide range of geology, Rutherford County supports a diverse set of natural communities as well as a high diversity of plants and animals.

Rutherford County ranks in the upper third of North Carolina's 100 counties both in the number of rare plant and animal species present. There are currently 54 special status plant species and 19 special status animal species (as defined by NatureServe, USFWS, and NC NHP) recorded from Rutherford County (Tables 2 and 3). Explanations for the ranks and statuses of rare plant and rare animals appear after each table. Information on the statewide distribution and habitats for rare plant species is found in the *Natural Heritage Program List of the Rare Plant Species of North Carolina* (Franklin and Finnegan 2004, 2006 in press). Similar information for rare animal species can be found in *Natural Heritage Program List of the Rare Animal Species of North Carolina* (LeGrand et. al. 2004, 2006 in press).

Rutherford County contains significant populations of several rare plant species. The State and Federally Endangered white irisette (*Sisyrinchium dichotomum*) occurs in the Hickorynut Gorge area. Populations also exist in the South Mountains region of the county on Yellowtop Mountain/Biggerstaff Mountain, as well as the Rollins/South Mountains Natural Area and Cherry Mountain. This plant is endemic to Henderson, Polk, and Rutherford Counties in North Carolina, and Greenville and Oconee Counties in South Carolina. It occurs in Montane Oak-Hickory Forest (Basic Variant) and Chestnut Oak Forest over amphibolite, in areas were little or no leaf litter is present (slopes, ridgelines, and old logging roads).

Rutherford County also contains significant populations of the State and Federally Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*). With the addition of populations discovered during this inventory, Rutherford County currently possesses the majority of known populations of this rare plant. Dwarf-flowered heartleaf is endemic to an 11 county region in North and South Carolina. This species is confined to Dry-Mesic Oak-Hickory and Mesic Mixed Hardwood Forests along north-facing slopes along small streams and springs. This species is threatened by logging, pasturing, and creation of ponds.

A rare nonvascular plant, rock gnome lichen (*Gymnoderma lineare*), is known from Rutherford County in Hickorynut Gorge around Chimney Rock Natural Area. This State and Federally Endangered lichen occurs on vertical rock faces at higher elevations where fog is often present, and at lower elevations in gorges in association with wet seepy northern exposures, or wet, partially shaded, southern and western exposures. This rare species is known from a 12 county area in western North Carolina.

Small whorled pogonia (*Isotria medeoloides)* is a State Endangered and Federally Threatened

species found in moist rich forests. Small whorled pogonia occurs in eight mountain counties in North Carolina. It is historically known from Cumberland, Harnett, Orange, and Surry Counties, in the Piedmont.

Rock outcrops in Rutherford County contain several rare plant species. Single-flowered sandwort (*Minuartia uniflora*) is a State Endangered species and Piedmont quillwort *(Isoetes piedmontana)* is a State Threatened species. Single-flowered sandwort and Piedmont quillwort are both known from the Sandy Mush Granitic Flatrock and several smaller granitic flatrocks in the region.

Other significant plant populations in Rutherford County includes four Federal Species of Concern: sweet pinesap (*Monotropsis odorata*), divided leaf ragwort (*Packera millefolium*), Carolina saxifrage (*Saxifraga caroliniana*), and mountain catchfly (*Silene ovata*). Most of these occur in the South Mountains and/or the Hickorynut Gorge area.

Several rare plant species that were documented historically from Rutherford County were either rediscovered or new populations were located during the inventory. The dwarf chinquapin oak (*Quercus prinoides*) was reported in the 1950's from credible sources as being located within a mile of the Rutherford and Polk County line, near and along the present day US Highway 74. This site was surveyed in 2005, but no specimens were found. In 2005, a separate population of dwarf chinquapin oak was located in central Rutherford County. Glade milkvine (*Matelea decipiens*) was reported in the 1950's from a single location along the Broad River south of Harris. This occurrence was relocated in 2005.

Other rare plant species reported as historical from Rutherford County were not found during the inventory. These include the fen orchid (*Liparis loeselii*), dissected toothwort (*Cardamine dissecta*), Pursh's wild petunia (*Ruellia purshiana*), and mountain catchfly (*Silene ovata*). All are documented from the county, but have not been seen in over 20 years according to NC NHP records.

Certain populations of rare aquatic and terrestrial animals in the county are especially significant. All of the known populations of the globally rare Broad River crayfish (*Cambarus lenati*) are contained in the headwaters of the First Broad River. Another crustacean, the Broad River spiny crayfish (*Cambarus spicatus*) a Federal Species of Concern also occurs in the First Broad River headwaters within the First Broad River Aquatic Habitat. Located in the area near and around Bat Cave is an occurrence of the State and Federally Endangered Indiana Bat (*Myotis sodalis*), the Federal Species of Concern small-footed myotis (*Myotis leibii*), and the Significantly Rare northern long-eared myotis (*Myotis septentrionalis*). Also from the same general area are known occurrences of the Southern Appalachian population of the eastern woodrat (*Neotoma floridana haematoreia*), and the uncommon pigmy shrew (*Sorex hoyi*). In southern Rutherford County, the northernmost range of the Significantly Rare oldfield mouse (*Peromyscus polionotus*) reaches several miles into the county along and just north of the Broad River.

Notable rare birds include the State Endangered peregrine falcon (*Falco peregrinus*), the Federal Species of Concern cerulean warbler (*Dendroica cerulea*), and the loggerhead shrike (*Lanius ludovicianus*). Rare amphibian and reptile species include two Federal Species of Concern: the

northern pine snake (*Pituophis melanoleucus*), and the green salamander (*Aneides aeneus*). A variety of the Yonahlossee salamander (*Plethodon yonahloassee* pop. 1), also known as the crevice salamander, is endemic to the region around Hickorynut Gorge. Also present within Hickorynut Gorge is an occurrence of the Blue Ridge gray-cheeked salamander (*Plethodon amplus*).

There are two Significantly Rare arachnid species known from the county, a lampshade spider (*Hypochilus coylei*) and a cave obligate nesticid spider (*Nesticus brimleyi*). Both of these rare spiders are found in the Hickorynut Gorge area with the nestid spider endemic to the vicinity of Bat Cave. Rare butterfly species known from Rutherford County include the Significantly Rare mottled duskywing (*Erynnis martialis*) and the North Carolina Watch List Diana fritillary (*Speyeria diana*).

Table 2. Rare plant species documented from Rutherford County, North Carolina.

SCIENTIFIC NAME COMMON NAME	STATUS NC	 US	RANK NC	 GLOBAL
VASCULAR PLANTS				
Amelanchier sanguinea Roundleaf Serviceberry	SR-P	-	S2	G5
Amorpha schwerinii Piedmont Indigo-bush	SR-T	-	S3	G3G4
Anemone berlandieri Southern Anemone	SR-P		S2	G4?
Arabis patens Spreading Rockcress	SR-T	-	S1	G3
Asplenium bradleyi Bradley's Spleenwort	SR-P	-	S1	G4
Asplenium pinnatifidum Lobed Spleenwort	SR-P	-	S1	G4
Baptisia albescens Thin-pod White Wild Indigo	SR-P	-	S2	G4
Berberis canadensis American Barberry	SR-T	-	S2	G3
Botrychium jenmanii Alabama Grape-fern	SR-P	-	S2	G3G4
Calamagrostis porteri Porter's Reed Grass	SR-P	-	S1	G4
Calystegia catesbeiana ssp. *sericata* Blue Ridge Bindweed	SR-T	-	S3	G3T2T3Q
Cardamine dissecta Dissected Toothwort	SR-P	-	S2	G4?

Carex biltmoreana Biltmore Sedge	SR-L	-	S3	G3
Celastrus scandens American Bittersweet	SR-P		S2?	G5
Cirsium carolinianum Carolina Thistle	SR-P	-	S2	G5
Collinsonia tuberosa Piedmont Horsebalm	SR-P	-	S1	G3G4
Coreopsis latifolia Broadleaf Coreopsis	SR-T	-	S3	G3
Dicentra eximia Bleeding Heart	SR-P	-	S2	G4
Dodecatheon meadia var. *meadia* Eastern Shooting Star	SR-P	-	S2	G5T5
Draba ramosissima Branching Draba	SR-P	-	S2	G4
Echinacea purpurea Purple Coneflower	SR-P	-	S1	G4
Eupatorium godfreyanum Godfrey's Thoroughwort	SR-P	-	S2	G4
Fothergilla major Large Witch-alder	SR-T	-	S3	G3
Helianthus laevigatus Smooth Sunflower	SR-P	-	S2	G4
Hexalectris spicata Crested Coralroot	SR-P	-	S2	G5
Hexastylis contracta Mountain Heartleaf	E	FSC	S1	G3

Hexastylis naniflora Dwarf-flowered Heartleaf	T	T	S3	G3
Huperzia appalachiana Appalachian Fir-clubmoss	SR-P	-	S2	G4G5
Huperzia porophila Rock Fir-clubmoss	SR-P	-	S2	G4
Isoetes piedmontana Piedmont Quillwort	T	-	S2	G3
Isotria medeoloides Small Whorled Pogonia	E	T	S2	G2
Juniperus communis var. depressa Dwarf Juniper	SR-D	-	S1	G5T5
Liatris aspera Rough Blazing star	SR-P	-	S1	G4G5
Liatris microcephala Small-head Blazing star	SR-P	-	S1	G3G4
Liatris squarrulosa Earle's Blazing star	SR-P	-	S2	G4G5
Liatris turgida Shale-barren Blazing star	SR-T	-	S1S2	G3
Lilium canadense ssp. *editorum* Red Canada Lily	SR-P	-	S1	G5T4
Liparis loeselii Fen Orchid	SR-P	-	S1	G5
Lonicera flava Yellow Honeysuckle	SR-P	-	S2	G5?
Matelea decipiens Glade Milkvine	SR-P	-	S2	G5

Minuartia uniflora Single-flowered Sandwort	E	-	S1	G4
Monotropsis odorata Sweet Pinesap	SR-T	FSC	S3	G3
Packera millefolium Divided-leaf Ragwort	T	FSC	S2	G2
Packera paupercula Balsam Ragwort	SR-P	-	S1?	G5
Quercus prinoides Dwarf Chinquapin Oak	SR-P	-	S1	G5
Rhynchospora alba Northern White Beaksedge	SR-P	-	S2	G5
Ruellia purshiana Pursh's Wild-petunia	SR-O	-	S2	G3
Saxifraga caroliniana Carolina Saxifrage	SR-T	FSC	S3	G2
Silene ovata Mountain Catchfly	SR-T	FSC	S3	G3
Sisyrinchium dichotomum White Irisette	E	E	S2	G2
Solidago simulans Granite Dome Goldenrod	SR-L	FSC	S1	G1
Thermopsis mollis sensu stricto Appalachian Golden-banner	SR-P	-	S2	G3G4
Trichophorum cespitosum Deerhair Bulrush	SR-D	-	S2S3	G5
Trillium simile Sweet White Trillium	SR-L	-	S2	G3

Utricularia cornuta Horned Bladderwort	SR-P	-	S1S2	G5
Woodsia appalachiana Appalachian Cliff Fern	SR-P	-	S2	G4
NONVASCULAR PLANTS				
Gymnoderma lineare Rock Gnome Lichen	T	E	S2	G2
Bryoerythrophyllum ferruginascens A Moss	SR-D	-	S1	G3G4
Cephaloziella hampeana A Liverwort	SR-D	-	S1	G5
Frullania appalachiana A Liverwort	SR-L	-	S1?	G1?
Macrocoma sullivantii Sullivant's Maned-moss	SR-D	-	S2	G3G5
Philonotis cernua Dwarf Apple Moss	SR-D	-	S1	G4?

EXPLANATION OF STATUS AND RANK CODES FOR RARE PLANTS

N.C. Status:
E = Endangered
T= Threatened
SC = Special Concern
C = Candidate
SR = Significantly Rare

The statuses used for plants are determined by the Plant Conservation Program, The North Carolina Department of Agriculture, and The North Carolina Natural Heritage Program (NC NHP). Any collections from the wild of Endangered, Threatened, or Special Concern plant species is regulated by law. The Candidate and Significantly Rare are designated statuses used by the NC NHP which indicate a need for plant population monitoring and possible conservation for species currently listed as Endangered, Threatened, or Special Concern.

U.S. Status:
E = Endangered. A plant in danger of extinction throughout all or a significant part of it's range.
T = Threatened. A plant that is likely to become an Endangered species in the near future throughout all of it's range or a significant part of it.
FSC = Federal Species of Concern. Replaces the former "Category 2" Candidate status used by the U. S. Fish and Wildlife Service. These are plants which have sone evidence fo vulnerability, but there is not enough data to support a listing of Endangered or Threatened. FSC has no official status.

N.C. Rank:
S1 = Critically imperiled in North Carolina because of extreme rarity or due to some factor making it vulnerable to extirpation from the state. Typically 1 to 5 known populations.
S2 = Imperiled in North Carolina because of rarity, or due to some factor making it vulnerable to extirpation from the state. Typically 6-20 known populations.
S3 = Rare or uncommon in North Carolina. Typically 21-100 known populations.
SH = Of historical occurrence in north Carolina, not having been seen or verified in more than 20 years, and suspected to still be extant.

Global Rank:
G1 = Critically imperiled globally because of extreme rarity or due to some factor making it especially vulnerable to extinction throughout its range. Typically less that 5 known occurrence globally.
G2 = Imperiled globally because of rarity, or due to some factor making it vulnerable to extinction throughout its range. Typically 6-20 known occurrences globally.
G3 = Either very rare and local throughout its range or found locally (even abundant in some locations) in a restricted range or due to some factor making it vulnerable to extinction throughout its range. Typically 21 -100 occurrences globally.
G4 = Apparently secure globally, though it may be rare in parts of its range, especially peripheral

parts of the range.
G5 = Demonstrably secure globally, though it may be rare in parts of its range, especially, peripheral parts of the range.
Q = Questionable taxonomic assignment.
T = The rank of a subspecies or variety. Example being: G4T1 would apply to a subspecies or a variety of a species with an overall rank of G4, but with the subspecies the warranting rank is G1.
? = Unranked or rank uncertain.
U = Possibly in peril range-wide, but status is uncertain.

An S or G rank involving two numbers indicates uncertainty of rank. For example, a G2G3 rank indicates that the species appears to warrant either a G2 or a G3 ranking, but existing data is not sufficient to allow a determination to be made.

Table 3. Rare animal species documented from Rutherford County, North Carolina.

SCIENTIFIC NAME COMMON NAME	STATUS NC	 US	RANK NC	 GLOBAL
		MAMMALS		
Myotis leibii Eastern Small-footed Myotis	SC	FSC	S3	G3
Myotis septentrionalis Northern Myotis	SC	-	S3	G4
Myotis sodalis Indiana Myotis	E	E	S1?	G2
Neotoma floridana haematoreia Eastern Woodrat - Southern Appalachian Population	SC	FSC	S3	G5T4Q
Peromyscus polionotus Oldfield Mouse	SR	-	S1	G5
		BIRDS		
Dendroica cerulea Cerulean Warbler	SR	FSC	S2B,SZN	G4
Falco peregrinus Peregrine Falcon	E	-	S1B,S2N	G4
Lanius ludovicianus Loggerhead Shrike	SC	-	S3B,S3N	G4
		AMPHIBIANS		
Aneides aeneus Green Salamander	E	FSC	S2	G3G4
Plethodon yonahlossee pop. 1 Crevice Salamander	SC	-	S1	G4T1Q
Plethodon amplus	SR	-	S1S2	G1G2

Blue Ridge Gray-cheeked Salamander				
Crotalus horridus Timber Rattlesnake	SC	-	S3	G4
Liochlorophis vernalis Smooth Green Snake	SC	-	SH	G5
Pituophis melanoleucus melanoleucus Northern Pine Snake	SC	FSC	S3	G4T4
FISHES				
Cyprinella zanema Santee Chub	SR	-	S3	G4
CRUSTACEANS				
Cambanus lenati Broad River Stream Crayfish	SR	-	S2	G2
ARACHNIDS				
Hypochilus coylei Lampshade Spider	SR	-	S3?	G3?
BUTTERFLIES				
Erynnis martialis Mottled Duskywing	SR	-	S3	G3G4
MAYFLIES				
Homoeoneuria cahabensis Cahaba Sand-filtering Mayfly	SR	-	S1S2	G2G3

EXPLANATION OF STATUS AND RANK CODES FOR RARE ANIMALS

N.C. Status:
E = Endangered
T= Threatened
SC = Special Concern
SR = Significantly Rare

The statuses used for rare animals are determined by the North Carolina Wildlife Resources Commission (NC WRC) and The North Carolina Natural Heritage Program (NC NHP). Endangered, Threatened, or Special Concern have some protection by state (The Endangered, Threatened Wildlife and Wildlife Species of Concern Act, 1987) regulated by law. The Significantly Rare status was designated by the NC NHP indicating rarity and a need for population monitoring and possible conservation for species currently listed as Endangered, Threatened, or Special Concern.

U.S. Status:
E = Endangered. A plant in danger of extinction throughout all or a significant part of it's range.
T = Threatened. A plant that is likely to become an Endangered species in the near future throughout all of it's range or a significant part of it.
FSC = Federal Species of Concern. Replaces the former "Category 2" Candidate status used by the U. S. Fish and Wildlife Service. These are plants which have some evidence for vulnerability, but there is not enough data to support a listing of Endangered or Threatened. FSC has no official status.

N.C. Rank:
S1 = Critically imperiled in North Carolina because of extreme rarity or due to some factor making it vulnerable to extirpation from the state. Typically 1 to 5 known populations.
S2 = Imperiled in North Carolina because of rarity, or due to some factor making it vulnerable to extirpation from the state. Typically 6-20 known populations.
S3 = Rare or uncommon in North Carolina. Typically 21-100 known populations.
SH = Of historical occurrence in North Carolina, not having been seen or verified in more than 20 years, and suspected to still be extant.
SR = State reported.
S_B (e.g S2B) = Rank of a breeding population in the state (migratory species only).
S_N = Rank of a non-breeding population in the state (migratory species only).
Z_ (e.g. SZN) = Population is not of significant conservation concern.

Global Rank:
G1 = Critically imperiled globally because of extreme rarity or due to some factor making it especially vulnerable to extinction throughout its range. Typically less that 5 known occurrence globally.
G2 = Imperiled globally because of rarity, or due to some factor making it vulnerable to extinction throughout its range. Typically 6-20 known occurrences globally.

G3 = Either very rare and local throughout its range or found locally (even abundant in some locations) in a restricted range or due to some factor making it vulnerable to extinction throughout its range. Typically 21 -100 occurrences globally.
G4 = Apparently secure globally, though it may be rare in parts of its range, especially peripheral parts of the range.
G5 = Demonstrably secure globally, though it may be rare in parts of its range, especially, peripheral parts of the range.
T = The rank of a subspecies or variety. Example being: G4T1 would apply to a subspecies or a variety of a species with an overall rank of G4, but with the subspecies the warranting rank is G1.
GH or TH = Historical occurrences only through its range, with the exception that in might be rediscovered (GH for a species, TH for a subspecies or variety).
GU = Possibly in peril range-wide, but status is uncertain; more information is needed..
? = Unranked or rank uncertain.

An S or G rank involving two numbers indicates uncertainty of rank. For example, a G2G3 rank indicates that the species appears to warrant either a G2 or a G3 ranking, but existing data is not sufficient to allow a determination to be made.

DISCUSSION OF THE SIGNIFICANT NATURAL HERITAGE AREAS

A natural area contains a good example of one or more community types with high integrity, with or without rare species present. These areas should be considered targets for conservation and preservation efforts. Natural areas are generally referred to in this report as 'sites' or Significant Natural Heritage Areas (SNHAs). These sites fall into three categories recognized by the North Carolina Natural Heritage Program (NC NHP). They are known as Standard Sites, Macrosites, and Megasites.

Standard Sites can range from one to thousands of acres and they possess reasonably good integrity throughout. In certain cases, Standard Sites fall into distinct groups based upon strong geographic connections and ecological relationships. Such clusters of standard sites are then grouped into what is known as a Macrosite. Undeveloped land between Standard Sites in a Macrosite is generally of a lower quality, but it contains ecologically important buffers, wildlife corridors, or basic landform connections.

A Megasite is delineated where multiple Macrosites, or a Macrosite and several Standard Sites, form a distinctive geographical unit within a region. For example, the South Mountains/Foothills Megasite contains the large South Mountains Macrosite and a larger surrounding region of relatively undeveloped natural lands in which four additional standard sites are also located. Significant Natural Heritage Areas in Rutherford County are listed in Table 4, with locations shown in Figure 5.

Significant sites in Rutherford County fall into three main regions, due in part to the presence of municipalities across the middle portion of the county. These regions are Blue Ridge/Hickorynut Gorge, The South Mountains, and the Inner Piedmont along the Broad River.

Descriptions of 46 biologically significant sites from Rutherford County are contained in this report (Figure 5). The site descriptions are grouped geographically and include site maps. Most site maps are at a scale of 1:24,000, unless otherwise indicated. Quadrangle names given refer to the standard 1:24,000 scale USGS topographic maps of North Carolina.

The natural area significance has been evaluated using a standard system employed by NC NHP. Each site has been compared to similar sites in the county, region, state, and the nation to determine its significance. Factors considered in the evaluation include the rarity, quality, and condition of the natural communities present; rarity, vigor, and population size of rare species present; size of the site; and geographical relationship of the elements (natural communities and rare species) to other similar elements in the surrounding counties and regions. After each significance level was assigned, it was subject to internal review and possible revision by other NC NHP biologists. The four significance levels assigned are: county, regional, state, and national.

National Significance: Considered to contain examples of natural communities, rare plant or animal populations, or other significant ecological features that are among the highest quality or best (top five or six) examples of their kind in the nation.

State Significance: Considered to contain examples of natural communities, rare plant or animal populations, or other significant ecological features that are among the highest quality or best (top five or six) examples of their kind in North Carolina, after any nationally significant examples. There may be comparable (or more significant) sites elsewhere in the nation or within the state.

Regional Significance: Considered to contain examples of natural communities, rare plant or animal populations, or other significant ecological features that are represented elsewhere in the state by better examples, but which are among the highest quality or best (top five or six) examples in their geographic region of the state. Portions of the Middle Mountains, Southern Foothills, and the Southern Charlotte Belt NC NHP Terrestrial Regions are located within Rutherford County. Portions of the Broad, and the Upper Catawba NC NHP Aquatic Regions are located in Rutherford County (see Figure 4).

County Significance: Considered to contain significant biological resources at the county level, but which do not rank at the regional (or higher) level.

Natural community names correspond to those in the *Classification of the Natural Communities of North Carolina: Third Approximation* (Schafale and Weakley, 1990). Rare and Watch List plant species names and status designations are as listed in the *Natural Heritage Program List of Rare Plant Species of North Carolina* (Franklin and Finnegan 2004, 2006 in press). Rare and Watch List animal species names and status designations are from the *Natural Heritage Program List of Rare Animals of North Carolina* (LeGrand, et al. 2004, 2006 in press). Site boundary and rare species information are maintained by the NC NHP in a Geographic Information System (GIS) in an ArcView format.

Table 4. Significant Natural Heritage Areas of Rutherford County, North Carolina.

Rank Codes: * = Stand-alone sites (not within a macrosite)
A = National Significance
B = State Significance
C = Regional Significance
D = County Significance

SITES	RANK
Blue Ridge Escarpment-Hickorynut Gorge Region	
1. Southeastern Escarpment Megasite	A
2. Hickorynut Gorge Macrosite	A
3. Bald Mountain/Round Top Mountain	A
4. Bat Cave/Bluerock Mountain	A
5. Bottomless Pools	C
6. Cane Creek Mountain	A
7. Chimney Rock Natural Area	A
8. Rumbling Bald/Shumont Mountain/Cedar Knob	A
9. Rich Mountain/Stony Mountain	C
10. Weed Patch Mountain/Joel Ridge	C
11. Worlds Edge/Sugarloaf Mountain	A
South Mountains-Foothills Region	
12. South Mountains/Foothills Megasite	A
13. South Mountains Macrosite	A
14. Anderson Shoal	D
15. Bovender Farm*	B
16. Camel Knob	D
17. Camp Bud Schiele/BSA Reservation*	D
18. Cherry Mountain	C
19. First Broad River Headwaters Aquatic Habitat	A
20. Fork Mountain/GSA Camp	C
21. Lisenberry Mountain	C
22. Lone Mountain Natural Area	B
23. Piney Knob Bog and Slope	D
24. Pinnacle Mountain/Long Mountain	C
25. Rockey Face Mountain and Cedar Knob	B
26. Rollins/South Mountains Natural Area	A
27. Shoal Ridge	C
28. Upper Catheys Creek/Harris Mountain	C
29. Yellowtop/Biggerstaff Mountain	B

Piedmont Region

30. Broad River Valley Macrosite	A
31. Big Horse Creek Rare Plant Site	D
32. Big Island Carolina Hemlock Bluff	B
33. Brice Rare Plant Site	B
34. Davenport Road/Mountain View Rare Plant Site*	B
35. Floyds Creek Tributary Rare Plant Site	C
36. Hensons Creek Natural Area	A
37. Hogpen Branch Flatrocks	D
38. Island Ford Flatrocks	C
39. Jenkins Flatrock	C
40. Jonas Road Rare Plant Site	D
41. Kudzu Farm Rare Plant Site	C
42. McKinney Bridge Site	D
43. McKinney Creek Low Elevation Seep	D
44. New Bethel Rare Plant Site	C
45. Riverbend*	C
46. Sandy Mush Outcrop	B

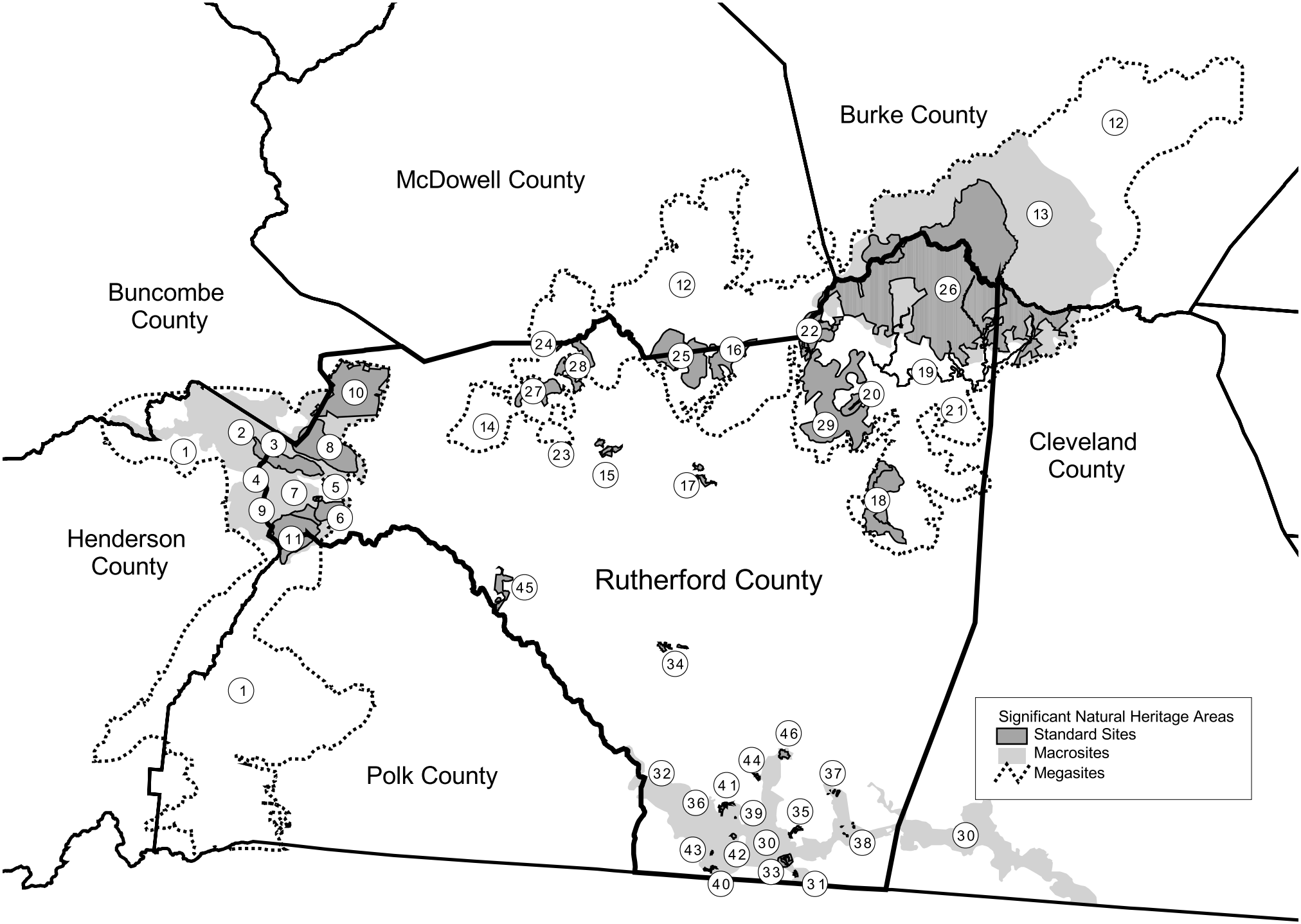

Figure 5. Significant Natural Heritage Areas of Rutherford County, North Carolina.

PROTECTION PRIORITIES

Although site significance rankings indicate the biological significance of a given site, they do not consider the site's protection needs. As previously described, site significance results from an objective evaluation of biological data with no regard to the potential threats for a given site or the ownership, as these two variables often change over the course of time. Ideally, conservation efforts should concentrate on the most significant sites in the county, which have good integrity and are ecologically viable. Viability of any given site can be influenced by numerous external pressures that can eventually lead to habitat fragmentation. In the past, fragmentation was primarily a result of logging/forest activities and agricultural practices. With increased population growth in the county, external pressures now also include development for industry and homes. It is important that conservation planners and agencies consider the long-term viability of a given site and the factors that influence it. Well-planned conservation efforts that take into account the objectives and abilities of all partners involved often results in a more efficient use of conservation resources and provides a better overall conservation plan for a site.

Northwestern Rutherford County

Hickorynut Gorge Macrosite: Within Rutherford County, this area comprised of nine sites is the highest priority for protection for several reasons. Sites in this area support a diverse number of rare natural communities, plant, and animal populations. Increasing residential development is the major threat to this region of the county. Many conservation partners are working to protect sensitive areas, for example, the establishment of a new state park at the Worlds Edge/Sugarloaf Mountain, Bat Cave/Bluerock Mountain, and Rumbling Bald/Shumont Mountain/Cedar Knob. Many highly significant sites still lack formal protection. **Chimney Rock Natural Area's** non-registered section contains large examples of various natural community types as well as numerous rare plant and animal species. High quality rock outcrop communities with mafic influence are scattered throughout the site. This site is also an important landscape corridor between **Worlds Edge/Sugarloaf Mountain** and **Bat Cave/Bluerock Mountain** site to the west along the southern side of the gorge.

Protection efforts for northern side of the gorge should focus on **Bald Mountain/Round Top Mountain**. Although a portion of this site which includes the Rainbow Falls is protected by TNC, the presence of eight rare plant and four rare animal species in unprotected areas makes this site a high priority for conservation. Another area of high priority along the northern side of the gorge is the south side of Rumbling Bald Mountain located in the **Rumbling Bald/Shumont Mountain/Cedar Knob** site. This side of the mountain possesses many unique rock outcrops which house a number of rare plant and animal species. This site, accessed by the public for years is currently owned by TNC and private landowners and is also used for recreational activities such as rock climbing, caving, and hiking.

Northern Rutherford County

South Mountains/Foothills Megasite: This area is located along the Rutherford-McDowell County line as a band of foothills that, in effect, acts as a corridor between the Blue Ridge Escarpment and South Mountains proper. Natural communities in this section of the county are threatened by logging as well as development. Within this area are located **Rockey Face Mountain and Cedar Knob** and **Camel Knob**. These two sites should be a high priority for protection. They contain examples of the rare Low Elevation Rocky Summit community that have clear, strong influence by mafic rock, several large forest community types, and a cluster of nine rare plant species.

Other sites in this region serve as part of a landscape corridor of mostly unfragmented lands and should be a high priority for protection. They include **Pinnacle Mountain/Long Mountain**, **Upper Catheys Creek/Harris Mountain**, and **Shoal Ridge**. All of these sites possess several large forest community types, as well as rare plant and animal species. The rare Low Elevation Rocky Summit community type is present in all three sites with Pinnacle Mountain/long Mountain and Upper Catheys Creek/Harris Mountain clearly showing influence from mafic rock.

In the eastern section of the South Mountains, two sites which should be of a high priority for protection are **Yellowtop/Biggerstaff Mountain** and **Cherry Mountain**. These sites are large-scale sites that possess several examples of good to excellent forest community types. The Rare Low Elevation Rocky Summit community type is present, and both site have several rare plant and animal populations. Both sites also contain populations of the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*), that occurs out of its normal range here where the soils are influenced by the presence of mafic rock.

Southern Rutherford County

Broad River Valley Macrosite: This area is of high significance and of a high priority due to the large number of occurrences of the Federal and State Threatened dwarf-flowered heartleaf. This portion of the county contains fairly unfragmented land with some logging and agricultural activities present. The biggest threat to this area comes from increased logging, the potential for residential development, and from the creation of a new lake as the demand for water increases in the future. **Big Island Carolina Hemlock Bluff** and **Hensons Creek Natural Area** are two sites that contain several large examples of common forest community types. The Big Island Carolina Hemlock Bluff contains a small example of the rare Carolina Hemlock Bluff community type. Both sites also contain populations of dwarf-flowered heartleaf (*Hexastylis naniflora*). The status of these sites will be important as this species is undergoing a Federal status review. Once a recovery plan is written and implemented, these sites could potentially serve as protected populations if and when the status of this species is changed.

Also known from this southern portion of the county are several examples of Granitic Flatrocks. Two of these natural communities, at Sandy Mush Outcrop and Hogpen Branch Flatrocks, are currently under threat from proposed granite quarries. The **Sandy Mush Outcrop** is the largest granitic flatrock in the North Carolina Piedmont. It houses several rare plant species which are

endemic to granitic flatrocks. The **Hogpen Branch Flatrocks** does not possess the same diversity as the Sandy Mush Flatrock, but like it, is threatened by a proposed quarry. Hogpen Branch Flatrock and Sandy Mush Flatrock both contain populations of the Federal and State Threatened dwarf-flowered heartleaf.

As the larger granitic flatrocks are threatened, protection priorities should also include the smaller flatrocks in the county. The **Island Ford Flatrocks** are a series of small flatrocks over a large area. They contain many of the same rare plant species endemic to flatrocks that are found on the larger outcrops, but they have a lower overall diversity. Another small flatrock, **Jenkins Flatrock**, is less that 0.25 acre in size and contains three rare plant species.

LANDOWNER PROTECTION INITIATIVES

With much of Rutherford county in private ownership, protection of significant sites will depend largely on an active partnership and the participation of federal and state agencies, local land trusts, landowners, and interested citizens. Numerous options are available to the landowners who promote conservation and protection efforts on their properties. These options can provide financial incentives as well as assistance in conservation planning and land management. In some cases, such options could mean the difference between divesting land for development or retaining it as a natural area.

One of the most useful options for a landowner is a conservation easement. The conservation easement is a flexible option to permanently conserve land for scenic, natural, or cultural values. Conservation easements can be sold or donated, they confer state and federal tax benefits to the owner, and they are affixed to the property deed "in perpetuity". Conservation easements are agreements entered into with a recognized conservation organization or government. They allow the owner to retain the title/deed to their land and to maintain a negotiated property right. Certain rights, such as development rights, are deeded over to the conservation entity. Examples of conservation organizations that work with landowners to set up conservation easements are local land trust. The Foothills Conservancy of North Carolina and Carolina Mountain Land Conservancy are two local land trusts qualified to hold conservation easements in Rutherford County. The Foothills Conservancy of North Carolina can be reached by mail at: P.O. Box 3023, Morganton, NC 28680, by telephone at: (828) 437-9930, or on the internet at http://www.foothillsconservancy.org. Carolina Mountain Land Conservancy can be reached by mail at: P.O. Box 2282, Hendersonville, NC 28793, by telephone at: (828) 697-5777, or on the internet at: http://www.carolinamountain.org.

The Conservation Trust for North Carolina (CTNC) located in Raleigh, can help design conservation easements as well as refer interested individuals to a qualified local land trust. Their website is http://www.ctnc.org/. The North Carolina chapter of The Nature Conservancy (TNC) is based in Durham, with offices located in western North Carolina in Asheville and Saluda**,** is a good option for lands high in biological diversity and significance. The Nature Conservancy can be contacted by mail at: 4705 University Drive, Suite 290 Durham, NC 27707, by phone at: (919) 403-8558, or on the internet at: http://www.nature.org/wherewework/northamerica/states/northcarolina/. Assistance

in identifying conservation organizations in North Carolina can also be obtained by contacting the N.C. Natural Heritage Program of the Office of Conservation and Community Affairs by telephone at: (919) 715-8696, by mail at: NC NHP, 1601 MSC, Raleigh, NC 27699-1601, or on the internet at: http://www.ncnhp.org/.

Owners who are interested in improving the conservation 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 the Rutherford County Soil and Water Conservation District. Various programs are available for soil and water protection, reforestation, erosion control, wildlife enhancement, and riparian-stream area restoration. For more information contact the US Department of Agriculture, 121 Laurel Dr., Rutherfordton, NC 28139; telephone: (828) 287-4220.

Landowners that would like assistance in achieving forest managment goals can look into cost-sharing through the North Carolina Forest Stewardship Program, which is sponsored by several state and federal agencies. Management plans could include controlled burning, reforestation with natural vegetation, maintenance of buffer strips along watercourses, and wildlife enhancement. For more information, contact the local representative of one of the following partner agencies: North Carolina Cooperative Extension Service, 121 Laurel Dr., Rutherfordton, NC 28139, phone: (828) 287-6010; North Carolina Division of Forestry Resources, County Rangers Office, 519 Airport Rd., Rutherfordton, NC 28139, phone: (828) 287-9201; Natural Resources Conservation Service of the US Department of Agriculture, 121 Laurel Drive, Rutherfordton NC, phone: (828) 287-6010; North Carolina Wildlife Resources Commission, phone: (919) 707-0050; or the North Carolina Division of Soil and Water Conservation, 121 Laurel Drive, Rutherfordton, NC 28139 (828) 287-4220 ext. 3.

One final option for landowners who wish to preserve high quality land in a natural state is through the North Carolina Registry of Natural Areas, administered by the North Carolina Natural Heritage Program. The program relies on voluntary agreements with landowners and can provide managment prescriptions, some degree of statutory protection from pipelines and transmission lines, and public recognition (if desired). For more information, contact the N. C. Natural Heritage Program of the Office of Conservation and Community Affairs by telephone at: (919) 715-8696, or by mail at: NC NHP, 1602 MSC, Raleigh, NC 27699-1601.

AREAS FOR FURTHER STUDY

Although this inventory examined numerous areas across the county, the need still exists for subsequent survey. This includes areas where permission to survey was not granted, and areas not targeted in this inventory. A list of areas suggested for future survey work follows, arranged by geographic region. A verbal description of each location is given along with the name of the USGS topographic quadrangle where the area is located.

Animal Surveys

Surveys for rare animal species in the South Mountains region, central, and southern portions of the county are needed. This area includes the Benn Knob, Dysartsville, Shingle Hollow, and Sunshine quadrangles. Although many animal records exist for the county, many of those records from Hickorynut Gorge have not been relocated or monitored in over 20 years. More work on large-ranging mammals such as the black bear (*Ursus americanus*), bobcat (*Lynx rufus*), red and grey fox (*Vulpes vulpes* and *Urocyon cinereoargenteus*), and eastern coyote (*Canis latris*) could be informative, particularly in regard to landscape function and conservation site design.

Southern Rutherford County

This area consists primarily within the Fingerville and Chesenee quadrangles. Areas of interest include property adjacent to the Hensons Creek Natural Area along the Broad River valley that were not examined for this report, areas along the Broad River from US 221 south to the Cleveland County line, and Granitic Flatrocks scattered throughout this area that were not surveyed. Also, a closer examination of Mesic Mixed Hardwood Forest and Dry-Mesic Oak-Hickory Forest along streamheads and coves might produce new occurrences of the State and Federally Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*).

South Mountains Region

The Sally Queen Fork region adjacent to the Rollins/South Mountains Natural Area located in the Dysartsville and Benn Knob quadrangles, is an area where future survey work would benefit knowledge of an already diverse region. Due to a lack of landowner permission, this area was not surveyed during this inventory. Surveys for animal, aquatic species, and plant occurrences are needed. More botanical and animal survey work is also needed in the area of Yellowtop/Biggerstaff Mountain.

Blue Ridge Region

The Bat Cave, Lake Lure, and Moffitt Hill quadrangles are among the most well surveyed areas within the state. Small parts have not been examined and might yield additional rare animal and plant records. Areas for additional survey work include Young's Mountain in the Lake Lure and Moffitt Hill quads. The mountain runs north to south along the Blue Ridge Escarpment north of Lake Lure. Buzzard's Roost, a prominent knob located at the end of the north finger of Lake Lure, has extensive

examples of the Low Elevation Rocky Summit natural community type that could yield new animal and plant records. Due to ongoing residential development, Weed Patch Mountain/Joel Ridge is a large area that will need to be monitored as fragmentation of the existing natural communities increases along the ridgelines.

NEGATIVE SURVEY INFORMATION

In addition to tracts for which survey permission was not granted, other land tracts were targeted and visited but did not meet the criteria for inclusion in the inventory as Significant Natural Heritage Areas. Information on such tracts is of value to those who might conduct biological or conservation work in the future. Data on negative survey results is retained and archived with local land conservancies such as The Nature Conservancy, Foothills Land Conservancy of North Carolina, and the Carolina Mountain Land Conservancy.

BIOLOGICAL SURVEY AND ENDANGERED SPECIES LAWS

Obtaining landowner permission to survey a potential site is an integral part of biological inventories carried out by the North Carolina Natural Heritage Program. On occasion, permission to survey on private lands is not granted due to the misconception that if significant natural areas or rare species are found residing there, it will result in limited land use and restrictions to the landowner. When this occurs, it limits the ability for good biological and scientific information to be obtained. Also, the landowner whom might possess a biologically significant natural community or rare species on their land does not learn about conservation options and tax incentives available to them. On the lands where landowners grant permission with significant natural communities and/or rare species are given the results of the biological survey, and if they wish, they are put in contact with appropriate conservation organizations, or are made aware of other management or protection options.

The reality is that landowners have very little reason to have concerns about the presence of significant natural areas or rare species that might be located on their land. Below is a summary of the federal and state endangered species laws relative to private landowners. It was prepared by Mark A. Cantrell of the U.S. Fish and Wildlife Service and Kenneth Bridle, PhD of the Piedmont Land Conservancy in Greensboro, North Carolina. It is presented to help dispel concerns landowners may have about rare species and to provide clarification on potential land-use restrictions.

FEDERAL LAW

1. The Endangered Species Act (ESA) 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 their occurring on a given tract of private land is generally very small.

2. The ESA does not protect federally listed animal species from the potentially harmful actions of private landowners. Because this mat lead to restrictions on their use of land, Congress, the U.S. Fish and Wildlife Service (USFWS), and a variety of 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 in the management and conservation of listed and candidate species on their lands.

3. Engaging in trade in a federally listed species without a permit is illegal for both plants and animals. "Taking" (i.e., harassing, harming, pursuing, hunting, killing, and trapping) or illegally possessing federally listed animals is a violation of the ESA. Removing, digging up, cutting, damaging, or destroying a federally listed plant on public land, or on private land without the landowner's permission, is illegal.

4. Through the habitat conservation planning process, the USFWS may issue a permit so that private landowners can 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 conservation plan for the species, 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 federally listed plant species as long as the activity does not involve federal funding or permitting.

5. Under the ESA, private developers can obtain permits to legally ham or even kill federally listed species on their property provided that they show attempts where made to minimize their impact on the species in other ways.

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

7. When critical habitat is designed for federally listed species, it applies only to federal actions and not to non-federal actions of private landowners.

STATE LAW

1. North Carolina endangered species laws apple to species listed by the state as Endangered or Threatened.

2. The plant and animal endangered species laws are modeled after the ESA, in that it prohibits illegal trafficking or poaching of listed species.

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

4. The state endangered plant species law specifically states "the incidental disturbance of protected plants during agricultural, forestry, or development operations is not illegal as the plants are not collected for sale or commercial use.

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SITE DESCRIPTIONS

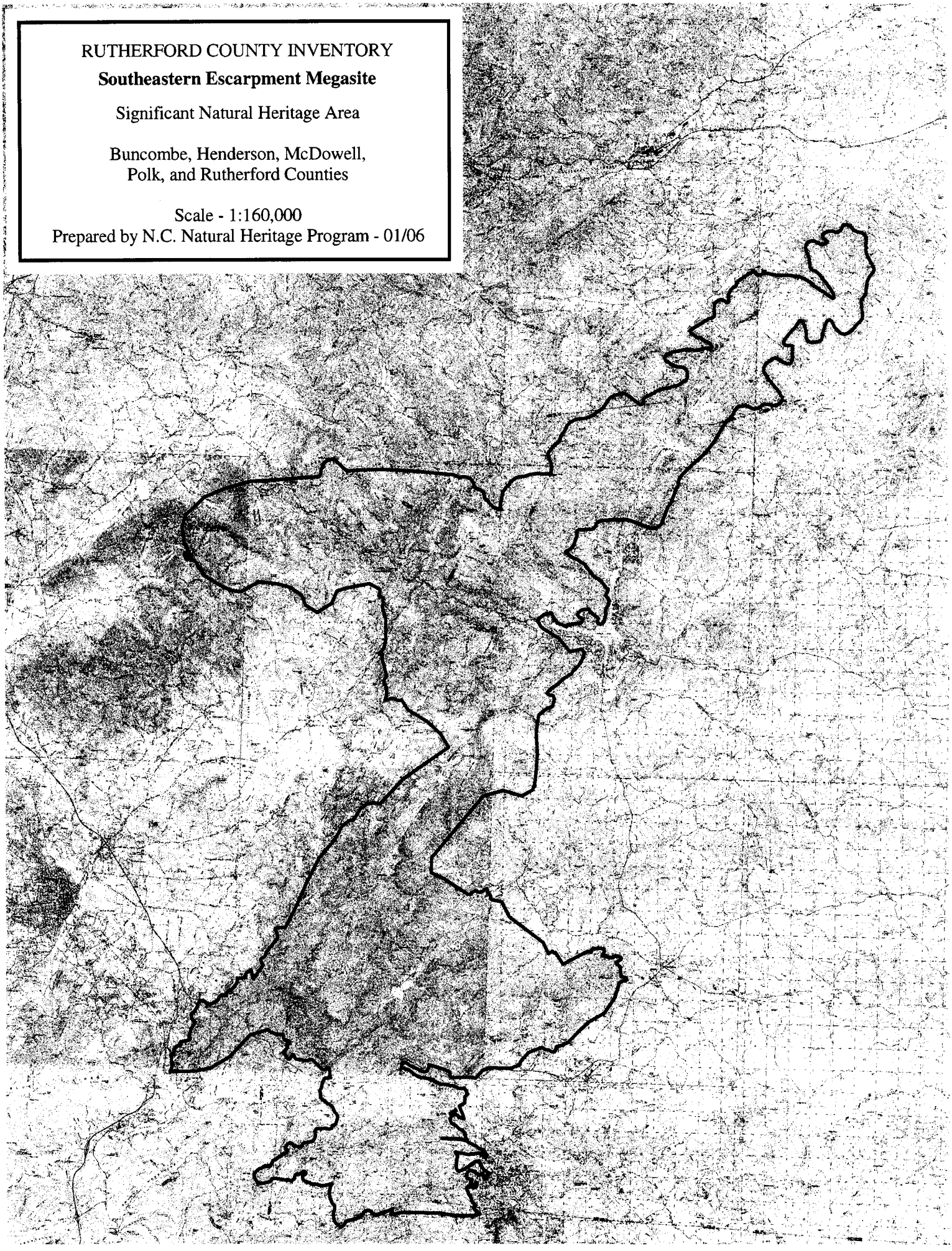
RUTHERFORD COUNTY INVENTORY

Southeastern Escarpment Megasite

Significant Natural Heritage Area

Buncombe, Henderson, McDowell,
Polk, and Rutherford Counties

Scale - 1:160,000
Prepared by N.C. Natural Heritage Program - 01/06



Rutherford County Natural Areas Inventory

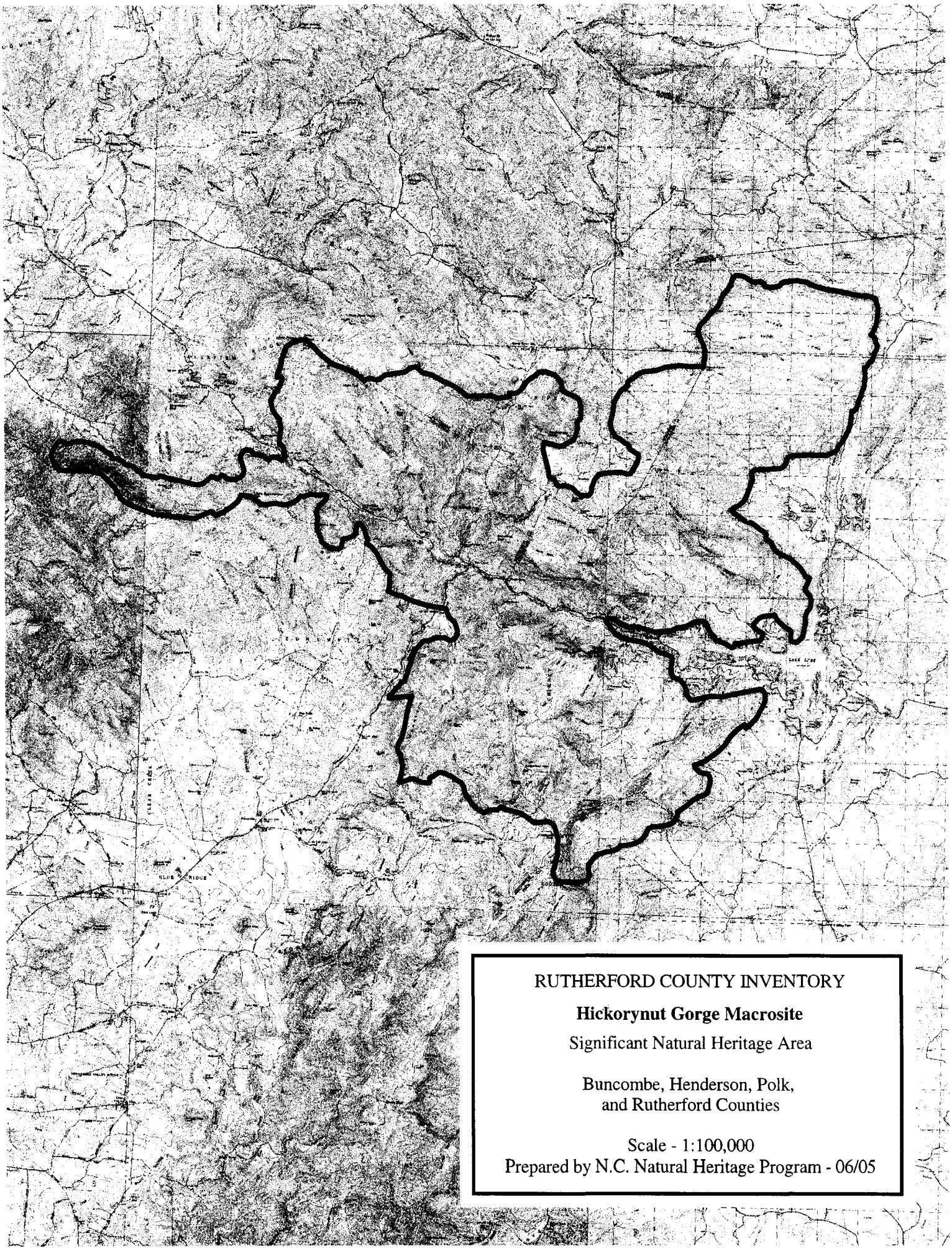
SOUTHEASTERN ESCARPMENT MEGASITE
Significant Natural Heritage Area

Site Significance: National **Size:** 86,020 acres
Counties: Buncombe, Henderson,
Polk, and Rutherford Counties

The Southeastern Escarpment Megasite is a landscape-scale site that includes three Macrosites, 38 Standard Sites, and numerous rare species populations embedded in a matrix of fairly unfragmented lands. The Rutherford County part of this Megasite includes the Hickorynut Gorge Macrosite, and the standard sites Bald Mountain/Round Top Mountain, Bat Cave/Bluerock Mountain, Bottomless Pools, Cane Creek Mountain, Chimney Rock Natural Area, Rumbling Bald/Shumont Mountain/Cedar Knob, Rich Mountain/Stony Mountain, Weed Patch Mountain/Joel Ridge, and Worlds Edge/Sugarloaf Mountain. The Megasite also contains natural areas in Buncombe, Henderson, and Polk Counties. The Megasite encompasses the northwestern corner of Rutherford County at Hickorynut Gorge, and extends southward along the Blue Ridge Escarpment to the South Carolina state line. The escarpment is an impressive break that separates the western Piedmont from the Blue Ridge Mountains. The elevation along this front rises on average from 1500 to 2500 ft. within a short distance.

The Southeastern Escarpment Megasite consists of rugged peaks, ridge tops, dissected slopes, gorges, and deep coves that are associated with areas found throughout the Blue Ridge proper. The forested lands between the standard sites provide ecological integrity that augments the entire area by providing a buffer, landscape continuity, and connections between sites. This ecological corridor and matrix is ecologically important for animals such as black bears, whitetail deer, rattlesnakes, and predatory birds which require large areas for breeding and foraging.

Some of these sites are under formal protection, but many still remain privately owned with no formal protection. Some of the more prominent protected areas in Rutherford County are located within Hickorynut Gorge and include part of Rumbling Bald Mountain, Cedar Knob, Worlds Edge, and The Bat Caves. All of these sites are protected and owned currently by The Nature Conservancy or the North Carolina Division of State Parks and Recreation.



RUTHERFORD COUNTY INVENTORY

Hickorynut Gorge Macrosite

Significant Natural Heritage Area

Buncombe, Henderson, Polk,
and Rutherford Counties

Scale - 1:100,000
Prepared by N.C. Natural Heritage Program - 06/05

Rutherford County Natural Area Inventory

HICKORYNUT GORGE MACROSITE
Significant Natural Heritage Area

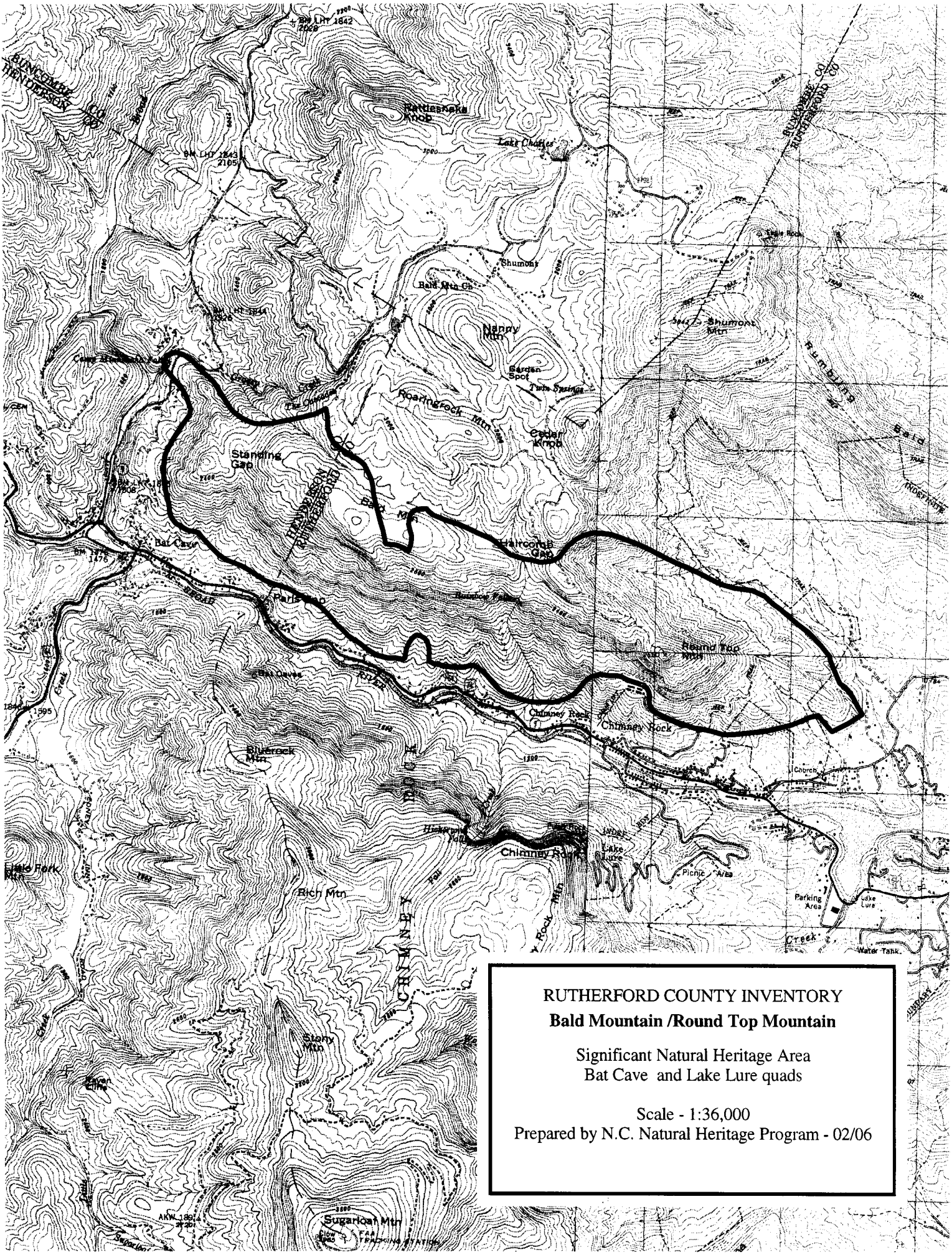
Site Significance: National **Size:** 28,807 acres
Counties: Buncombe, Henderson
Polk, and Rutherford Counties

The Rutherford County portion of the Hickorynut Gorge Macrosite includes Bald Mountain/Round Top Mountain, Bat Cave/Bluerock Mountain, Bottomless Pools, Cane Creek Mountain, Chimney Rock Natural Area, Rumbling Bald/Shumont Mountain/Cedar Knob, Rich Mountain/Stony Mountain, Weed Patch Mountain/Joel Ridge, and Worlds Edge/Sugarloaf Mountain. The Hickorynut Gorge Macrosite is within a larger landscape-scale site known as the Southeastern Escarpment Megasite which contains three Macrosites and a number of standard sites.

Hickorynut Gorge Macrosite is significant for containing numerous rare animal, plant, and natural communities. The Macrosite is comprised of the entire gorge and adjacent natural areas that lend to the overall significance of the region. The Macrosite is located in four counties: Buncombe, Henderson, Polk, and Rutherford, with the majority of the site located in Rutherford County. With its overall large size and low degree of fragmentation, the Hickorynut Gorge Macrosite has a good overall prospect for long-term ecological viability. The viability of the Macrosite is further increased by an excellent landscape connection extending southward along the Blue Ridge Escarpment towards South Carolina, as well as northward and eastwards towards the South Mountains/Foothills Megasite that encompasses a large portion of the South Mountains. Such large, unfragmented landscape-scale areas provide benefits to species at the local level as well as at larger scales. Perhaps the most important benefit is to long-ranging animal species that require large areas of unfragmented habitat for survival. Strong landscape connections and corridors provide essential habitat for large species such as black bear.

The Macrosite is also the location of the future Hickory Nut Gorge State Park that will be created from several areas already under protection. The Nature Conservancy, along with Carolina Mountain Land Conservancy, are the leading proponents for conservation in Hickorynut Gorge. They currently hold lands within four Significant Natural Heritage Areas that include Bald Mountain/Round Top Mountain, Bat Cave/Bluerock Mountain, Rumbling Bald/Shumont Mountain/Cedar Knob, and Worlds Edge/Sugarloaf Mountain. These non-profit organizations have also been instrumental in conserving a number of smaller area tracts in the area that now have some level of protection.

Within the gorge are also several Registered Heritage Areas (RHAs) such as the Bat Cave Preserve, and a portion of the privately-owned Chimney Rock Natural Area. None of these RHAs have formal protection, but several have conservation-minded owners. Overall, less than one-third of the Macrosite has any form of formal protection.



RUTHERFORD COUNTY INVENTORY

Bald Mountain /Round Top Mountain

Significant Natural Heritage Area
Bat Cave and Lake Lure quads

Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 02/06

Rutherford County Natural Area Inventory

BALD MOUNTAIN/ROUND TOP MOUNTAIN
Significant Natural Heritage Area

Site Significance: National
Quadrangles: Bat Cave, Lake Lure

Size: 740 acres
Ownership: The Nature Conservancy, Private

SIGNIFICANT FEATURES: This site is significant for high quality examples of three distinct natural community types, and the presence of five rare plant species and three rare animal species, three of which have federal protection status. Numerous Watch List plant species are also found within this site.

LANDSCAPE RELATIONSHIPS: This site is located within the Southeastern Escarpment Megasite, and the Hickorynut Gorge Macrosite. Several standard sites are either adjacent to or near this site. They include Rumbling Bald/Shumont Mountain/Cedar Knob to the northeast, and Bat Cave/Bluerock Mountain which lies directly across the gorge from the Bald Mountain portion of this site.

SITE DESCRIPTION: The Bald Mountain section of the site is a moderate to very steep south-facing slope that extends upwards from the Broad River to the top of Bald Mountain, rising in elevation from 1100-2800 ft. in a relatively short distance. The predominant south-facing aspect of this site makes it dry to very dry, with areas of mesic forest found along steams in coves.

Areas of the Low Elevation Granitic Dome community type are embedded within the site. They are remnants of what were undoubtably large areas of this community type that have since eroded away. A thin canopy surrounds them. Canopy species include chestnut oak (*Quercus montana*), Carolina and Canada hemlock (*Tsuga caroliniana* and *T. canadense*), southern red oak (*Quercus falcata*), and Table Mountain pine (*Pinus pungens*). The understory is generally composed of canopy species with scattered sourwood *(Oxydendrum arboreum).* Shrubs present include hairy mock-orange (*Philadelphus hirsutus*), Georgia hackberry (*Celtis tenuifolia*), sparkleberry (*Vaccinium arboreum*), and hydrangea (*Hydrangea arborescens*). Herbs include Biltmore sedge (*Carex biltmoreana*), Carey's saxifrage (*Saxifraga careyana*), lobed spleenwort (*Asplenium pinnatifidum*), granite goldenrod (*Solidago simulans*), and roundleaf ragwort (*Packera obovata*). Several rare animal species occur in this community type, especially among the exfoliated rock. They include the lampshade spider (*Hypochilus coylei*), Eastern woodrat (*Neotoma floridana haematoreia*), and crevice salamander (*Plethodon yonahlossee*).

An excellent example of Chestnut Oak Forest extends across the upper slopes. The dominant canopy species present includes chestnut oak, northern red oak (*Quercus rubra*), scarlet oak (*Quercus coccinea*), and mockernut hickory (*Carya alba*). Other canopy species that often dominate small spur

ridges include Carolina hemlock, Canadian hemlock, Table Mountain pine, and shortleaf pine (*Pinus echinata*). The understory is comprised of sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*), and Carolina silverbell (*Halesia tetraptera*). Shrubs include thick patches of mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), and gorge rhododendron (*R. minus*). Shrubs present in open moist areas include sweet shrub (*Calycanthus floridus*), strawberry bush (*Euonymus americanus*), and beaked hazelnut (*Corylus cornuta*). Herbs tend to be sparse in association with the heath patches, and more abundant and diverse in the more open areas. Common herbs include galax (*Galax urceolata*), pipsissewa (*Chimaphila maculata*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), large-flowered heartleaf (*H. shuttleworthii*), asters (*Aster* spp.), rattlesnake plantain (*Goodyera pubescens*), bottlebrush grass (*Hystrix patula*), and Indian tobacco (*Lobelia inflata*).

Along the lower slopes is a good quality extensive Montane Oak–Hickory Forest. The canopy is mature and is comprised of chestnut oak, northern red oak, scarlet oak southern red oak, mockernut hickory, pignut hickory (*Carya glabra*), tulip polar (*Liriodendron tulipifera*), sweet birch (*Betula lenta*), basswood (*Tilia heterophylla*), and honey locust (*Robinia pseudo-acacia*). The understory is comprised of red maple, witch hazel downy serviceberry *(Amelanchier arborea),* sourwood, and Carolina silverbell. Shrubs include mountain laurel, great laurel, gorge rhododendron, pinxter-flower (*Rhododendron periclymenoides*), and flame azalea (*Rhododendron calendulaceum*). Woody vines found in this community include virgins bower (*Clematis virginiana*), cross vine (*Bignonia capreolata*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*). Herbs include rattlesnake plantain, little brown jugs, blazing star (*Liatris graminifolia*), pipsissewa, rattlesnake weed (*Hieracium venosum*), sedges (*Carex* spp.), and panic grasses (*Panicum* spp.).

Rainbow Falls is a fairly high waterfall (150-175 ft.), with a Spray Cliff natural community. There is no canopy or understory directly around the waterfall, but the area is surrounded by a Chestnut Oak Forest. The shrub layer around the falls contains hairy mock-orange, yellowroot (*Xanthorhiza simplicissima*), and spicebush (*Lindera benzoin*). Herbs seen at the Spray Cliff include Carey's saxifrage, little sweet Betsy (*Trillium cuneatum*), and mayapple (*Podophyllum peltatum*). The rare dwarf apple moss (*Philonotis cernua*), last recorded from the site in 1965, is reported to have occurred near the falls, but was not re-located during this inventory.

Round Top Mountain is a steep, prominent mountain directly opposite the entrance to Chimney Rock Park. Most of the slopes are forested except for the upper slopes on the south side of the mountain, that consist of fractured, nearly vertical Montane Acidic Cliffs, which support a population of the rare lobed spleenwort (*Asplenium pinnatifidum*). The south side of the mountain also supports Chestnut Oak Forest. The summit supports a good quality example of a Pine-Oak/Heath Forest community. Montane Oak-Hickory Forest (Acidic Variant), and Rich Cove Forest occur on the north side of the mountain supporting the rare branching draba (*Draba ramosissima*), white irisette (*Sisyrinchium dichotomum*), and yellow honeysuckle (*Lonicera flava*).

MANAGEMENT AND PROTECTION: A portion of this site around the Rainbow Falls is protected and owned by The Nature Conservancy while the remainder of the site has no formal

protection. The forest should be allowed to continue to mature.

NATURAL COMMUNITIES: Chestnut Oak Forest, Low Elevation Granitic Dome, Pine-Oak/Heath, and Spray Cliff Community. Chestnut Oak Forest, Montane Oak- Hickory Forest (Basic Variant), Montane Oak- Hickory Forest (Acidic Variant), Montane Acidic Cliff, Pine-Oak/Heath Forest, and Rich Cove Forest.

RARE PLANTS: Biltmore sedge (*Carex biltmoreana*), white irisette (*Sisyrinchium dichotomum*), Carolina saxifrage (*Saxifraga caroliniana*), branching draba (*Draba ramosissima*), yellow honeysuckle (*Lonicera flava*), lobed spleenwort (*Asplenium pinnatifidum*), granite dome goldenrod (*Solidago simulans*); Watch List – grotto alumroot (*Heuchera parviflora* var. *parviflora*), mountain cynthia (*Krigia montana*), hairy mock-orange (*Philadelphus hirsutus*), wafer ash (*Ptelea trifoliata*), Carolina hemlock (*Tsuga caroliniana*), and Carey's saxifrage (*Saxifraga careyana*); Historical – dwarf apple moss (*Philonotis cernuai*).

RARE ANIMALS: Eastern woodrat (*Neotoma floridana haematoreia*), Green salamander (*Aneides aeneus*), crevice salamander (*Plethodon yonahlossee*), and a lampshade spider (*Hypochilus coylei*). Watch List – black vulture (*Coragyps atratus*), and the common raven (*Corvus corax*).

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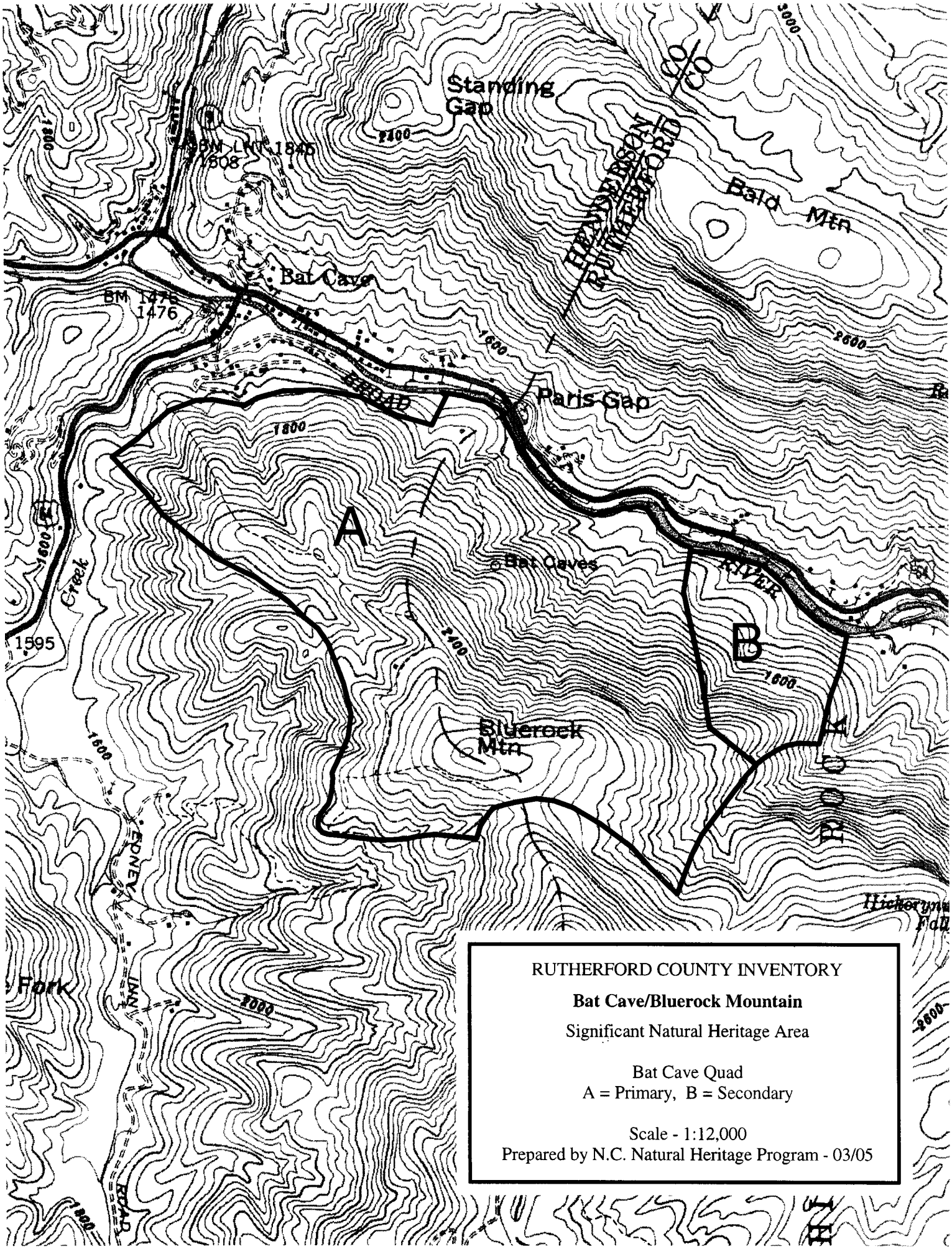

RUTHERFORD COUNTY INVENTORY

Bat Cave/Bluerock Mountain

Significant Natural Heritage Area

Bat Cave Quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

BAT CAVE/BLUEROCK MOUNTAIN
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Bat Cave
Size: 549 acres (484 primary; 65 secondary)
Ownership: The Nature Conservancy, Private

SIGNIFICANT FEATURES: This site contains one of the largest caves in North Carolina and the largest fissure cave in the world. The caves are located on the sheltered north-facing side of Hickorynut Gorge, which contains a number of high quality forest communities on its rich soils, rocky bluffs, and granitic domes. Five distinct community types are present within this site. This site is also home to nine rare plant species and six rare animal species, five of which have federal protection status.

LANDSCAPE RELATIONSHIPS: This site is located along the Rutherford/Henderson County line within the Southeastern Escarpment Megasite, and the Hickorynut Gorge Macrosite. Located approximately halfway along the southern wall of Hickorynut Gorge, this site is surrounded by a number of high quality significant natural areas including Chimney Rock Natural Area to the southeast, and Bald Mountain/Round Top Mountain directly across the gorge.

SITE DESCRIPTION: The Bat Cave Preserve is a Registered Natural Heritage Area owned by The Nature Conservancy. World-class fissure caves within the preserve provide habitat for numerous animal species that include the green salamander (*Aneides aeneus*), crevice salamander (*Plethodon yonahlossee* pop. 1), small-footed myotis (*Myotis leibii*), the Indiana bat (*Myotis sodalis*), and northern long-eared myotis (*Myotis septentrionalis*). Rare arachnids also occur within the cave system and include nesticid spiders (*Nesticus brimleyi* and *N. gertchii*). Both of these spiders are cave-obligate species with restricted ranges. The rare lampshade spider (*Hypochilus coylei*) is known from the cliffs above the caves, and the Eastern woodrat (*Neotoma floridana haematoreia*) is known from the preserve and adjacent areas.

Very mature, high quality Rich Cove Forest is found on the rocky middle and lower slopes leading up to the bat caves. The canopy is a mature closed canopy and is comprised of tulip poplar (*Liriodendron tulipifera*), basswood (*Tilia heterophylla*), northern red oak (*Quercus rubra*), mockernut hickory (*Carya alba*), cucumber tree (*Magnolia acuminata*), and Fraser magnolia (*M. fraseri*). The understory contains canopy species, as well as red maple (*Acer rubrum*), chestnut sprouts (*Castanea dentata*), downy serviceberry (*Amelanchier arborea*), Carolina silverbell (*Halesia tetraptera*), and witch hazel (*Hamamelis virginiana*). Shrubs include mountain laurel *(Kalmia latifolia*), great laurel (*Rhododendron maximum*), and gorge rhododendron (*R. minus*). In the open understory common shrubs include sweet shrub (*Calycanthus floridus*), strawberry bush (*Euonymus americanus*), spicebush (*Lindera benzoin*), hairy mock-orange (*Philadelphus hirsutus*), and Carolina rose (*Rosa carolina*). Common woody vines include virgin's bower (*Clematis virginiana*), Virginia

creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*). The herb layer is very lush with many circumneutral species present including dissected toothwort (*Cardamine dissecta*), waterleaf (*Hydrophyllum virginianum*), walking fern (*Asplenium rhizophyllum*), dissected leaf grape fern (*Botrychium dissectum*), sweet Cicely (*Osmorhiza claytonii*), spotted phacelia (*Phacelia bipinnatifida*), bloodroot (*Sanguinaria canadensis*), southern nodding trillium (*Trillium rugelii*), tall bellwort (*Uvularia grandiflora*), sweet white violet (*Viola blanda*), Canada violet (*Viola canadensis*), marginal wood fern (*Dryopteris marginalis*), bleeding heart (*Dicentra eximia*), mandarin lily (*Disporum lanuginosum*), broadleaf tickseed (*Coreopsis latifolia*), black cohosh (*Cimicifuga racemosa*), and wild ginger (*Asarum canadense*). This site is prime habitat for the cerulean warbler (*Dendroica cerulea*) and Swainson's warbler (*Limnothlypis swainsonii*).

Good quality Chestnut Oak Forest occurs above the rich coves. Dominant canopy species include chestnut oak (*Quercus montana*), northern red oak, and tulip polar. The understory is contains sourwood and red maple. Shrubs along the steep north-facing slopes are dense with mountain laurel, great laurel, gorge rhododendron, and an occasional flame azalea *(R. calendulaceum*). More open understory has sparkleberry (*Vaccinium arboreum*) and deerberry (*V. stamineum*). Woody vines are common throughout this community type and often include Virginia creeper, poison ivy, and muscadine (*Vitis rotundifolia*). Herbs are sparse with pipsissewa, partridgeberry (*Mitchella repens*), rattlesnake plantain (*Goodyera pubescens*), and galax (*Galax urceolata*) common.

A good quality Carolina Hemlock Bluff with an occurrence of the rare bleeding heart occurs just above the cave entrance known as "Little Bat". It is dominated by Carolina hemlocks, chestnut oak, and northern red oak. The understory and shrub layer is mostly heath species with some witch hazel present. The herb layer is much like that found in the Chestnut Oak Forest community that surrounds it.

Several highly significant unprotected areas occur outside of the Bat Cave Preserve, but within the site. The slopes to the west contain occurrences of small-footed myotis, northern long-eared myotis, and eastern woodrat. Good quality Rich Cove Forest, Chestnut Oak Forest, and a few small examples of a Pine-Oak/Heath occurs throughout the area. The areas east of the preserve support extensive Rich Cove Forest comparable with that in the preserve. This area contains steep, bouldery slopes and coves and is likely habitat for the cerulean warbler (*Dendroica cerulea*), the green salamander (*Aneides aeneus*), and other rare species known throughout the gorge.

The area to the south of the Bat Cave preserve contains the prominent peak known as Bluerock Mountain. It possesses excellent quality examples of both the acidic and basic variants of the Low Elevation Granitic Dome community along the north face of the mountain. Associated with the community are several rare plant species, including one of the few known populations of granite dome goldenrod (*Solidago simulans*). Also present is roundleaf serviceberry (*Amelanchier sanguinea*), rock-fir clubmoss (*Huperzia porophila*), northern beaksedge (*Rhynchospora alba*), bleeding heart, and deerhair bulrush (*Trichophorum cespitosum*). The domes are visited by peregrine falcons (*Falco peregrinus*) that occasionally nest at nearby Chimney Rock Natural Area.

MANAGEMENT AND PROTECTION: The Bat Cave Preserve is owned by The Nature

Conservancy, and guided hikes to the Bat Caves are given from late spring to late summer/early fall. Management of the Bat Cave Preserve is passive except for localized maintenance on trails and removal of invasive plant species leading to the caves. No hunting allowed within the preserve. The remainder of the natural area is privately owned and is unprotected.

NATURAL COMMUNITIES: Rich Cove Forest, Chestnut Oak Forest, Montane Oak-Hickory Forest, Carolina Hemlock Bluff, and Low Elevation Granitic Dome (Acidic and Basic Variants).

RARE PLANTS: Dissected toothwort (*Cardamine dissecta*), rock-fir clubmoss (*Huperzia porophila*), northern white beaksedge (*Rhynchospora alba*), deerhair bulrush (*Trichophorum cespitosum*), roundleaf serviceberry (*Amelanchier sanguinea*), bleeding heart (*Dicentra eximia*), granite dome goldenrod (*Solidago simulans*), and broadleaf tickseed (*Coreopsis latifolia*); Watch List – (*Asplenium resiliens*), grotto alumroot (*Heuchera parviflora* var. *parviflora*), bloodroot (*Sanguinaria canadensis*), devil's bit (*Chamaelirium luteum*), galax (*Galax urceolata*), ginseng (*Panax quinquefolia*), southern nodding trillium (*Trillium rugelii*), hairy mock-orange (*Philadelphus hirsutus*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: small-footed myotis (*Myotis leibii*), northern long-eared myotis (*Myotis septentrionalis*), Indiana bat (*Myotis sodalis*), eastern woodrat (*Neotoma floridana haematoreia*), cerulean warbler (*Dendroica cerulea*), peregrine falcon (*Falco peregrinus*), green salamander (*Aneides aeneus*), crevice salamander (*Plethodon yonahlossee*), nestid spider (*Nesticus brimleyi* and *N. gertchii*), and lampshade spider (*Hypochilus coylei*); Watch List - Swainson's warbler (Limnothlypis *swainsonii*).

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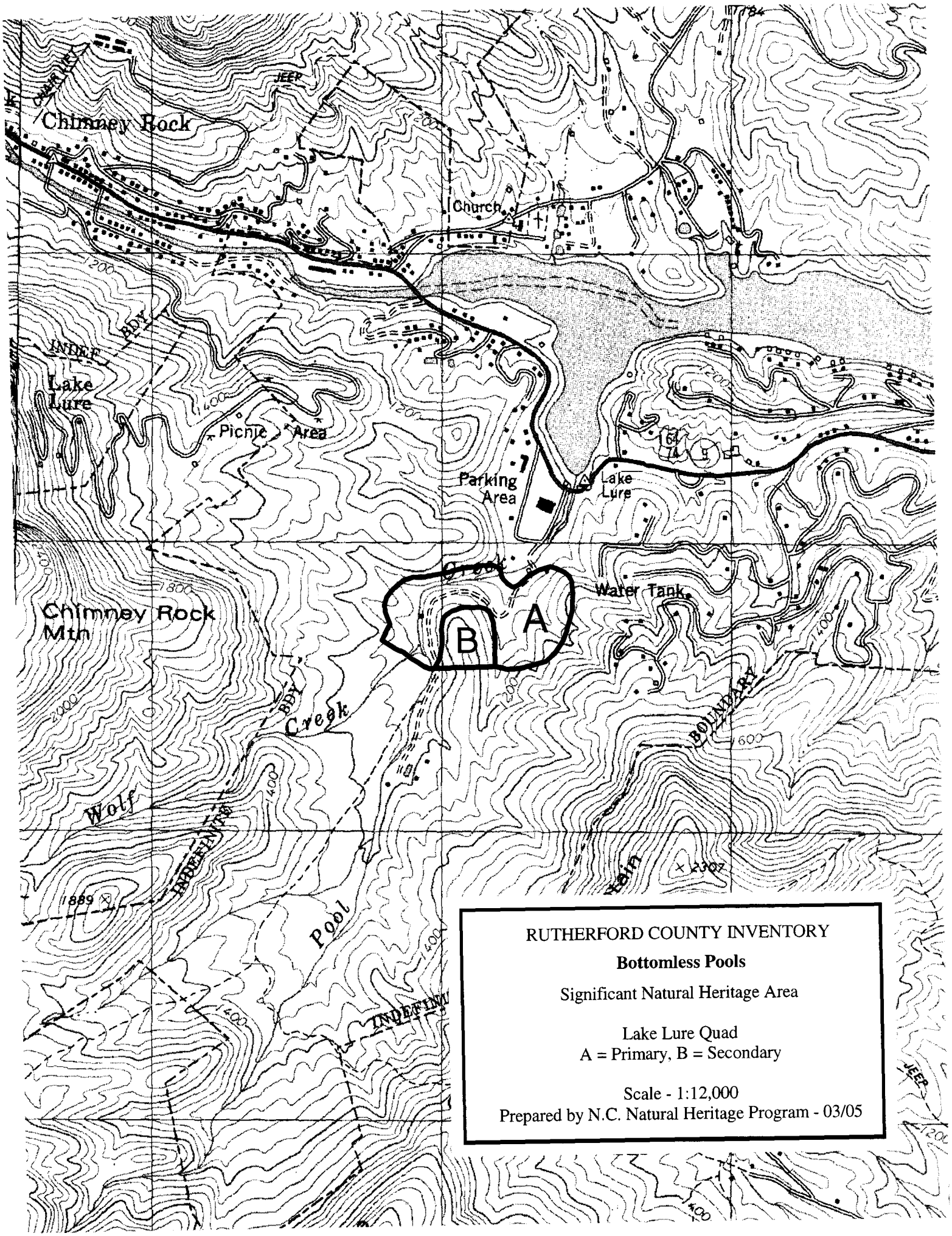

RUTHERFORD COUNTY INVENTORY

Bottomless Pools

Significant Natural Heritage Area

Lake Lure Quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

BOTTOMLESS POOLS
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Lake Lure
Size: 48 acres (39 primary; 9 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains a series of geomorphically significant potholes along the lower reaches of Pool Creek. The potholes are the result of scouring action from swirling water and sand that work at the points of intersection of fractures in the bedrock. The result over time is unusually deep, roughly circular pools in the streambed. Small examples of two natural community types are present that contain several Watch List plant species.

LANDSCAPE RELATIONSHIPS: This site is located near Lake Lure and the eastern mouth of Hickorynut Gorge where it opens up to the Piedmont. It falls within the Southeastern Escarpment Megasite and the Hickorynut Gorge Macrosite. It is adjacent to or near several natural areas including Cane Creek Mountain, Worlds Edge/Sugarloaf Mountain, and Chimney Rock Natural Area. Distantly across the lake is Rumbling Bald/Shumont Mountain/Cedar Knob.

SITE DESCRIPTION: The site is located along Pool Creek and the adjacent lower slopes of Cane Creek Mountain. The slopes have fair quality Dry-Mesic Oak-Hickory Forest and show evidence of past storm damage. Pockets of shortleaf pine (*Pinus echinata*) and Virginia pine (*P. virginiana*) are present. The forested area along Pool Creek is a small example of an Acidic Cove Forest community.

The canopy in both the Dry-Mesic Oak-Hickory Forest and Acidic Cove Forest are similar, with the Acidic Cove Forest containing more mesic tree species. The dominant species in the canopy of the two small communities are Canada hemlock (*Tsuga canadensis*), yellow buckeye (*Aesculus flava*), tulip poplar (*Liriodendron tulipifera*), and green ash (*Fraxinus pennsylvanica*). Along the slopes the canopy possess northern red oak (*Quercus rubra*), chestnut oak (*Quercus montana*), mockernut hickory (*Carya alba*), beech (*Fagus grandifolia*), pines (*Pinus echinata* and *P. virginiana*), basswood (*Tilia heterophylla*), and black locust (*Robinia pseudo-acacia*). The dominant understory species are red maple (*Acer rubrum*), Carolina silver bell (*Halesia tetraptera*), sourwood (*Oxydendrum arboreum*), pawpaw (*Asimina triloba*), and witch hazel (*Hamamelis virginiana*). Common shrubs found in this community type include mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), pinxter-flower (*R. periclymenoides*), horse sugar (*Symplocos tinctoria*), hairy mock-orange (*Philadelphus hirsutus*), sparkleberry (*Vaccinium arboreum*), and yellowroot (*Xanthorhiza simplicissima*). Woody vines present are Virginia creeper (*Parthenocissus quinquefolia*), greenbrier (*Smilax glauca*.), and poison ivy (*Toxicodendron radicans*). Several invasive woody vines are present, especially around disturbed areas, and include Japanese honeysuckle (*Lonicera japonica*) and kudzu (*Pueraria montana*). The herbaceous layer is diverse except in areas where the shrub layer is dense. Common herbs include rattlesnake plantain (*Goodyera pubescens*), little brown jugs

(*Hexastylis arifolia* var. *arifolia*), yellow star grass (*Hypoxis hirsuta*), elephant foot (*Elephantopus tomentosus*), galax (*Galax urceolata*), Biltmore carrion flower (*Smilax biltmoreana*), sweet cicely (*Osmorhiza claytonii*), little sweet Betsy (*T. cuneatum*), devil's bit (*Chamaelirium luteum*), and Canada violet (*Viola canadensis*).

MANAGEMENT AND PROTECTION: This site has some protection as a well-known former tourist attraction. The invasive species limited to areas of high impact-disturbance and pose no real threat to the site if controlled.

NATURAL COMMUNITIES: Dry-Mesic Oak-Hickory Forest and Acidic Cove Forest.

RARE PLANTS: Watch List – Virginia snakeroot (*Aristolochia serpentaria*), Biltmore carrion flower (*Smilax biltmoreana*), Catesby's trillium (*Trillium catesbaei*), little sweet Betsy (*Trillium cuneatum*), hairy mock-orange (*Philadelphus hirsutus*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Oakley, S. C. 1996. Natural Areas Inventory of the Hickory Nut Gorge Area of North Carolina. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

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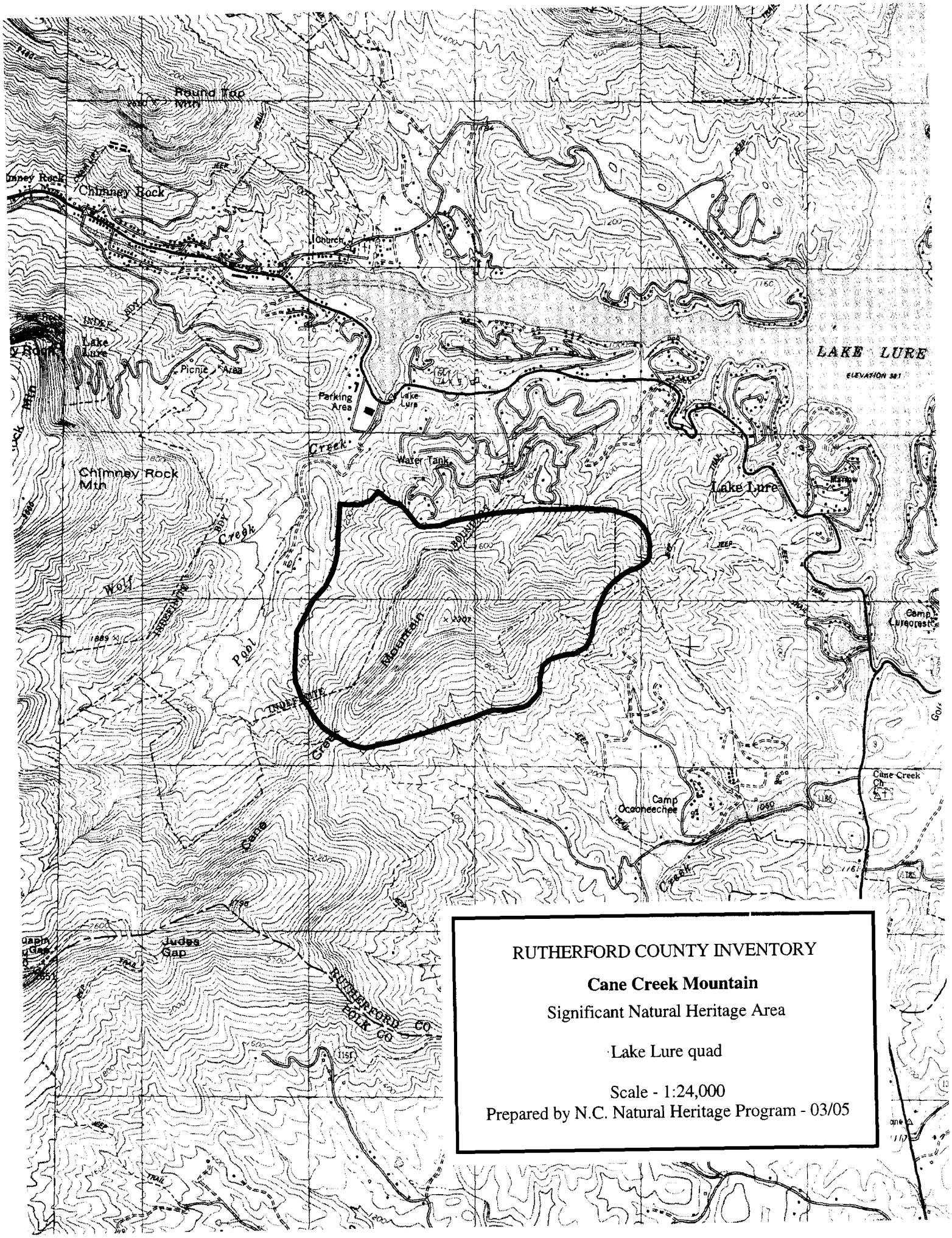

RUTHERFORD COUNTY INVENTORY

Cane Creek Mountain

Significant Natural Heritage Area

Lake Lure quad

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

CANE CREEK MOUNTAIN
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Lake Lure
Size: 536 acres
Ownership: Private

SIGNIFICANT FEATURES: This site is significant for having high-quality examples of six natural community types. It contains four rare plant species and four rare animal species. Of those, three have federal protection status: white irisette (*Sisyrinchium dichotomum*), eastern woodrat (*Neotoma floridana haematoreia*), and green salamander (*Aneides aeneus*). Several Watch List plant and animal species are also present throughout the site.

LANDSCAPE RELATIONSHIPS: The site is located in the easternmost part of Hickorynut Gorge, along the Blue Ridge Escarpment. It lies within the Southeastern Escarpment Megasite as well as the Hickorynut Gorge Macrosite. Two natural areas are adjacent to Cane Creek Mountain: Bottomless Pools and Worlds Edge/Sugarloaf Mountain. Chimney Rock Natural Area, Rumbling Bald Mountain/Shumont Mountain/Cedar Knob, and Bald Mountain/Round Top Mountain are nearby.

SITE DESCRIPTION: The site is a southwest-northeast oriented, steeply sloping mountain in the southeastern portion of Hickorynut Gorge along the easternmost edge of the Blue Ridge Escarpment. It consists of a prominent peak and steep narrow ridges that trend southwest for about a mile in length.

A good quality Rich Cove Forest occurs on the north slope of the mountain and along the summit. Large amphibolite outcrops support a cove-like forest. It has a closed canopy dominated by tulip poplar (*Liriodendron tulipifera*), northern red oak (*Quercus rubra*), basswood (*Tilia heterophylla*), Carolina silverbell (*Halesia tetraptera*), and white ash (*Fraxinus americana*). Some common understory species present include flowering dogwood (*Cornus florida*), slippery elm (*Ulmus rubra*), witch hazel (*Hamamelis virginiana*), and Fraser magnolia (*Magnolia fraseri*). Shrubs present are hydrangea (*Hydrangea arborescens*), gorge rhododendron (*Rhododendron minus*), great laurel (*R. maximum*), maple-leaf viburnum (*Viburnum acerifolium*), and spicebush (*Lindera benzoin*). The herb layer is lush and well-developed. Herbs include brittle fern (*Cystopteris protrusa*), water leaf (*Hydrophyllum virginianum*), sweet white trillium (*Trillium simile*), spotted phacelia (*Phacelia bipinnatifida*), little sweet Betsy (*Trillium cuneatum*), black cohosh (*Cimicifuga racemosa*), jack in the pulpit (*Arisaema triphyllum*), bloodroot (*Sanguinaria canadensis*), broadleaf tickseed (*Coreopsis latifolia*), Canada violet (*Viola canadensis*), Dutchman's breeches (*Dicentra cucullaria*), and zigzag spiderwort (*Tradescantia subaspera*). Rare animal species present in this community type include the green salamander, crevice salamander (*Plethodon yonahlossee* pop. 1), and lampshade spider (*Hypochilus coylei*).

Good examples of high quality Chestnut Oak Forest are common in the site along the upper slopes. The closed canopy is dominated by chestnut oak (*Quercus montana*) and scarlet oak (*Q. coccinea*). Also present are northern red oak, black oak (*Q. velutina*), pitch pine (*Pinus rigida*), and Virginia pine (*P. virginiana*). The understory contains red maple (*Acer rubrum*), sand hickory (*Carya pallida*), Carolina hemlock (*Tsuga caroliniana*), white pine (*P. strobus*), Table Mountain pine (*P. pungens*), persimmon (*Diospyros virginiana*), and fringe tree (*Chionanthus virginicus*). Shrubs include mountain laurel (*Kalmia latifolia*), gorge rhododendron, and great laurel. Shrubs occur in open forest and include deerberry (*Vaccinium stamineum*), flame azalea (*Rhododendron calendulaceum*), and sweet shrub (*Calycanthus floridus*). The herb layer is sparse in this drier community type and includes galax (*Galax urceolata*), white irisette, pipsissewa (*Chimaphila maculata*), tickseed (*Coreopsis major*), and trailing arbutus (*Epigaea repens*).

An area of Pine-Oak/Heath occurs in the vicinity of East Rock (a rock outcrop area located at the northeast summit ridgeline). It has a semi-open to closed canopy dominated by stunted Table Mountain pine, Virginia pine, and chestnut oak. The understory is comprised of few individuals of canopy species and an occasional Carolina hemlock, or black jack oak (*Quercus marilandica*). Shrubs occur in dense patches and are comprised of sassafras (*Sassafras albidum*), great laurel, gorge rhododendron, and mountain laurel. An occasional scattered deerberry, lowbush blueberry (*Vaccinium pallidum*), black huckleberry (*Gaylussacia baccata*), and fetterbush (*Leucothoe recurva*) are present. Dwarf iris (*Iris verna*), yellow star grass (*Hypoxis hirsuta*), and Biltmore carrionflower (*Smilax biltmoreana*) are also present. Black vultures (*Coragyps atratus*) are commonly seen here.

In the vicinity of West Rock (a rock outcrop area located at the southwest summit ridgeline), small areas of the Low Elevation Granitic Dome community type overlook Pool Creek westwards towards Chimney Rock Mountain. It is a small area which supports stunted pine and red maple in soil pockets along ledges. Spikemoss (*Selaginella tortipila*), Michauxii's saxifrage (*Saxifraga michauxii*), reindeer moss (*Cladonia* sp.), and live-for-ever (*Sedum telephioides*) are present. Rare plant occurrences include yellow honeysuckle (*Lonicera flava*) and white irisette. The common raven *(Corvus corax)* and black vultures also frequent this area.

High quality Montane Oak-Hickory Forest occur southwest of the peak along the ridge. The canopy is dominated by northern red oak, white oak (*Quercus alba*), Canada hemlock, chestnut oak, and tulip poplar. The understory contains flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), persimmon, and witch hazel. The shrub layer is open and consist of hairy mock orange (*Philadelphus hirsutus*), sweet shrub, and sparkleberry. The herb layer contains galax, round-leaf violet (*Viola rotundifolia*), pipsissewa, Christmas fern (*Polystichum acrostichoides*), and large-flowered heartleaf (*Hexastylis shuttleworthii*).

An area of Canada Hemlock Forest occurs along the lower slopes near Bottomless Pools. The canopy is closed and dominated by Canada hemlock. The understory is shady and contains mainly canopy species. Shrubs present include great laurel, maple-leaf viburnum, dog hobble (*Leucothoe fontanesiana*), and sweet shrub. Herbs are sparse with snakeroot (*Sanicula canadensis*), round-leaf violet, foam flower (*Tiarella cordifolia*), broad beech fern (*Thelypteris hexagonoptera*), and partridgeberry (*Mitchella repens*) present.

MANAGEMENT AND PROTECTION: This site has no formal protection, and it is within an area of high interest for protection and conservation from local, state, and federal agencies. The owners have established hiking trails used by residents of adjacent private development and guest.

NATURAL COMMUNITIES: Chestnut Oak Forest, Montane Oak-Hickory Forest, Rich Cove Forest, Pine-Oak/Heath, Low Elevation Granitic Dome, and Canada Hemlock Forest.

RARE PLANTS: broadleaf tickseed (*Coreopsis latifolia*), yellow honeysuckle (*Lonicera flava*), white irisette (*Sisyrinchium dichotomum*), sweet white trillium (*Trillium simile*); Watch List – grotto alumroot (*Heuchera parviflora* var. *parviflora*), roundleaf ragwort (*Packera obovata*), ginseng (*Panax quinquefolius*), hairy mock-orange (*Philadelphus hirsutus*), southern nodding trillium (*Trillium rugelii*), Carolina hemlock (*Tsuga caroliniana*)**,** and carrion-flower (*Smilax biltmoreana*).

RARE ANIMALS: Eastern woodrat (*Neotoma floridana haematoreia*), green salamander (*Aneides aeneus*), crevice salamander (*Plethodon yonahlossee* pop. 1), and lampshade spider (*Hypochilus coylei*); Watch List – southern pygmy shrew (*Sorex hoyi winnemana*), black vulture (*Coragyps atratus*), and common raven (*Corvus corax).*

REFERENCES:

Oakley, S. C, H. E. LeGrand, Jr., and I. Smith. 1994. Site Survey Report; Cane Creek Mountain. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

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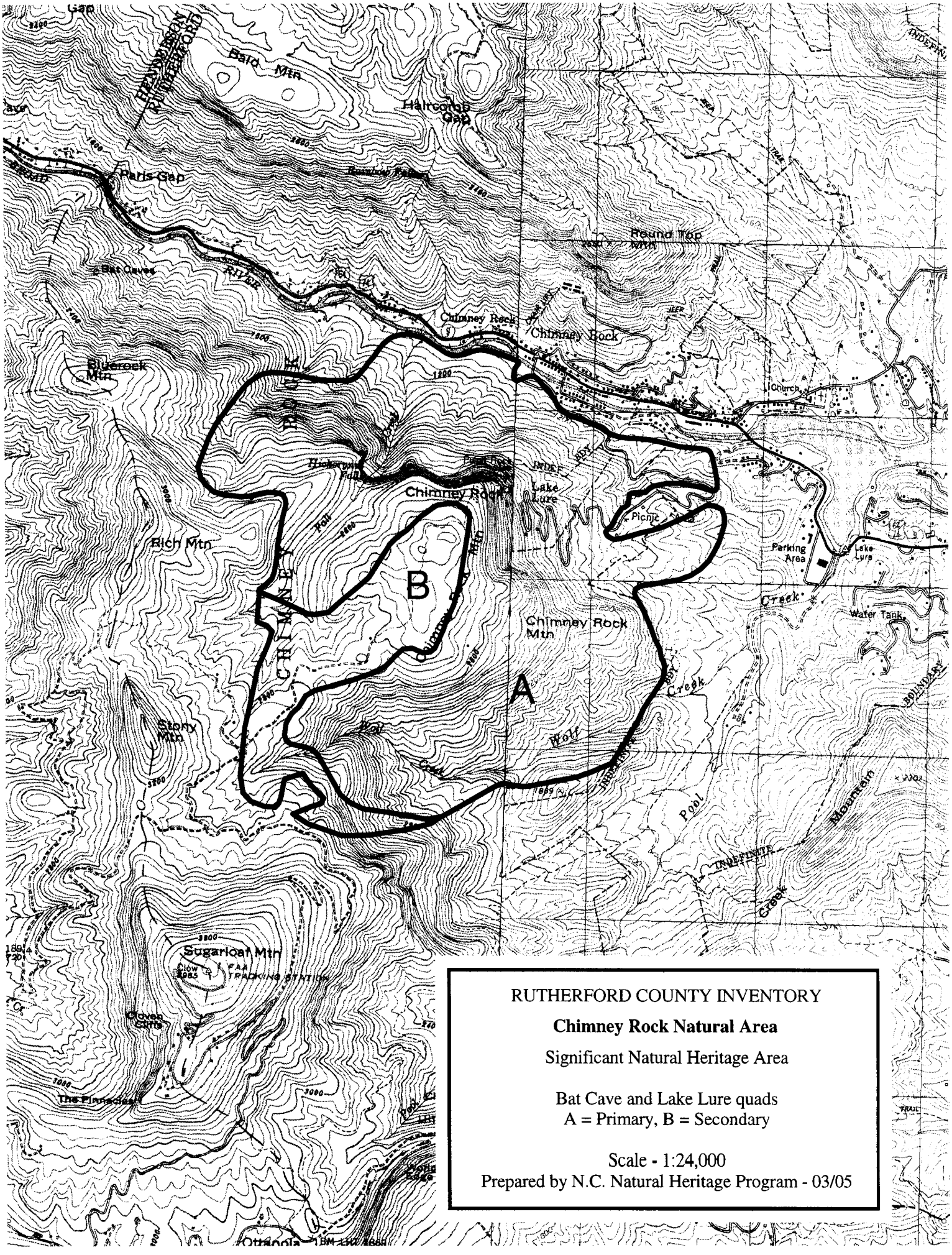
Padgett, J. E. 2005. Addendum to Site Survey Report: Cane Creek Mountain. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Chimney Rock Natural Area

Significant Natural Heritage Area

Bat Cave and Lake Lure quads
A = Primary, B = Secondary

Scale - 1:24,000
Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

CHIMNEY ROCK NATURAL AREA
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Lake Lure and Bat Cave
Size: 1,488 acres (1,232 primary; 255 secondary)
Ownership: Private

SIGNIFICANT FEATURES: Pulpit Rock is an unusual geomorphic feature known as a 'hoodoo'. This area is of tremendous biological significance, with habitat for five rare animal species and at least 16 rare plant species. Five of these species have Federal protection status: the peregrine falcon (*Falco peregrinus*), the green salamander (*Aneides aeneus*), white irisette (*Sisyrinchium dichotomum*), rock gnome lichen (*Gymnoderma lineare*), and sweet pinesap (*Monotropsis odorata*). This site also supports the very rare granite dome goldenrod (*Solidago simulans*). The registered section of the site is along the north face of Chimney Rock Mountain within Chimney Rock Park. It contains most of the very steep cliffs between Pulpit Rock and Hickorynut Falls.

LANDSCAPE RELATIONSHIPS: This site is located near Lake Lure at the mouth of Hickorynut Gorge. This site contains a prominent landmark feature, which is a large 'hoodoo' rock formation visible for several miles. It is located within both the Southeastern Escarpment Megasite and the Hickorynut Gorge Macrosite. Chimney Rock is surrounded by a number of significant natural areas that include Bat Cave/Bluerock Mountain to the northwest, Bald Mountain/Round Top Mountain to the north, Bottomless Pools and Cane Creek Mountain adjacent to the southeast, and Worlds Edge/Sugarloaf Mountain to the south.

SITE DESCRIPTION: The registered area of this site contains excellent examples of the Montane Acidic Cliff, Chestnut Oak Forest, rare Montane Red Cedar-Hardwood Woodland, and Rich Cove Forest community types. Associated with these communities are many other rare plant species including roundleaf serviceberry (*Amelanchier sanguinea*), broadleaf coreopsis (*Coreopsis latifolia*), Porter's reed grass (*Calamagrostis porteri*), Biltmore sedge (*Carex biltmoreana*), eastern shooting star (*Dodecatheon meadia* var. *meadia*), large witch alder (*Fothergilla major*), crested coralroot (*Hexalectris spicata*), Appalachian fir-clubmoss (*Huperzia appalachiana*), yellow honeysuckle (*Lonicera flava*), deerhair bulrush (*Trichophorum cespitosum*), and sweet white trillium (*Trillium simile*). In addition to these rare plant species, the fen orchid (*Liparis loeselii*) is historically known from this site. Also an historic occurrence of the smooth green snake (*Opheodrys vernalis)* was reported from the area in 1930, but the snake is now considered extirpated from North Carolina.

Most of the steep, rugged northeast-facing and southeast-facing middle and upper slopes contain good quality Low Elevation Granitic Dome, mature Rich Cove Forest, and Acidic Cove Forest communities. Granitic Domes facing northeast support occurrences of many rare plant species including roundleaf serviceberry (*Amelanchier sanguinea*), spreading rock cress (*Arabis patens*), granite dome goldenrod, Porter's reedgrass, yellow honeysuckle, divided-leaf ragwort (*Senecio*

millefolium), large witch alder (*Fothergilla major*), Biltmore carrion-flower (*Smilax biltmoreana*), Biltmore sedge, bleeding hearts (*Dicentra eximia*), white irisette, and broadleaf coreopsis. Rare animals on the site include the eastern woodrat (*Neotoma floridana haematoreia*) and cerulean warbler (*Dendroica cerulea*).

MANAGEMENT AND PROTECTION: The registered portion of this site is maintained as a tourist attraction that is open from early spring to late fall. Several events are also held in the winter months as well. The unregistered portion is maintained as natural area with no development currently present. Human impact on the site has occurred over the years with impacts reduced greatly by the use of a maintained and managed trail system. Several off the beaten path hikes are conducted each year that have little impact on the more sensitive areas of the site.

NATURAL COMMUNITIES: Acidic Cove Forest, Chestnut Oak Forest, Low Elevation Granitic Dome, Low Elevation Seep, Montane Acidic Cliff, Montane Oak-Hickory Forest, Montane Red Cedar-Hardwood Woodland, and Rich Cove Forest.

RARE PLANTS: Spreading rock cress (*Arabis patens*), granite dome goldenrod (*Solidago simulans*), Porter's reedgrass (*Calamagrostis porteri*), yellow honeysuckle (*Lonicera flava*), divided-leaf ragwort (*Senecio millefolium*), large witch alder (*Fothergilla major*), Biltmore sedge (*Carex biltmoreana*), bleeding hearts (*Dicentra eximia*), white irisette (*Sisyrinchium dichotomum*), deerhair bulrush (*Trichophorum cespitosum*), roundleaf serviceberry (*Amelanchier sanguinea*), sweet white trillium (*Trillium simile*), broadleaf coreopsis (*Coreopsis latifolia*)**,** shooting star (*Dodecatheon meadia* var. *meadia*), Piedmont gerardia (*Agalinis decemloba*), rock gnome lichen (*Gymnoderma lineare*), and Appalachian fir-clubmoss (*Huperzia appalachiana*); Watch List – mountain cynthia (*Krigia montana*), Biltmore carrion flower (*Smilax biltmoreana*), Carolina hemlock (*Tsuga caroliniana*), and ginseng (*Panax quinquefolius*); Historical – fen orchid (*Liparis loeselii*).

RARE ANIMALS: eastern woodrat (*Neotoma floridana haematoreia*), cerulean warbler (*Dendroica cerulea*), timber rattlesnake (*Crotalus horridus*), peregrine falcon (*Falco peregrine*), crevice salamander (*Plethodon yonahlossee* pop.1), green salamander (*Aneides aeneus*), lampshade spider (*Hypochilus coylei*); Historical – smooth green snake (*Opheodrys vernalis*).

REFERENCES:

Feil, E. 1987. Floristics and Vegetation of Chimney Rock Park, Rutherford County, North Carolina. M. S. Thesis. UNC-Charlotte.

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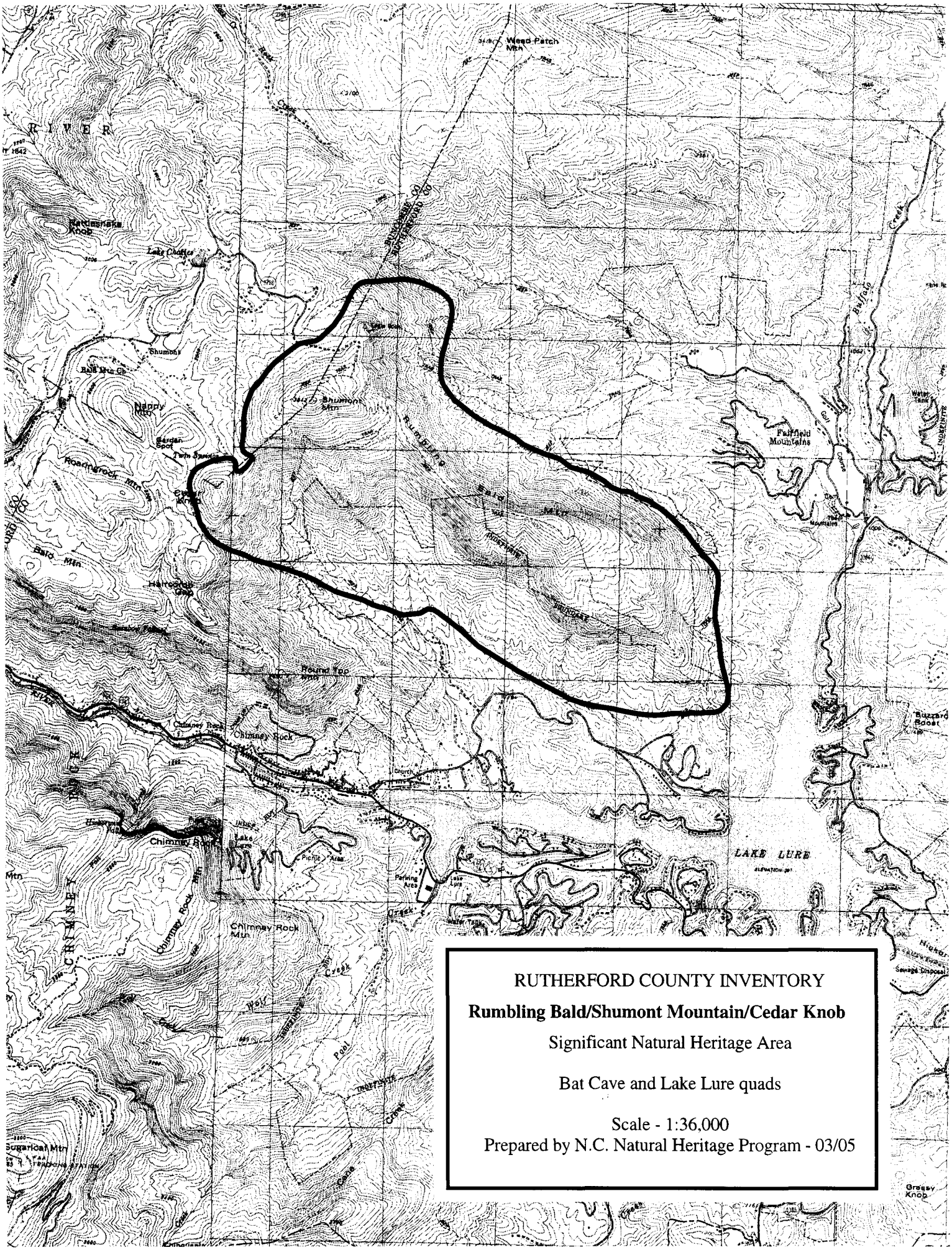

RUTHERFORD COUNTY INVENTORY

Rumbling Bald/Shumont Mountain/Cedar Knob

Significant Natural Heritage Area

Bat Cave and Lake Lure quads

Scale - 1:36,000

Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

RUMBLING BALD/SHUMONT MOUNTAIN/CEDAR KNOB
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Bat Cave and Lake Lure

Size: 2,276 acres
Ownership: The Nature Conservancy, Private

SIGNIFICANT FEATURES: This is one of the most significant sites in the Hickorynut Gorge area. It is important as a large extensive natural area that supports high quality contiguous occurrences of five community types and variants of those community types. The way that those communities are distributed throughout the site produces a mosaic of habitat which lends to the high biodiversity found within the site. This site houses sixteen rare plant species, of which four have federal status. They include Carolina saxifrage (*Saxifraga caroliniana*), sweet pinesap (*Monotropsis odorata*), white irisette (*Sisyrinchium dichotomum*), and granite dome goldenrod (*Solidago simulans*). Thirteen rare animal species are also known from the site, with three have federal status. They include the eastern small-footed myotis (*Myotis leibii*), the eastern woodrat (*Neotoma floridana haematoreia*), and green salamander (*Aneides aeneus*). The presence of several fissure caves on the site is a highly significant ecological feature. In those caves, invertebrates such as the nesticid spider (*Nesticus brimleyi*) and an uncommon cave-obligate springtail (*Pseudosinella gisini*) are present.

LANDSCAPE RELATIONSHIPS: This site is located on the eastern front of the Blue Ridge Escarpment along the northern section of Hickorynut Gorge where it slopes towards Lake Lure and the Piedmont to the east. It is situated within the Southeast Escarpment Megasite and the Hickorynut Gorge Macrosite. This site is directly north Bald Mountain/Round Top Mountain and across the gorge from Chimney Rock Natural Area and Worlds Edge/Sugarloaf Mountain.

SITE DESCRIPTION: One of the more prominent features of the Hickorynut Gorge, this site juts out as a large long ridge at the easternmost edge of the Blue Ridge Escarpment. From Lake Lure, Rumbling Bald Mountain gradually increases in elevation westward for over two miles where it adjoins Shumont Mountain and curves around to the southwest to Cedar Knob.

Rumbling Bald possesses extensive very good quality Low Elevation Granitic Dome (Acidic and Basic Variants), Montane Oak-Hickory Forest (Acidic and Basic Variants), and Chestnut Oak Forest community types. High quality Carolina Hemlock Bluff and Pine-Oak/Heath communities are also present. Fissure caves are present in the site as well. Cliffs provide habitat for common ravens (*Corvus corax*) and Biltmore sedge (*Carex biltmoreana*). Extensive areas of Montane Oak-Hickory and Chestnut Oak Forest are found along the base of the south-facing domes and cliffs. Rare animal species such as the green salamander (one of the largest populations in the gorge), and the uncommon crevice salamander (*Plethodon yonahlossee* pop.1) are also present. Areas where boulders and talus have accumulated are habitat for the eastern woodrat and the southern pygmy shrew (*Sorex hoyi winnemana*). Several large fissure caves within the site are habitat for numerous bat species

including the eastern small-footed myotis. One cave is the type locality for the rare nesticid spider, with an uncommon cave-obligate springtail also present. Sizable populations of timber rattlesnake (*Crotalus horridus*) reside within the site as well. Also present is a large occurrence of white irisette. Other rare plant species present include yellow honeysuckle, (*Lonicera flava*), roundleaf serviceberry (*Amelanchier sanguinea*), shooting star (*Dodecatheon meadia* var. *meadia*), Biltmore sedge, bleeding heart (*Dicentra eximia*), and broadleaf coreopsis (*Coreopsis latifolia*).

Shumont Mountain has an elevation of 3,842 feet and primarily supports Montane Oak-Hickory Forest and Chestnut Oak Forest. Shaded, rocky seepage areas on the forested north side of the mountain support Biltmore sedge. A high quality Carolina hemlock bluff, with a population of bleeding heart, occurs at Eagle Rock on the north side of summit of Shumont Mountain. To the southwest lies Cedar Knob. This area supports a high quality example of the Low Elevation Granitic Dome (Basic Variant), Montane Oak-Hickory Forest, Carolina Hemlock Bluff, and Chestnut Oak Forest community types with occurrences of several rare species. Along the dome margins are areas of Biltmore sedge and granite dome goldenrod. In the adjacent forest, white irisette, Carolina saxifrage, Carey's saxifrage (*Saxifraga careyana*), hairy mock-orange (*Philadelphus hirsutus*), and scentless mock orange (*P. inodorus*) are present. The presence of these rare species is a strong indicator of circumnetural soils.

MANAGEMENT AND PROTECTION: A large portion of this site is formally protected by The Nature Conservancy, which currently limits access into the area to reduce human impact on the site. The portion owned by The Nature Conservancy is proposed to become part of the newly established Hickory Nut Gorge State Park.

NATURAL COMMUNITIES: Low Elevation Granitic Dome (Acidic and Basic Variants), Carolina Hemlock Bluff, Montane Oak-Hickory Forest (Acidic and Basic Variants), Chestnut Oak Forest, and Pine-Oak/Heath Forest.

RARE PLANTS: roundleaf serviceberry (*Amelanchier sanguinea*), Biltmore sedge (*Carex biltmoreana*), broadleaf tickseed (*Coreopsis latifolia*), Carolina saxifrage (*Saxifraga caroliniana*), bleeding heart (*Dicentra eximia*), eastern shooting star (*Dodecatheon media* var. *media*), yellow honeysuckle (*Lonicera flava*), sweet pinesap (*Monotropsis odorata*), white irisette (*Sisyrinchium dichotomum*), and granite dome goldenrod (*Solidago simulans*); Watch List – grotto alumroot (*Heuchera parviflora* var. *parviflora*), mountain cynthia (*Krigia montana*), hairy mock-orange (*Philadelphus hirsutus*), scentless mock orange (*Philadelphus inodorus*), Carey's saxifrage (*Saxifraga careyana*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: gray myotis (*Myotis grisescens*), eastern small-footed Myotis (*Myotis leibii*), northern long-eared myotis (*Myotis septentrionalis*), eastern woodrat (*Neotoma floridana haematoreia*), timber rattlesnake (*Crotalus horridus)*, the green salamander (*Aneides aeneus*), crevice salamander (*Plethodon yonahlossee* pop. 1), a nesticid spider (*Nesticus brimleyi*), and a cave-obligate springtail (*Pseudosinella gisini*); Watch List – pygmy shrew (*Sorex hoyi winnemana*), black vulture (*Coragyps atratus*), common raven (*Corvus corax*), and American kestrel (Falco sparverius).

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Heiman, K. and A. Haney. 1985. Preliminary Site Reconnaissance Survey: Eagle Rock-Shumont Mountain. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

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Oakley, S., and H. E. LeGrand, Jr. 1994. Site Survey Report: Cedar Knob. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

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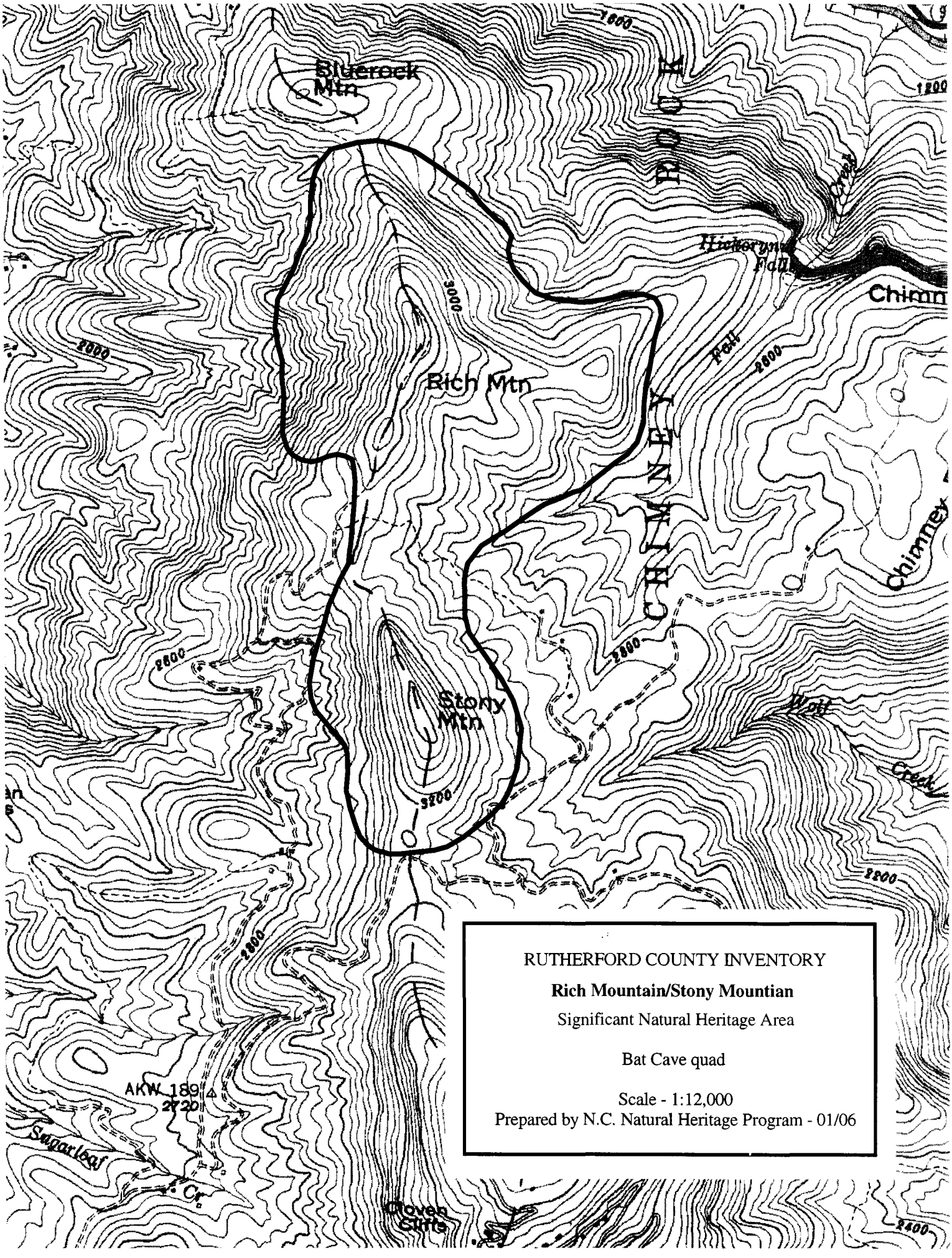


RUTHERFORD COUNTY INVENTORY

Rich Mountain/Stony Mountian

Significant Natural Heritage Area

Bat Cave quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 01/06

Rutherford County Natural Area Inventory

RICH MOUNTAIN/STONY MOUNTAIN
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Bat Cave
Size: 427 acres
Ownership: Private

SIGNIFICANT FEATURES: The site contains the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*), the Significantly Rare Blue Ridge bindweed (*Calystegia catesbeiana* ssp. *sericata*), and broadleaf coreopsis (*Coreopsis latifolia*), and the eastern woodrat (*Neotoma floridana haematorreia*), a Federal Species of Concern. Good quality examples of several common community types are present.

LANDSCAPE RELATIONSHIPS: This site is situated one air mile north of Sugarloaf Mountain and lies on the Rutherford/Henderson County line. Stony Mountain is located a few miles west and north west of Bat Cave/Bluerock Mountain and northwest of Chimney Rock Natural Area.

SITE DESCRIPTION: This site consists of two prominent peaks located on the Rutherford/Henderson County line. This site contains steep rocky slopes with gradually sloping forested lower slopes. Rock outcrops are found on the western (Henderson County) eastern, and northeastern slopes (Rutherford County). The middle and lower slopes extend southwards towards Sugarloaf Mountain and northwards towards Bat Cave/Bluerock Mountain.

A good example of a Montane Oak-Hickory Forest occurs on the summits of Stony Mountain and Rich Mountain, with maturing examples of the same community located on the lower slopes. The closed canopy is dominated by northern red oak (*Quercus rubra*), chestnut oak (*Q. montana*), some white oak (*Q. alba*), tulip poplar (*Liriodendron tulipifera*), and hickories (*Carya* spp.). The understory along the summit and upper slopes has sassafras (*Sassafras albidum*) and sourwood (*Oxydendrum arboreum*). Along the lower slopes the understory is dominated by sassafras, some over 12 ft. tall. The shrubs present include mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), and gorge rhododendron (*R. minus*). Herbs observed include ragwort (*Packera* sp.), Carolina lily (*Lilium michauxii*), broad leaf coreopsis, scattered areas of white irisette, spotted wintergreen (*Chimaphila maculata*), galax (*Galax urceolata*) and violet (*Viola* sp.).

Examples of Low Elevation Rocky Summit and Low Elevation Granitic Dome occur along the eastern upper slope around to the northern end of the Stony Mountain and on the norther upper slope of Rich Mountain. Rock outcrops documented on Stony Mountain, along the western slope in Henderson County (Gaddy 1994), were not investigated during this inventory. Montane Canopy species surrounding the rock outcrops include scattered chestnut oak, Carolina hemlock (*Tsuga caroliniana*), and tulip poplar. The understory is sparse with sourwood, Carolina silverbell (*Halesia tetraptera*), and mock orange (*Philadelphus* sp.). Shrubs include mountain laurel, great laurel, gorge

rhododendron, and flame azalea (*Rhododendron calendulaceum*). Herbs include pipsissewa (*Chimaphila maculata*), turtlehead (*Chelone* sp.), galax (*Galax urceolata*), mountain cynthia (*Krigia montana*), marginal fern (*Dryopteris marginalis*), sedges (*Carex* spp.), and panic grasses (*Panicum* spp.).

Along the northern summit, extending northward towards Rich Mountain, is an example of a Pine-Oak/Heath community. The canopy is dominated by Table Mountain pine (*Pinus pungens*) and chestnut oak. The understory and shrub layer are dominated by heath species that include mountain laurel, great laurel, gorge rhododendron, highbush blueberry (*Vaccinium corymbosum*), and lowbush blueberry (*V. pallidum*). Herbs are sparse and include galax and pipsissewa.

A small Carolina Hemlock Bluff occurs near the northeastern summit of Stony Mountain. The closed canopy is dominated by Carolina hemlock with a few Table Mountain pine and chestnut oak along the margins of the community type. The understory contains canopy species, blackgum (*Nyssa sylvatica*), and downy serviceberry (*Amelanchier arborea*). The shrub layer is predominantly mountain laurel with some great laurel interspersed. The herb layer is very sparse with galax being the dominant herb.

MANAGEMENT AND PROTECTION: This site has no formal protection. The site would make an excellent natural area for trails or overlooks, due to the view into the Tennessee Valley drainage to the west in Henderson County, and into part of Hickorynut Gorge to the east and southeast.

NATURAL COMMUNITIES: Montane Oak-Hickory Forest, Low Elevation Rocky Summit, Low Elevation Granitic Dome, Pine-Oak/Heath, and Carolina Hemlock Bluff.

RARE PLANTS: Blue Ridge bindweed (*Calystegia catesbeiana* ssp. *sericata*) white irisette (*Sisyrinchium dichotomum*), and broadleaf coreopsis (*Coreopsis latifolia*); Watch List – mountain cynthia (*Krigia montana*).

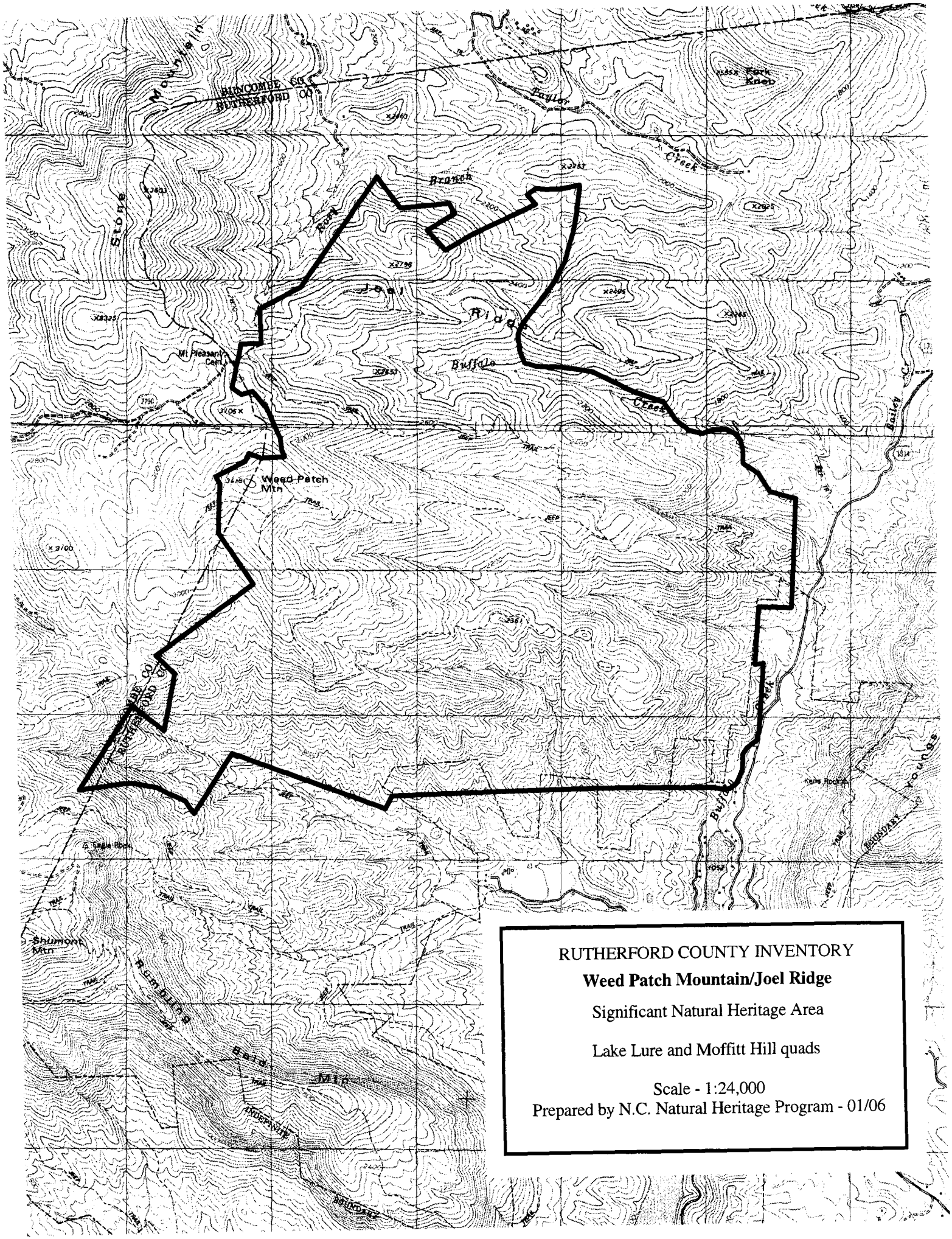
RARE ANIMALS: Eastern woodrat (*Neotoma floridana haematoreia*).

REFERENCES:

Gaddy, L. L. 1994. Natural Areas of Henderson County: A Preliminary Inventory of the Natural Areas of Henderson County, North Carolina. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

Oakley, S. C. 1996. Natural Areas Inventory of The Hickorynut gorge Area of North Carolina. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

Padgett, J. E. 2006. Site Survey Report, Stony Mountain. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Weed Patch Mountain/Joel Ridge

Significant Natural Heritage Area

Lake Lure and Moffitt Hill quads

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 01/06

Rutherford County Natural Area Inventory

WEED PATCH MOUNTAIN/JOEL RIDGE
Significant Natural Heritage Area

Site Significance: Regional
Quadrangles: Lake Lure and Moffitt Hill
Size: 3,968 acres
Ownership: Private

SIGNIFICANT FEATURES: This site has significant exemplary examples of Montane Oak-Hickory forest and Pine-Oak/Heath natural community types. It has known occurrences of two rare species: broad leaf tickseed (*Coreopsis latifolia*) and green salamander (*Aneides aeneus*), a Federal Species of Concern.

LANDSCAPE RELATIONSHIPS: This site is a continuous, mostly unfragmented area, that extends northwards towards old US Hwy 64, westward towards NC Hwy 9, and southward towards Hickorynut Gorge. Roughly 12,000 acres are mostly undeveloped when including the surrounding region, with only two-lane county roads present throughout the area. This site is separated from Rumbling Bald/Shumont Mountain/Cedar Knob by less than one air mile.

SITE DESCRIPTION: This site consists of several north and south-facing slopes near the Blue Ridge Escarpment. It is drained by small perennial streams which flow eastward from four steep coves. The coves are separated by east-west oriented ridges which slope eastward from the summit of Weed Patch Mountain. Less steep areas occur on knolls on each of the east-west ridges. In general, the forests are young due to past logging activities. The effect of logging on forest composition appears to be greater in the coves and slopes with higher moisture levels and deeper soils. Areas which have undergone extensive logging support regenerating tulip poplar (*Liriodendron tulipifera*) dominated forest. Dry Oak-Hickory Forest occur on the drier slopes and ridge tops. A Montane Oak-Hickory Forest community type is found throughout the site on middle and upper slopes, and on the ridge tops. Several examples of Pine-Oak/Heath, a less common community type, are embedded within the oak-hickory forest on the driest, thinnest, most acidic soils. Areas on the lower slopes and cove bottoms are more difficult to classify because of logging activities which have left these areas dominated by tulip poplar.

MANAGEMENT AND PROTECTION: This site is planned to be developed with over 900 home sites. The steep slopes and stream corridors are proposed to be left as green space.

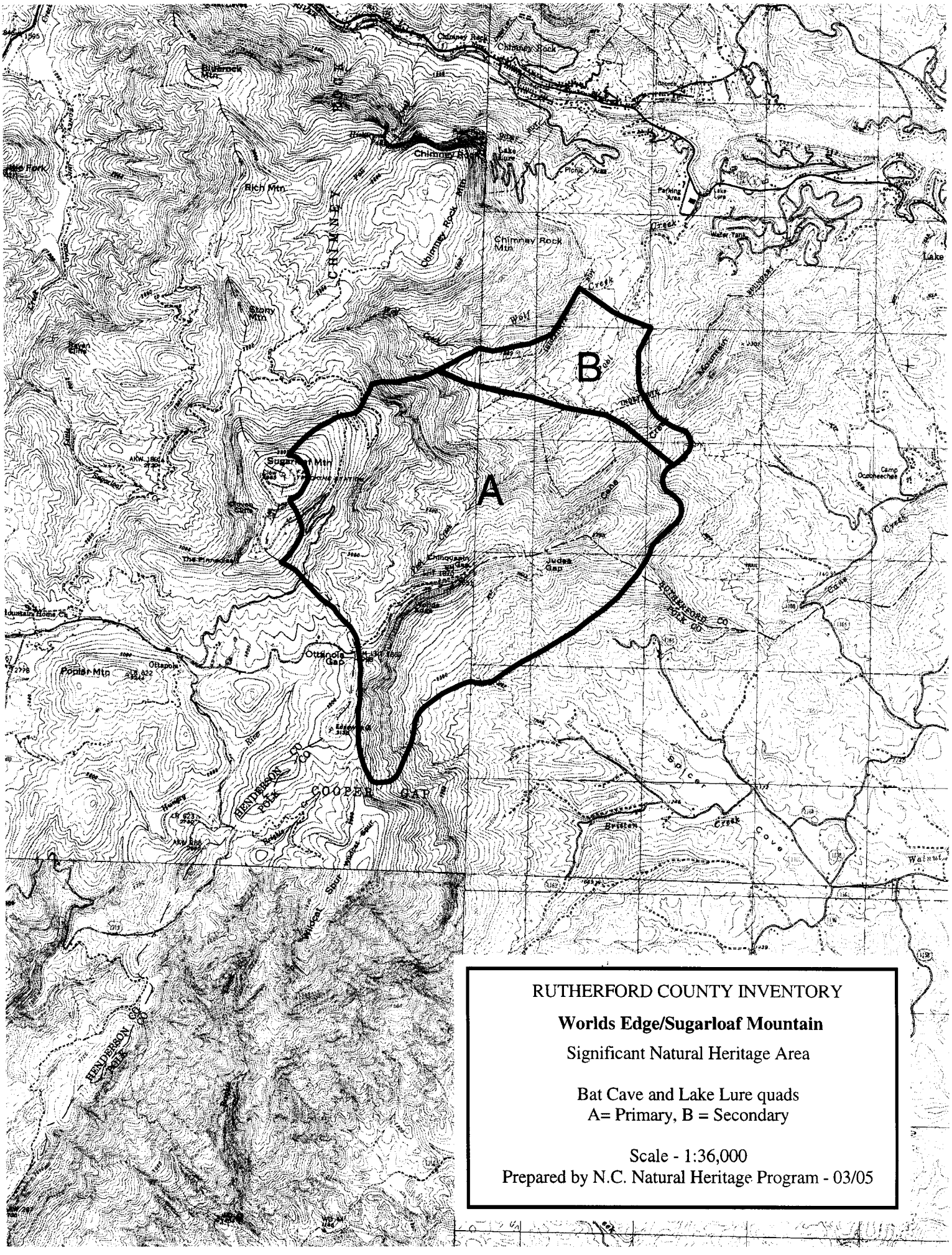
NATURAL COMMUNITIES: Montane Oak-Hickory Forest, Pine-Oak/Heath, Acidic Cove Forest, Rich Cove Forest, and Dry Oak-Hickory Forest.

RARE PLANTS: broad leaf tickseed (*Coreopsis latifolia*).

RARE ANIMALS: green salamander (*Aneides aeneus*).

REFERENCES:

Oakley, S. C. 1996. Natural Areas Inventory of The Hickorynut Gorge Area of North Carolina. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Worlds Edge/Sugarloaf Mountain

Significant Natural Heritage Area

Bat Cave and Lake Lure quads
A= Primary, B = Secondary

Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

WORLDS EDGE/SUGARLOAF MOUNTAIN
Significant Natural Heritage Area

Site Significance: National
Quadrangles: Bat Cave and Lake Lure

Size: 2102 acres (1,799 primary; 303 secondary)
Ownership: State of North Carolina, The Nature Conservancy, and Private

SIGNIFICANT FEATURES: Worlds Edge/Sugarloaf Mountain is a large site that contains extensive examples of nine natural community types. Significance is further enhanced by the presence of rare flora and fauna that include seven rare plants and five rare animals. Of those, three have federal status. They include white irisette (*Sisyrinchium dichotomum*), eastern small-footed myotis (*Myotis leibii*), and green salamander (*Aneides aeneus*).

LANDSCAPE RELATIONSHIPS: This site is located in the northwestern corner of Rutherford County along the eastern edge of the Blue Ridge Escarpment where it makes a sudden drop to the Piedmont below. The elevation along this front, called Worlds Edge, rises from 1400 to 2651 feet in about 1.5 miles. This site is within the Southeastern Escarpment Megasite and The Hickorynut Gorge Macrosite. Chimney Rock Natural Area, Cane Creek Mountain, and Cloven Cliffs/The Pinnacles are adjacent to this site.

SITE DESCRIPTION: The southeastern portion of the site includes Worlds Edge and Judes Gap. It is comprised of a spectacular, one mile-long set of steep southeast-facing slopes on the eastern edge of the Blue Ridge Escarpment, which form the divide between Hickorynut Gorge (Broad River watershed) to the north and the lower elevation western Piedmont (Green River watershed) to the south. The Worlds Edge overlook supports good quality examples of Chestnut Oak Forest and Pine-Oak/Heath with a large number of the rare Biltmore carrion-flower (*Smilax biltmoreana*) present along with yellow honeysuckle (*Lonicera flava*). An extensive, good example of Low Elevation Rocky Summit occurs just below the overlook and supports an occurrence of Bradley's spleenwort (*Asplenium bradleyi*). Small areas of Pine-Oak/Heath occur along the dry, somewhat rocky ridgelines throughout the site. A peak north of Judes Gap supports high quality Chestnut Oak Forest, Pine-Oak/Heath, and good quality Montane Oak-Hickory Forest.

Areas west of Pool Creek, contain extensive populations of broadleaf coreopsis (*Coreopsis latifolia*) and white irisette, as well as scattered localities of yellow honeysuckle and Porter's reedgrass (*Calamagrostis porteri*). Also on the west side of Pool Creek is a rugged area with very extensive outcrops that support high quality examples of Low Elevation Granitic Dome, and an unusual natural community described as a Semi-Exfoliated Basic Glade. Both rock outcrop communities support Biltmore sedge (*Carex biltmoreana*), and the Glade supports a good population of yellow honeysuckle. Extensive, good examples of both the acidic and basic variants of the uncommon Montane Oak-Hickory Forest community types occur throughout, with Pine-Oak/Heath present along several spur ridges of Sugarloaf Mountain. Small examples of Rich Cove and Acidic Cove Forest

are present on lower slopes and in the valley. Along the road banks on Sugarloaf Mountain, there are several occurrences of white irisette, shale-barren blazing star (*Liatris turgida*), and Earle's blazing star (*Liatris squarrulosa*).

MANAGEMENT AND PROTECTION: The majority of this site is now under formal protection by The Nature Conservancy and Carolina Mountain Land Conservancy. Part of those holdings are now owned by the North Carolina State Parks with the remainder to be transferred sometime in 2006 for the establishment of Hickory Nut Gorge State Park. At the Worlds Edge overlook a small Registered Natural Heritage Area that receives heavy unauthorized visitation from ORV use and refuse dumping is present.

NATURAL COMMUNITIES: Low Elevation Rocky Summit, Low Elevation Granitic Dome, Semi-Exfoliated Basic Glade, Pine-Oak/Heath, Spray Cliff, Montane Oak-Hickory Forest (Acidic and Basic variants), Chestnut Oak Forest, Acidic Cove Forest, and Rich Cove Forest.

RARE PLANTS: White irisette (*Sisyrinchium dichotomum*), broadleaf coreopsis (*Coreopsis latifolia*), yellow honeysuckle (*Lonicera flava*), Porter's reed grass (*Calamagrostis porteri*), Biltmore sedge (*Carex biltmoreana*), shale-barren blazing star (*Liatris turgida*), Earle's blazing star (*Liatris squarrulosa*); Watch List – Biltmore carrionflower (*Smilax biltmoreana*), grotto alumroot (*Heuchera parviflora* var. *parviflora*), mountain cynthia (*Krigia montana*), Carolina hemlock (*Tsuga caroliniana*), little sweet Betsy (*Trillium cuneatum*), large witch alder (*Fothergilla major*), southern nodding trillium (*Trillium rugelii*), hairy mock-orange (*Philadelphus hirsutus*), whiteleaf sunflower (*Helianthus glaucophyllus*), scentless mock orange (*Philadelphus inodorus*), ashy hydrangea (*Hydrangea cinerea*), and Appalachian joe-pye-weed (*Eupatorium steelii*).

RARE ANIMALS: northern long-eared myotis (*Myotis septentrionalis*), eastern small-footed myotis (*Myotis leibii*), green salamander (*Aneides aeneus*) and crevice salamander (*Plethodon yonahlossee* pop. 1), and a cave-obligate bristletail (*Litocampa* sp.).

REFERENCES:

Gaddy, L. L. 1994. Natural Areas of Henderson County: A Preliminary Inventory of the Natural Areas of Henderson County, North Carolina. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

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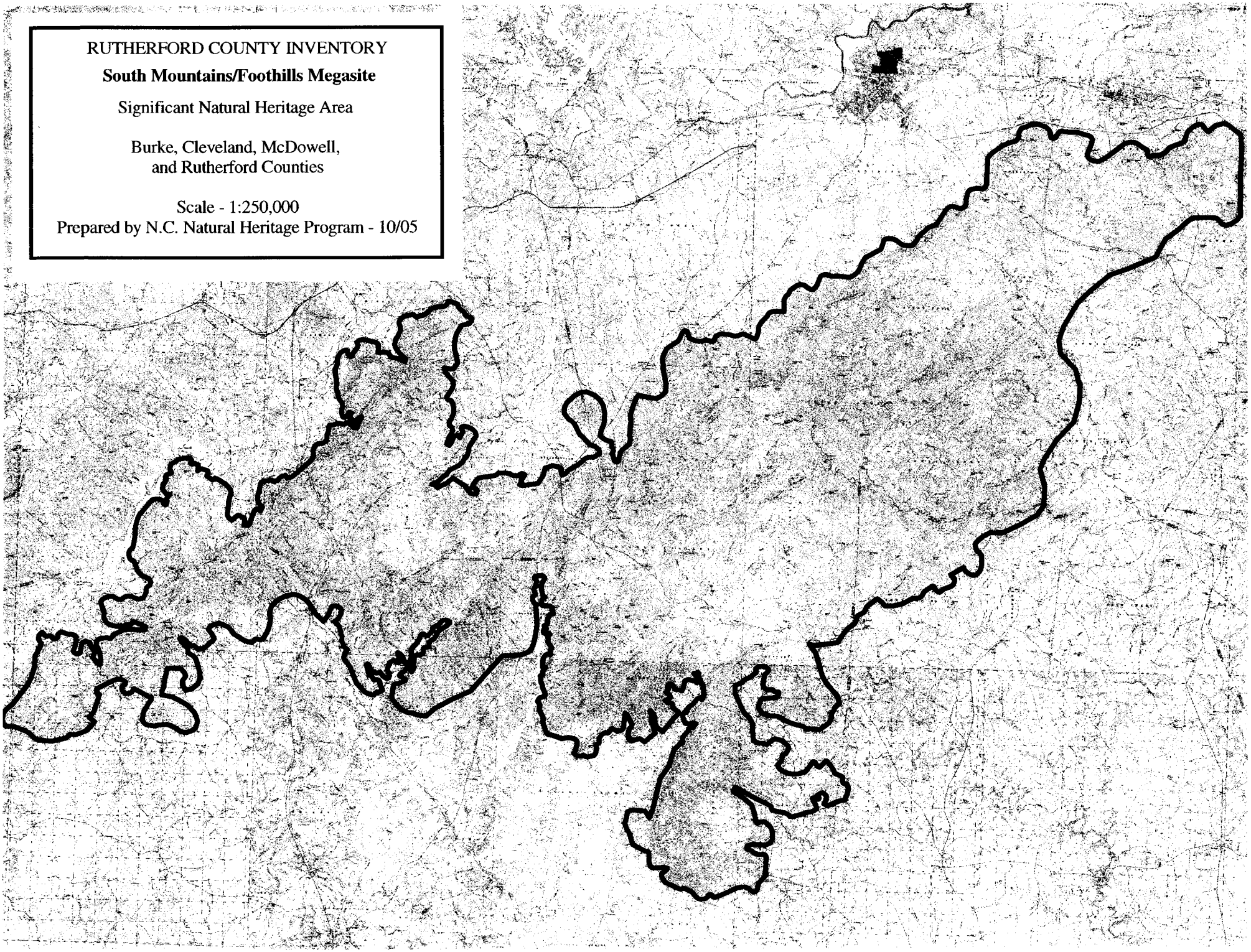
RUTHERFORD COUNTY INVENTORY

South Mountains/Foothills Megasite

Significant Natural Heritage Area

Burke, Cleveland, McDowell,
and Rutherford Counties

Scale - 1:250,000
Prepared by N.C. Natural Heritage Program - 10/05



Rutherford County Natural Areas Inventory

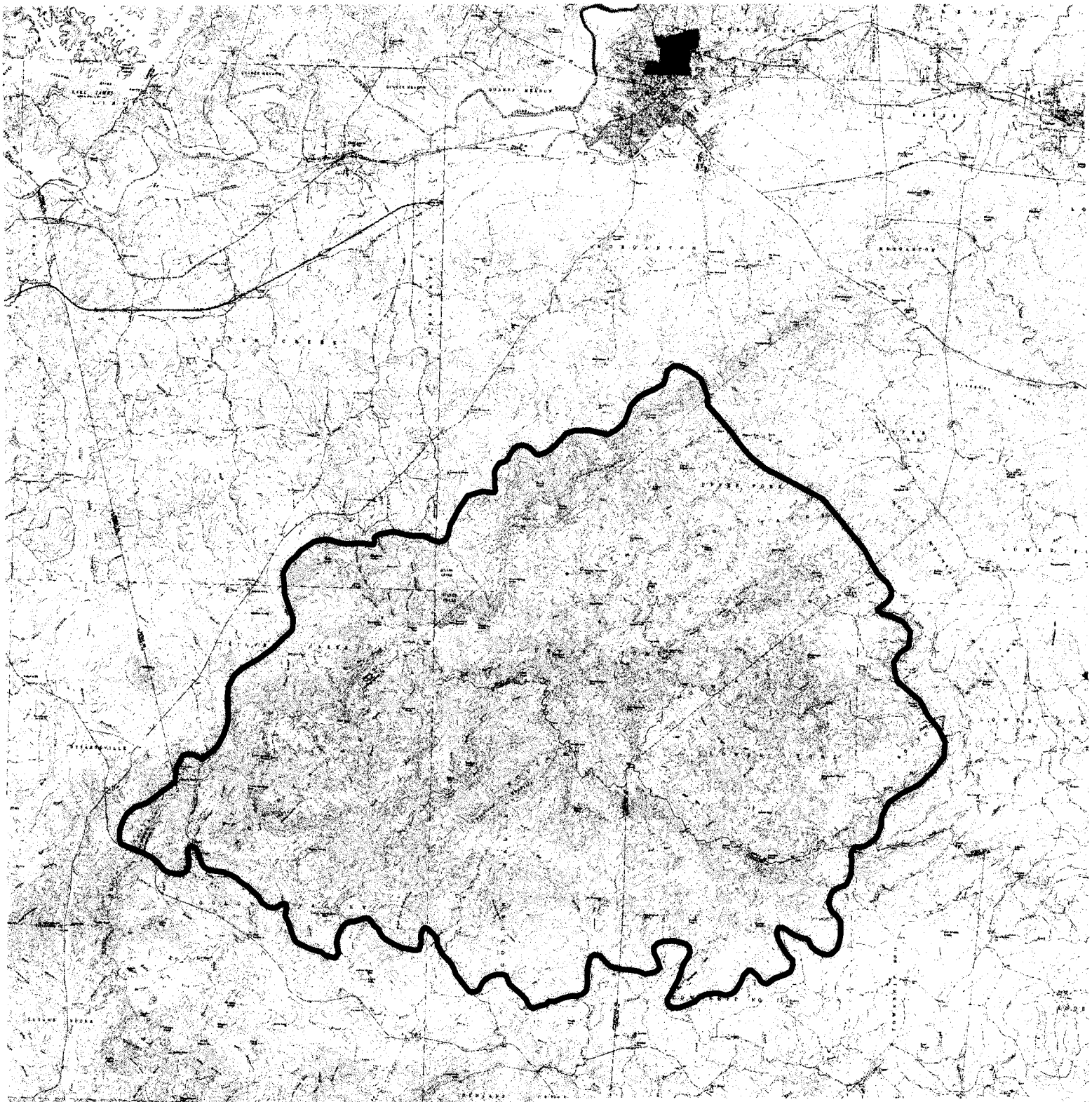
SOUTH MOUNTAINS/FOOTHILLS MEGASITE
Significant Natural Heritage Area

Site Significance: National **Size:** 83,130 acres
Counties: Burke, Cleveland, McDowell, and Rutherford

The South Mountains/Foothills Megasite is a landscape-scale site that contains a cluster of 30 standard Significant Natural Heritage Areas embedded in a matrix of fairly unfragmented, contiguous lands. It encompasses the northeastern corner of Rutherford County, southern McDowell County, the northwestern corner of Cleveland County, and most of southern and central Burke County. All of the South Mountains are included in this Megasite as well as an area of prominent foothills that extend northeast towards the Interstate 40 corridor. This is the largest contiguously forested area in the western Piedmont of North Carolina. Its ecological importance is augmented by a unfragmented landscape connection that extends westward through the higher elevations of northern Rutherford County and southern McDowell County to the Blue Ridge Escarpment. In addition to its excellent landscape characteristics, the Foothills Megasite is highly significant for the numerous high quality natural communities and rare species it contains.

The Megasite consists of the rugged peaks, ridge tops, dissected slopes, and deep coves that are associated with the South Mountains and surrounding foothills. The forested lands between the standard sites augment the ecological integrity of the standard sites by providing buffers, landscape continuity, and landscape connections. This connective function is especially important for animals such as black bears, whitetail deer, rattlesnakes, and are-sensitive birds that require large areas for breeding, foraging, and dispersal.

The Rutherford County part of the Megasite includes one Macrosite: South Mountains Macrosite, and 14 Standard Sites: Rollins/South Mountains Natural Area, First Broad River Headwaters Aquatic Habitat, Lone Mountain Natural Area, Rockey Face/Cedar Knob, Yellowtop/Biggerstaff Mountain, Cherry Mountain, Lisenberry Mountain, Long Mountain/Pinnacle Mountain, Shoal Ridge, Anderson Shoal, Camel Knob, Piney Knob Slope and Bog, Fork Mountain/GSA Camp, and Upper Catheys Creek/Harris Mountain.



RUTHERFORD COUNTY INVENTORY

South Mountains Macrosite

Significant Natural Heritage Area

Burke, Cleveland, McDowell,
and Rutherford Counties

Scale - 1:125,000

Prepared by N.C. Natural Heritage Program - 10/05

Rutherford County Natural Areas Inventory

SOUTH MOUNTAINS MACROSITE
Significant Natural Heritage Area

Site Significance: National
Counties: Burke, Cleveland, McDowell, and Rutherford

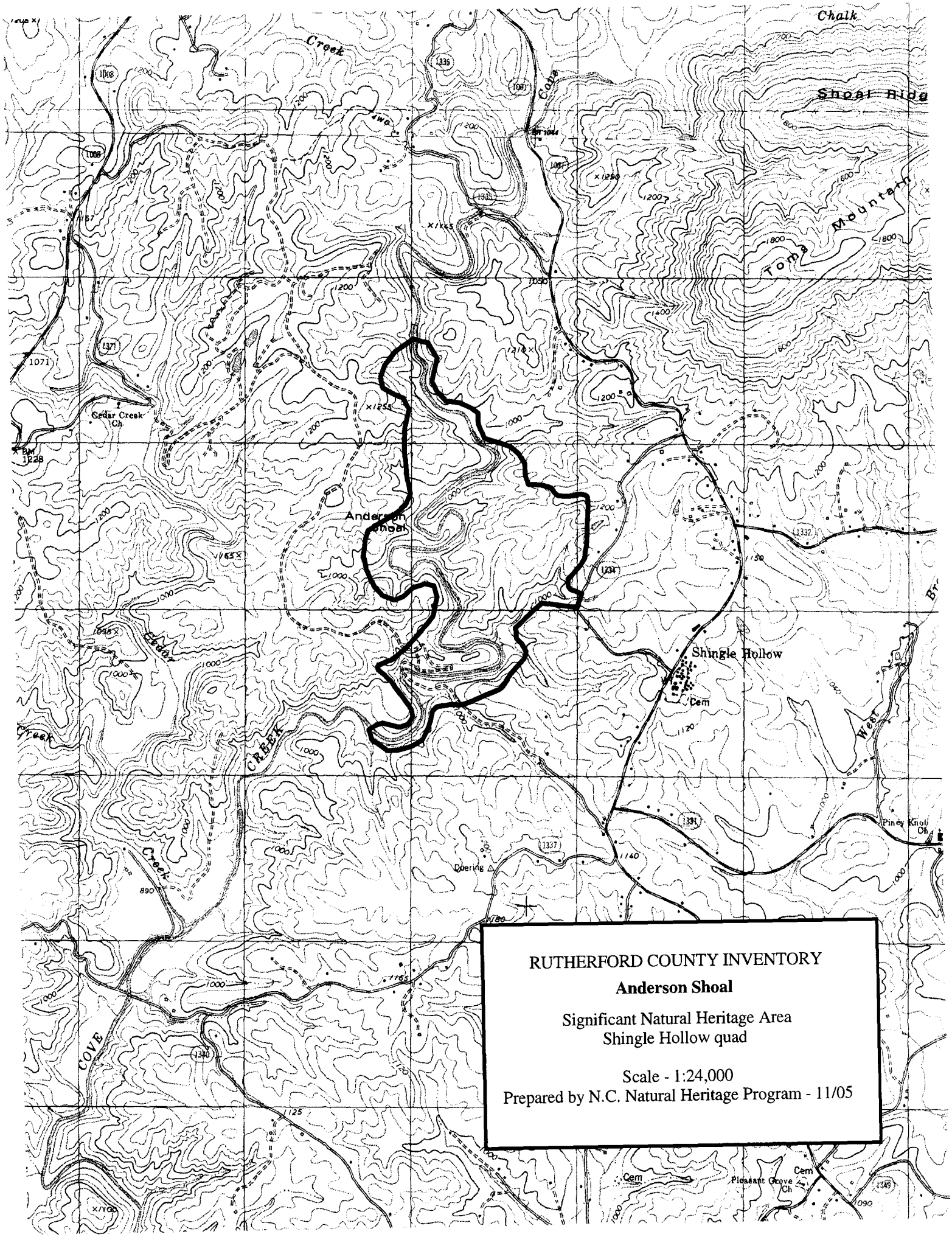
Size: 55,380 acres
Ownership: State of North Carolina, Private

The South Mountains Macrosite contains the most extensive unfragmented area of forested lands in the western Piedmont of North Carolina. It encompasses the South Mountains of southern Burke County, northeastern Rutherford County, and northwestern Cleveland County. Over half of the South Mountains Macrosite is in public ownership, including South Mountains State Park and the South Mountains Game Land. The area is highly significant for the size and quality of the natural communities present, and for a large cluster of rare species. It is also significant because it supports many species and natural communities that are typical of those found in the Blue Ridge Mountains and the western Piedmont. The Macrosite is included in the even larger South Mountains/Foothills Megasite, which contains additional unfragmented lands that extending west into Rutherford and McDowell counties and northeast into Burke County.

Over half of the area in the Macrosite is protected as a Dedicated State Nature Preserve, including Rollins/South Mountains Natural Area in Rutherford County, most of the South Mountains Jacob Fork Watershed, and parts of South Mountains Henry Fork Watershed, both in Burke County. The majority of South Mountains Henry Fork Watershed and Clear Creek Watershed Natural Area are within the South Mountains State Park, and are administered by the North Carolina Division of Parks and Recreation, but remain to be dedicated as State Nature Preserves. The Deaf School Watershed and Broughton Hospital/Keller Knob standard sites are in Burke County and are administered by the North Carolina Department of Health and Human Resources, but have no formal protection. None of the standard sites in private ownership have formal protection.

The prospect for long-term ecological viability of the Macrosite and its constituent standard sites is greatly enhanced by its size and low degree of fragmentation. The viability of the Macrosite is increased by an excellent landscape connection extends from the South Mountains westward to the Blue Ridge Escarpment, through southern McDowell and northern Rutherford counties. As a large island of natural lands, the Macrosite provides benefits to species of forest interior habitats, as well as to disturbance-sensitive and wide-ranging animal species. Its strong landscape connection to the Blue Ridge may be important for movements of black bear populations.

The Rutherford County part of the Macrosite includes the First Broad River Headwaters Aquatic Habitat, and the Rollins/South Mountains Natural Area. The remaining standard sites within the Macrosite occur in Burke and Cleveland Counties with a small area reaching into McDowell County.



RUTHERFORD COUNTY INVENTORY

Anderson Shoal

Significant Natural Heritage Area
Shingle Hollow quad

Scale - 1:24,000
Prepared by N.C. Natural Heritage Program - 11/05

Rutherford County Natural Area Inventory

ANDERSON SHOAL
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Shingle Hollow
Size: 386 Acres
Ownership: Private

SIGNIFICANT FEATURES: This site is an intact matrix of natural communities along a unique aquatic habitat with numerous oxbows, shoals, and small waterfalls. The waterfalls occur along several smaller streams leading down into Cove Creek. This site is also home to a small suite of Watch List plant species.

LANDSCAPE RELATIONSHIPS: This site lies three miles south of the Rutherford/McDowell County line and 0.5 miles northwest of the community of Shingle Hollow in the western-most section of the South Mountains/Foothills Megasite along Cove Creek. Piney Knob Bog and Slope is 2.5 miles to the east.

SITE DESCRIPTION: This site is comprised of steep slopes with narrow ridgelines along several small perennial streams that flow into Cove Creek, ranging between 980-1255 ft in elevation. Most of the site lies along and east of Cove Creek, with maturing forest and a narrow strip of alluvial forest along the creek.

A good quality mature Acidic Cove Forest is located along the steep slopes in the southern portion of the site leading down to Cove Creek, along the east side of the creek. The canopy is closed and dominated by tulip poplar (*Liriodendron tulipifera*), cucumber tree (*Magnolia acuminata*), Canada hemlock (*Tsuga canadensis*), Fraser magnolia (*M. fraseri*), and sweet birch (*Betula lenta*). Scattered northern red oak (*Quercus rubra*), chestnut oak (*Q. montana*), and slippery elm (*Ulmus rubra*) are found throughout. The understory includes red maple (*Acer rubrum*), flowering dogwood (*Cornus florida*), Carolina silverbell (*Halesia tetraptera*), witch hazel (*Hamamelis virginiana*), and black gum (*Nyssa sylvatica*). Shrubs vary according to aspect and light with the more common shrubs being sweet shrub (*Calycanthus floridus*), spicebush (*Lindera benzoin*), mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), and hydrangea (*Hydrangea arborescens*). The lower slopes are comprised almost entirely of mountain laurel and great laurel thickets. Common herbs are black cohosh (*Cimicifuga racemosa*), Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris noveboracensis*), broad beech fern (*Phegopteris hexagonoptera*), zigzag spiderwort (*Tradescantia subaspera*.), Solomon's seal (*Polygonatum biflorum*), mayapple (*Podophyllum peltatum*), and rattlesnake plantain (*Goodyera pubescens*).

The dominant natural community within the site is a fair to good quality Dry-Mesic Oak-Hickory Forest. Dominant canopy species include white oak (*Quercus alba*), northern red oak, black oak (*Q. velutina*), mockernut hickory (*Carya alba*), pignut hickory (*C. glabra*), tulip poplar, and sweetgum

(*Liquidambar styraciflua*). In the understory, red maple, flowering dogwood, sourwood (*Oxydendrum arboreum*), American holly (*Ilex opaca*), and black gum are common. Shrubs include deerberry (*Vaccinium stamineum*), lowbush blueberry (*V. pallidum*), mountain laurel, and strawberry bush (*Euonymus americana*). Woody vines include muscadine (*Vitis rotundifolia*) and poison ivy (*Toxicodendron radicans*). The herb layer includes variable leaf heartleaf (*Hexastylis heterophylla*), showy skullcap (*Scutellaria serrata*), spotted joe-pye-weed (*Eupatoriadelphus maculatus*), pipsissewa (*Chimaphila maculata*), roundleaf ragwort (*Packera obovata*), goldenrod (*Solidago* sp.), rose pink (*Sabatia angularis*), and rattlesnake weed (*Hieracium venosum*).

Along Cove Creek, on both sides is a narrow strip of Piedmont/Low Mountain Alluvial Forest that possesses a canopy dominated by tulip polar, river birch (*Betula nigra*), and red maple. The understory has ironwood (*Carpinus caroliniana*) and red maple. Shrubs include spicebush, strawberry bush, and dog hobble (*Leucothoe fontanesiana*). Common herbs include many of the those found in the other forest communities. In addition, Spanish bayonet (*Yucca filamentosa*), rushes (*Juncus* spp.), and sedges (*Carex* spp.) are present.

MANAGEMENT AND PROTECTION: This site has no formal protection, but is well suited for potential conservation. The Acidic Cove Forest should be managed for old growth conditions and the removal of invasive plant species is desirable.

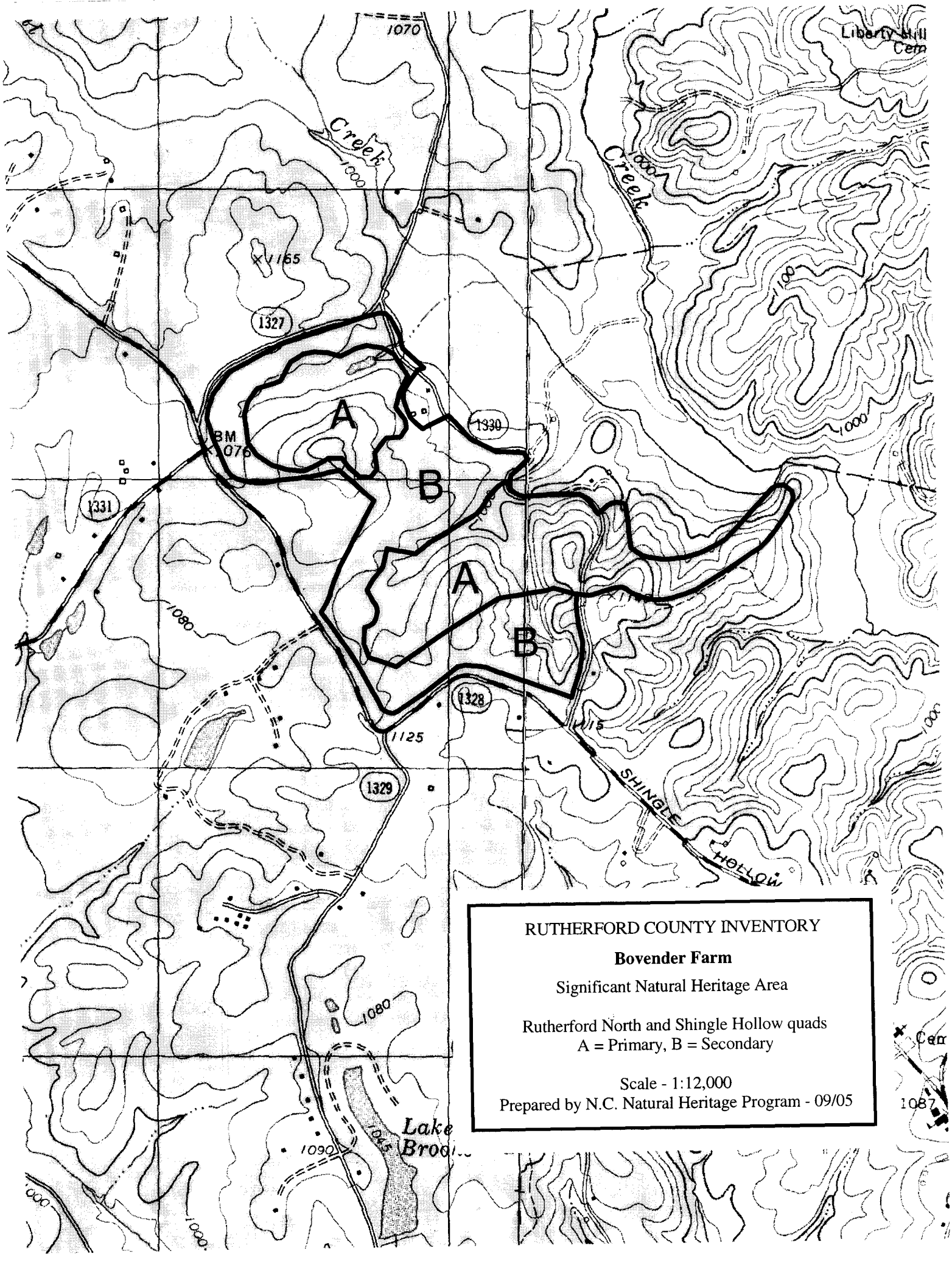
NATURAL COMMUNITIES: Acidic Cove Forest, Dry-Mesic Oak-Hickory Forest, and Piedmont/Low Mountain Alluvial Forest.

RARE PLANTS: Watch list – spotted Joe-pye (*Eupatoriadelphus maculatus*), galax (*Galax urceolata*), roundleaf ragwort (*Packera obovata*), showy skullcap (*Scutellaria serrata*), and little sweet Betsy (*Trillium cuneatum*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2004. Site Survey Report: Anderson Shoal Natural Area. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Bovender Farm

Significant Natural Heritage Area

Rutherford North and Shingle Hollow quads
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

BOVENDER FARM
Significant Natural Heritage Area

Site Significance: State
Quadrangles: Rutherfordton North and Shingle Hollow
Size: 263 acres (139 primary; 124 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site has fair examples of three community types. It is also home to three rare plant species, which include the only known extant population of the Significantly Rare dwarf chinquapin oak (*Quercus prinoides*) in the state.

LANDSCAPE RELATIONSHIPS: This site is located in north-central Rutherford County, in the western Piedmont 2.5 miles south of the South Mountains/Foothill Megasite. Piney Knob Bog and Slope is located one mile to the west. Roughly 2.75 miles to the northwest are Shoal Ridge, and Upper Catheys Creek/Harris Mountain. Rockey Face Mountain and Cedar Knob is located 4.3 miles to the northeast.

SITE DESCRIPTION: This site is a series of rolling hills and valleys within two separate areas of predominantly northeast running slopes that contain small spur ridges and coves reaching downslope to Catheys Creek. The land between the two areas are lightly forested areas or cattle pastures that are currently in use.

Along Catheys Creek and two small unnamed streams are fair examples of a Piedmont/Low Mountain Alluvial Forest. The canopy trees are those typical in a floodplain forest with river birch (*Betula nigra*), tulip poplar (*Liriodendron tulipifera)*, red maple (*Acer rubrum*), box elder (*Acer negundo*), and sycamore (*Platanus occidentalis*) present. Once out of the immediate floodplain on higher ground, oaks (*Quercus* spp.), hickories (*Carya* spp.), and pines (*Pinus* spp.) are common in the canopy. The understory consists of species such as ironwood (*Carpinus caroliniana*), sourwood (*Oxydendrum arboreum*), American holly (*Ilex opaca*), and Carolina silverbell (*Halesia tetraptera*). The shrub layer has sparkleberry (*Vaccinium arboreum*), strawberry bush (*Euonymus americanus*), and the invasive Chinese privet (*Ligustricum sinense*) present. Woody vines include greenbrier (*Smilax glauca*.), Virginia creeper *(Parthenocissus quinquefolia*), trumpet vine (*Campsis radicans*), poison ivy (*Toxicodendron radicans*), crossvine (*Bignonia capreolata*), and the invasive Japanese honeysuckle (*Lonicera japonica*). Herbs are diverse with river oats (*Chasmanthium latifolium*), river cane (*Arundinaria gigantea*), violet (*Viola* sp.), grape fern (*Botrychium* sp.), Christmas fern (*Polystichum acrostichoides*), touch-me-not (*Impatiens* sp.), and chickweed (*Stellaria media*) common.

A good example of a Dry-Mesic Oak–Hickory Forest is found through most of the upland slopes and ridgelines. This maturing forest has uneven-aged trees with reproduction occurring in the canopy gaps. Canopy dominants include white oak (*Quercus alba*), chestnut oak (*Q. montana*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), mockernut hickory (*C. alba*), pignut hickory (*C. glabra*), tulip poplar, and pines (*Pinus echinata and P. virginiana*). The understory is dominated by red maple

(*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and flowering dogwood (*Cornus florida*). A few dwarf chinquapin oak and downy serviceberry (*Amelanchier arborea*) are present as well. Shrubs include sparkleberry, lowbush blueberry (*Vaccinium pallidum*), deerberry (*V. stamineum*), and strawberry bush. Muscadine (*Vitis rotundifolia*), crossvine, and poison ivy are among the common woody vines present. The herb layer includes little brown jugs (*Hexastylis arifolia* var. *arifolia*), rattlesnake plantain (*Goodyera pubescens*), Appalachian golden banner (*Thermopsis mollis*), and thin-pod white wild indigo (*Baptisia albescens*), galax (*Galax urceolata*), goldenrods (*Solidago odora*, and *S. bicolor*), and naked trefoil (*Desmodium nudiflorum*).

MANAGEMENT AND PROTECTION: This site has some protection under conservation easements with the North Carolina Farm Preservation Program. Areas not currently protected would make a good project for further conservation.

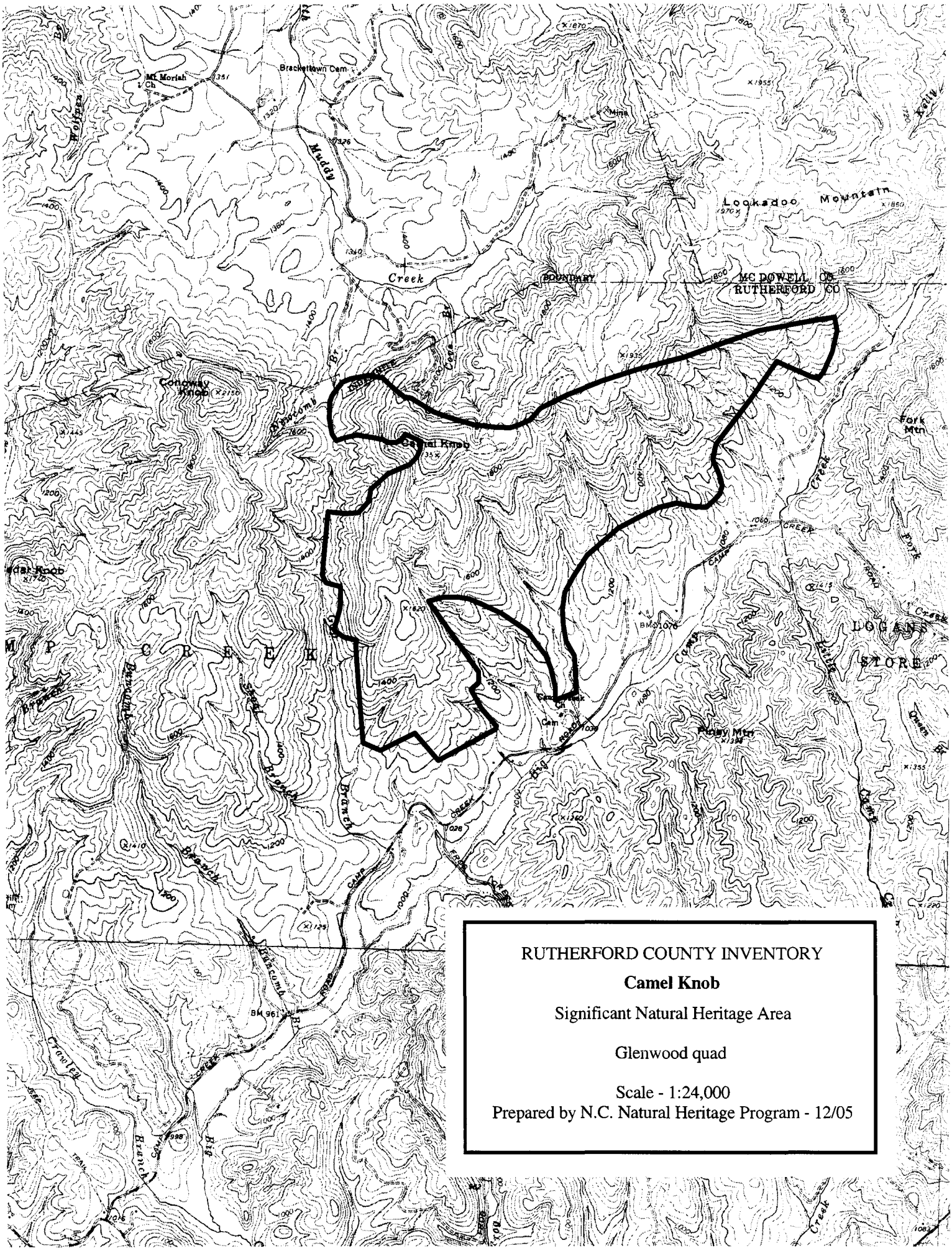
NATURAL COMMUNITIES: Piedmont/Low Mountain Alluvial Forest, Dry-Mesic Oak–Hickory Forest, and Chestnut Oak Forest.

RARE PLANTS: Appalachian golden banner (*Thermopsis mollis*), thin-pod white wild indigo (*Baptisia albescens*), and dwarf chinquapin oak (*Quercus prinoides*); Watch List – little sweet Betsy (*Trillium cuneatum*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2005. Site Survey Report: Bovender Farm. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Camel Knob

Significant Natural Heritage Area

Glenwood quad

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 12/05

Rutherford County Natural Area Inventory

CAMEL KNOB
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Glenwood
Size: 1,042 acres
Ownership: Private

SIGNIFICANT FEATURES: This site is significant for the landscape connection and cohesiveness it provides to other sites in the region. It also houses a population of the Significantly Rare Blue Ridge bindweed (*Calystegia catesbeiana* ssp. *sericata*).

LANDSCAPE RELATIONSHIPS: The location of the site, and the fact that there is little or no development, makes this site part of a corridor linking the Blue Ridge Escarpment to the west, and the South Mountains to the east. This site lies within the South Mountains/Foothills Megasite, and is just east of Rockey Face Mountain and Cedar Knob Significant Natural Heritage Area.

SITE DESCRIPTION: Despite being mostly undeveloped, this site has been subjected to extensive logging at various times in recent years, over large areas. A few ridgelines and coves have not been logged and they remain the higher quality areas. If allowed to regenerate, the logged areas could potentially become high quality areas again. Forest community types that occur include Acidic Cove, Montane Oak-Hickory and Dry Oak-Hickory, with smaller areas of Chestnut Oak Forest and Rich Cove Forest present.

Dry Oak-Hickory Forest is present along a few of the south-facing slopes and ridges. The canopy is a mosaic of white oak *(Quercus alba)*, chestnut oak (*Q. montana*), scarlet oak (*Q. coccinea*), northern red oak (*Q. rubra*), mockernut hickory (*Carya alba*) and pignut hickory (*C. glabra*). The understory is sparse with sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), sassafras (*Sassafras albidum*), and eastern red cedar (*Juniperus virginiana*) present. Along the more northerly slopes, dense patches of mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), and pinxter-flower (*Rhododendron periclymenoides*) are common. Vine species include Virginia creeper (*Parthenocissus quinquefolia*) and muscadine (*Vitis rotundifolia*). Common herbs include pipsissewa (*Chimaphila maculata*), naked trefoil (*Desmodium nudiflorum*), sedges (*Carex* spp.), partridgeberry (*Mitchella repens*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), and rattlesnake plantain (*Goodyera pubescens*), Blue Ridge bindweed**,** Virginia snakeroot (*Aristolochia serpentaria*), and St. Andrew's cross (*Hypericum hypericoides*).

Montane Oak-Hickory Forest is located along the upper slopes and ridgelines near Camel Knob. The canopy is semi-open to closed, with uneven aged trees and reproduction occurring in openings. It is dominated by oaks, hickories, and other hardwood species. Pines occurring in natural settings have been subject to southern pine bark beetle damage, but have not been completely destroyed. The understory is comprised of red maple, a few sourwood, flowering dogwood, and black gum. The shrub layer is sparse with a few small patches of mountain laurel scattered about as well as a few

deerberry, lowbush, and maple-leaf viburnum (*Viburnum acerifolium*). Common woody vines include muscadine, Virginia creeper, poison ivy (*Toxicodendron radicans*), and greenbrier (*Smilax glauca* and *S. rotundifolia*). Herbs are sparse with false Solomon's seal (*Maianthemum racemosum*), Solomon's seal *(Polygonatum biflorum)*, New York fern (*Thelypteris noveboracensis*), and bedstraw (*Galium* spp.) common.

Small areas of Acidic Cove Forest occur in a few coves. The canopy contains uneven aged mesophytic trees including tulip poplar, sweet birch (*Betula lenta*), Canada hemlock (*Tsuga canadensis*), yellow buckeye (*Aesculus flava*), basswood (*Tilia heterophylla*), and northern red oak. The understory generally includes Fraser magnolia (*Magnolia fraseri*), Carolina silverbell (*Halesia tetraptera*), and smaller canopy species. The dense shrub layer consists of great laurel, dog hobble (*Leucothoe fontanesiana*), and mountain laurel. Woody vines are not common, but a few crossvine (*Bignonia capreolata*), Virginia creeper, and greenbrier are present. The herb layer is not well developed, but does include a number of acidic loving species, and occasionally a few rich cove species in low numbers. Common herbs present are Christmas fern (*Polystichum acrostichoides*), black cohosh (*Cimicifuga racemosa*), partridgeberry, trailing arbutus (*Epigaea repen*s), New York fern, jack in the pulpit (*Arisaema triphyllum*), violet (*Viola* sp.), sedges (*Carex* spp.), and false Solomon's seal.

Areas of Chestnut Oak Forest are located along a few of the upper ridgelines. These grade into Montane Oak-Hickory Forest and possess many of the same canopy species. The herb layer is nearly the same, only slightly more diverse. One cove near the southeastern edge of the site has a small example of a Rich Cove Forest community which grades into a Dry Oak-Hickory Forest. The herb layer is diverse with little or no shrub layer; especially noticeable is the absence of a thick heath shrub layer of great laurel, gorge rhododendron, and mountain laurel which occurs upslope.

MANAGEMENT AND PROTECTION: This site has undergone extensive logging and should be managed as an early successional forest and allowed to mature back to a native vegetative forest community. This site has some conservation and protection value, as it is part of a corridor that extends across from the South Mountains westward to the Blue Ridge Escarpment.

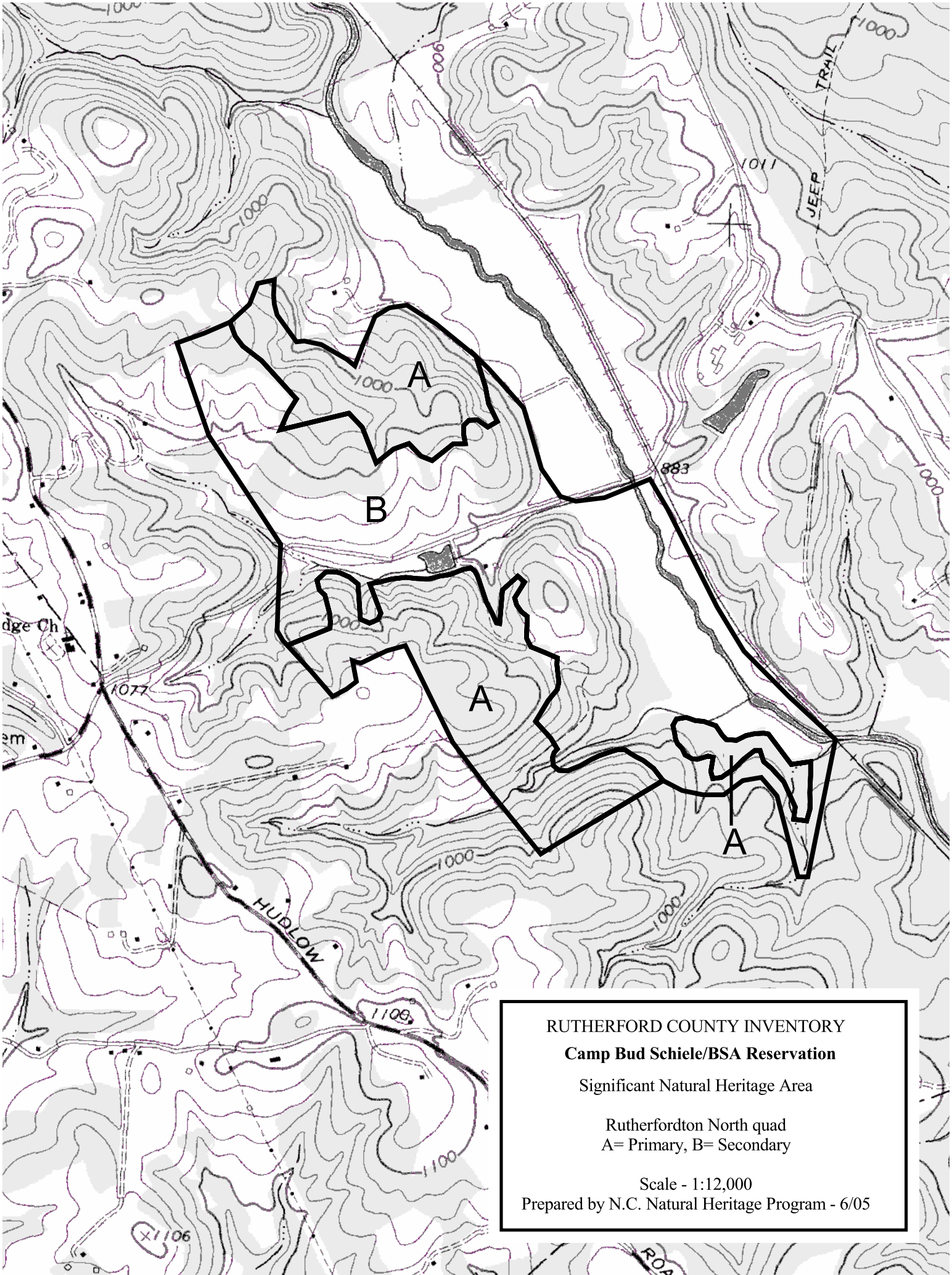
NATURAL COMMUNITIES: Dry Oak-Hickory Forest, Montane Oak-Hickory Forest, Acidic Cove Forest, Chestnut Oak Forest, and Rich Cove Forest.

RARE PLANTS: Blue Ridge bindweed (*Calystegia catesbeiana* ssp. *sericata*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: Camel Knob. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Camp Bud Schiele/BSA Reservation

Significant Natural Heritage Area

Rutherfordton North quad
A= Primary, B= Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 6/05

Rutherford County Natural Area Inventory

CAMP BUD SCHIELE/BSA RESERVATION
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Rutherfordton North
Size: 380 acres (143 primary; 237 secondary)
Ownership: Boy Scouts of America

SIGNIFICANT FEATURES: This site is significant for fair examples of several common community types and a small suite of Watch List plant species.

LANDSCAPE RELATIONSHIPS: This site, a series of rolling hills and coves, is located just west of Second Broad River, five air miles north-northeast of the town of Rutherfordton. It is also about two miles south of the South Mountains/Foothills Megasite and three miles southeast of Bovender Farm.

SITE DESCRIPTION: Dry-Mesic Oak-Hickory Forest comprises the majority of the site. It is located throughout the site on both lower and upper slopes. This is only a fair example of this common forest community. The canopy is dominated by a mosaic of oak and hickory species. Dominant oak species include white oak (*Quercus alba*), post oak (*Q. stellata*), southern red oak (*Q. falcata*), northern red oak (*Q. rubra*), bitternut hickory (*Carya cordiformis*), mockernut hickory (*C. alba*), and pignut hickory (*C. glabra*). Other canopy species include tulip poplar (*Liriodendron tulipifera*) and red maple (*Acer rubrum*). The sparse understory includes red maple, sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), and downy serviceberry (*Amelanchier arborea*). Common shrubs include sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), deerberry (*V. stamineum*), and strawberry bush (*Euonymus americanus*). Muscadine (*Vitis rotundifolia*) and poison ivy (*Toxicodendron radicans*) are common woody vine species. The herb layer includes rattlesnake plantain (*Goodyera pubescens*), pussy-toes (*Antennaria plantaginifolia*), pipsissewa (*Chimaphila maculata*), and partridgeberry (*Mitchella repens*).

A small wetland is at the south end of the site, along a small unnamed stream that flows into Second Broad River. It grades into a Piedmont/Low Mountain Alluvial Forest with river birch (*Betula nigra*), tulip poplar, box elder (*Acer negundo*), white ash (*Fraxinus pennsylvanica*), and red maple dominant in the canopy. The understory includes canopy species and also some ironwood (*Carpinus caroliniana*). Shrubs along the wetland portion include spicebush *(Lindera benzoin)*, sweet shrub *(Calycanthus floridus)*, and pinxter-flower *(Rhododendron periclymenoides)*. The invasive Chinese privet *(Ligustricum sinense)* is a dominant shrub along the river. Woody vine species are most dense towards the river with trumpet vine (*Campsis radicans*), poison ivy , and the invasive Japanese honeysuckle (*Lonicera japonica*) widespread. Common herbs include blue phlox (*Phlox divaricata* ssp. *divaricata*), touch-me-not (*Impatiens* sp.), bloodroot (*Sanguinaria canadensis*), devil's-bit (*Chamaelirium luteum*), New York fern (*Thelypteris noveboracensis*), little sweet Betsy (*Trillium cuneatum*), Catesby's trillium (*Trillium catesbaei*), Christmas fern (*Polystichum acrostichoides*), and ebony spleenwort (*Asplenium platyneuron*).

MANAGEMENT AND PROTECTION: The Boy Scouts have practiced good land stewardship on this tract. This site needs little or no management, but reducing human impacts in the more sensitive areas, such as wetlands, should be part of a management plan.

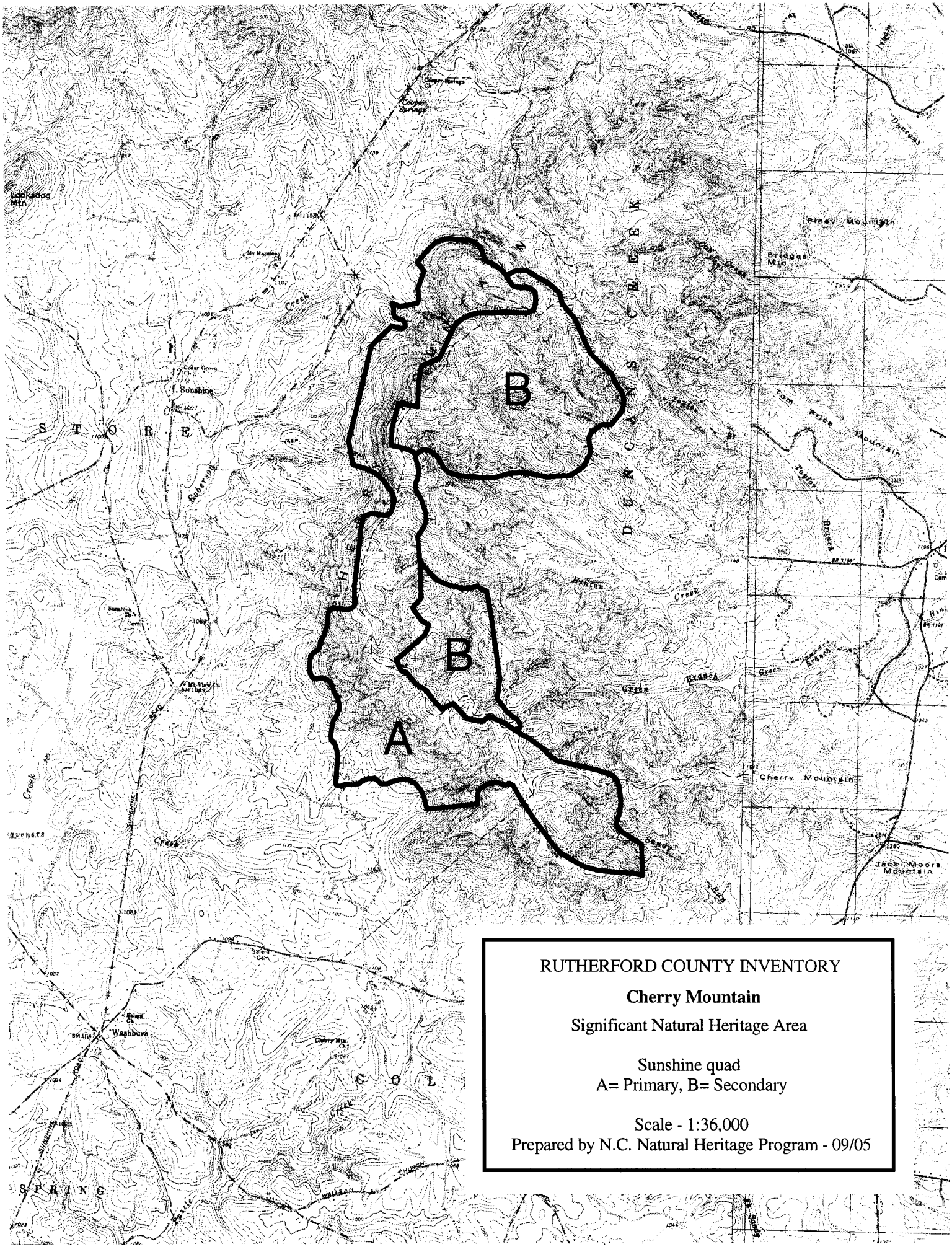
NATURAL COMMUNITIES: Dry-Mesic Oak–Hickory Forest, Chestnut Oak Forest, Dry Oak-Hickory Forest, Piedmont/Low Mountain Alluvial Forest.

RARE PLANTS: Watch List – blue phlox (*Phlox divaricata* ssp. *divaricata*), wafer ash (*Ptelea trifoliata*)**,** and little sweet Betsy (*Trillium cuneatum*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2005. Site Survey Report: Camp Bud Schiele/BSA Reservation. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Cherry Mountain

Significant Natural Heritage Area

Sunshine quad
A= Primary, B= Secondary

Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

CHERRY MOUNTAIN
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Sunshine
Size: 2,121 acres (1244 primary; 877 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site's significance stems from good examples of common forest communities. This site contains one rare plant species and one rare animal species. They are the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*) and the Significantly Rare timber rattlesnake (*Crotalus horridus*). Also present within the site are a suite of Watch List plant species.

LANDSCAPE RELATIONSHIPS: Located in the northeastern part of Rutherford County, this site lies within the South Mountains/Foothills Megasite, in the southern flank of the South Mountains that extends across the entire northern edge of Rutherford County. Cherry Mountain differs because it runs dramatically north to south into the Piedmont of Rutherford County rather than northeast with the majority of the range. Lisenberry Mountain lies 3.5 miles to the northeast, and Yellowtop/Biggerstaff Mountain is 1.25 miles to the northwest.

SITE DESCRIPTION: This site, located seven miles northeast of the town of Forest City, contains most of the moderately steep western-facing slope of Cherry Mountain as well as several valleys and ridgelines.

The predominant natural community type is Chestnut Oak Forest, which is found along ridgeline and upper slopes throughout. Former logging activities are evident throughout, as much of this community is at various stages in maturity with pockets of mature forest embedded. The dominant canopy species are chestnut oak (*Quercus montana*), northern red oak (*Q. rubra*), scarlet oak (*Q. coccinea*), pignut hickory (*Carya glabra*), and occasionally tulip poplar (*Liriodendron tulipifera*). The understory is comprised of sourwood (*Oxydendrum arboreum*), black gum (*Nyssa sylvatica*), flowering dogwood (*Cornus florida*), and downy serviceberry (*Amelanchier arborea*). Shrubs are sparse and include sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), scattered patches of mountain laurel (*Kalmia latifolia*), and strawberry bush (*Euonymus americanus*). Herb density and diversity varies with moisture and aspect. The more common herbs include white irisette, pipsissewa (*Chimaphila maculata*), Christmas fern (*Polystichum acrostichoides*), roundleaf ragwort (*Packera obovata*), Solomon's seal (*Polygonatum biflorum*), and the uncommon southern loosestrife (*Lysimachia tonsa*). The timber rattlesnake is known from this location.

At the summit, a fair quality Low Elevation Rocky Summit exists at two small locations within the site. They are surrounded by Chestnut Oak Forest above and below with an occasional bitternut hickory (*Carya cordiformis*), scarlet oak, white oak (*Quercus alba*), red maple (*Acer rubrum*), and black gum present. Woody vine species dominate large portions of the rock surface with Virginia

creeper (*Parthenocissus quinquefolius*), butterfly pea (*Clitoria mariana*), virgin's bower (*Clematis virginiana*), poison ivy (*Toxicodendron radicans*), and Japanese honeysuckle (*Lonicera japonica*) growing on the flat surfaces of the rock and the surrounding shallow soils. Near the rock outcrops ginseng (*Panax quinquefolius*), southern harebell (*Campanula divaricata*), and zigzag spiderwort (*Tradescantia subaspera*) grow. On the rock outcrops, mountain spleenwort (*Asplenium montanum*), ebony spleenwort (*Asplenium platyneuron*), and bladder fern (*Cystopteris protrusa*) are present.

A Dry-Mesic Oak-Hickory Forest community occurs along the middle and lower slopes. The canopy is generally closed and dominated by white oak, scarlet oak, chestnut oak, mockernut hickory **(***Carya alba*), pignut hickory, bitternut hickory, and red maple. The understory is comprised of canopy species, sourwood, and black gum. Shrubs are sparse to patchy with mountain laurel, sweet shrub (*Calycanthus floridus*), spicebush (*Lindera* benzoin), strawberry bush, and wafer ash (*Ptelea trifoliata*) present. Herbs along the lower slopes and around the few seep areas include roundleaf ragwort (*Packera obovata*), southern loosestrife (*Lysimachia tonsa*), pipsissewa (*Chimaphila maculata*), Saint Andrew's cross (*Hypericum hypericoides*) Christmas fern (*Polystichum acrostichoides*), partridge berry (*Mitchella repens*), wood sorrel (*Oxalis* sp.), and sedges (*Carex pennsylvanicum* and *C. stricta*).

MANAGEMENT AND PROTECTION: There is no formal protection of this site. Protection of the rocky summit with adequate buffers is desirable. With past logging evident throughout the site, maturation of these cut areas should be allowed, and a management plan implemented. This site has great potential as a conservation project.

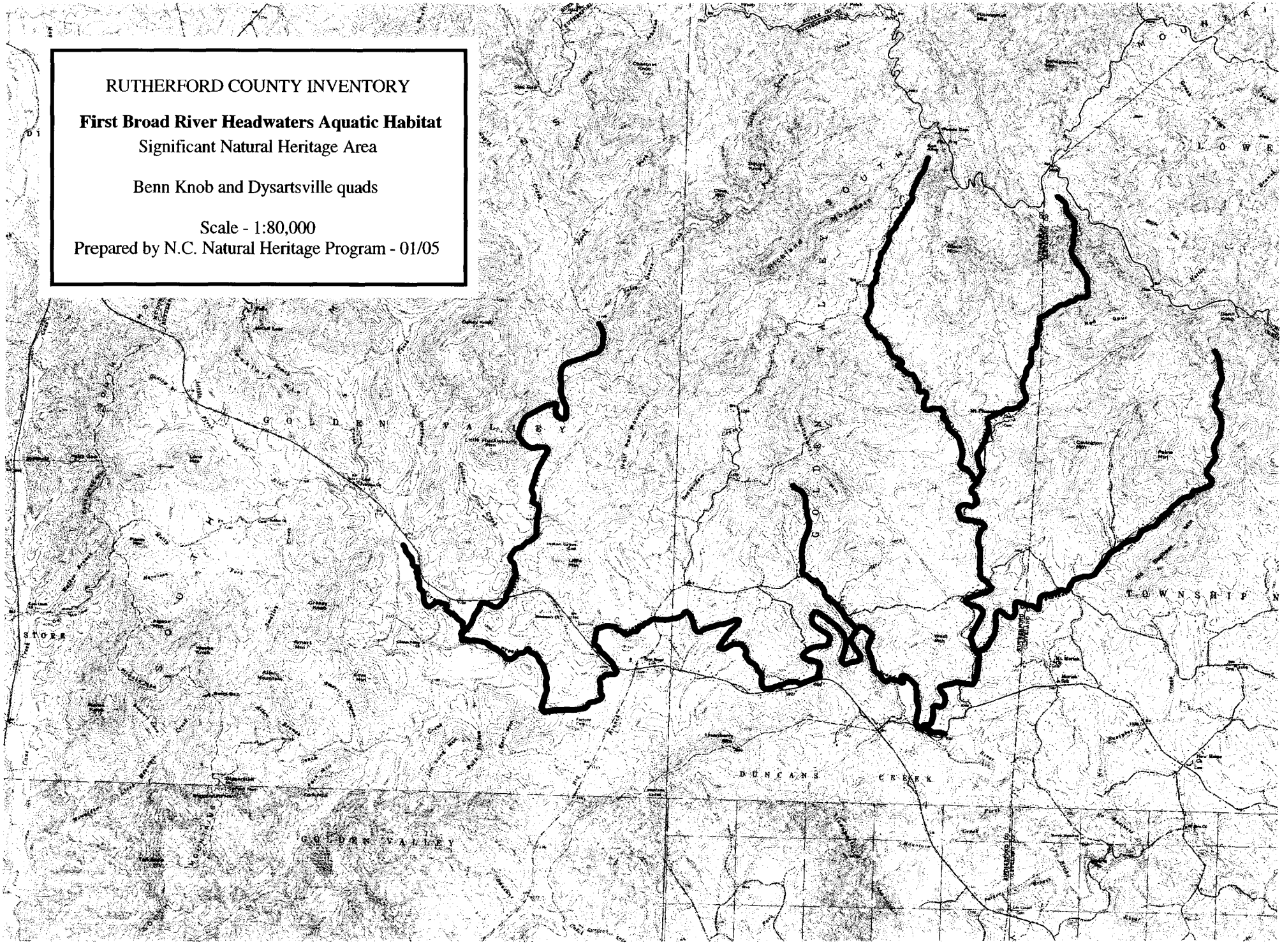
NATURAL COMMUNITIES: Chestnut Oak Forest, Dry-Mesic Oak-Hickory Forest, and Low Elevation Rocky Summit.

RARE PLANTS: white irisette (*Sisyrinchium dichotomum*); Watch List – roundleaf ragwort (*Packera obovata*), wafer ash (*Ptelea trifoliata*), white-leaf sunflower (*Helianthus glaucophyllus*), galax (*Galax urceolata*) southern loosestrife (*Lysimachia tonsa*), and ginseng (*Panax quinquefolius*).

RARE ANIMALS: Timber rattlesnake (*Crotalus horridus*).

REFERENCES:

Padgett, J. E. 2005 Site Survey Report: Cherry Mountain. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


RUTHERFORD COUNTY INVENTORY
First Broad River Headwaters Aquatic Habitat
Significant Natural Heritage Area
Benn Knob and Dysartsville quads
Scale - 1:80,000
Prepared by N.C. Natural Heritage Program - 01/05
GOLDEN VALLEY
DUNCANS CREEK
GOLDEN VALLEY

Rutherford County Natural Areas Inventory

FIRST BROAD RIVER HEADWATERS AQUATIC HABITAT

Site Significance: National
Quadrangles: Benn Knob, Dysartsville
Length: Approximately 26.6 stream miles
O**wnership**: North Carolina Public Waters

SIGNIFICANT FEATURES: This site is home to the Significantly Rare Broad River stream crayfish (*Cambarus lenati*) and is an area of good water quality that is protected by public lands.

LANDSCAPE RELATIONSHIPS: The south flank of the South Mountains range lies just north of the main stem of the First Broad River. Several streams in the aquatic habitat flow through Rollins/South Mountains Natural Area, including the headwaters of Pheasant Creek in Cleveland County, and Pot Branch and the headwaters of Brier Creek in Rutherford County. The lower reaches of Pheasant Creek, North Fork/Sally Queen Creek, and most of the main stem of the First Broad River are situated just south of protected areas in the South Mountains. Portions of this aquatic site are situated in a rural landscape that is forested, pastured, and cleared. Camp Knob (Cleveland County) lies just east of the upper reaches of Pheasant Creek.

SITE DESCRIPTION: This site is located in northeastern Rutherford County, but also includes stream sections in northwestern Cleveland County. Well over 20 miles of moderate to high gradient stream habitat are contained within the site. The main stem of the First Broad River comprises almost half of the site. Other primary parts of the site include most of the North Fork/Sally Queen Creek drainage, all of Pot Branch/Brier Creek, and all of Pheasant Creek. Most of Pheasant Creek and the uppermost one-mile segment of Brier Creek are located in Cleveland County. The west end of the aquatic habitat starts where the First Broad River arises, at the confluence of the Little First Broad River and Grayson Creek. The downstream end of the habitat is about 0.25 miles below the confluence of the First Broad River and Brier Creek, and about 0.75 miles west of the Cleveland/Rutherford County line. Wide meanders characterize the main stem of the First Broad River, and to a lesser degree, the tributary streams.

The healthy streams within the aquatic habitat support many of the known locations for the Broad River stream crayfish (*Cambarus lenati*). The crayfish has been recorded from Pheasant Creek in Cleveland County and from Brier Creek, Pot Branch, First Broad River, and an unnamed tributary of the First Broad River, all in Rutherford County. It is considered to be globally imperiled. The species appears to require small to moderate size streams with good water quality and adequate levels of trapped hardwood leaf litter. The greatest direct threat to the species is the construction of impoundments. Other threats include water pollution, removal of forest cover in upstream areas of occupied habitat, or conversion of adjacent lands to pine plantations.

MANAGEMENT AND PROTECTION: Sections of the aquatic habitat contained in Rollins/South Mountains Natural Area (a part of South Mountains Game Land, managed by N.C. Wildlife Resources Commission) are part of the South Mountains Dedicated State Nature Preserve and are

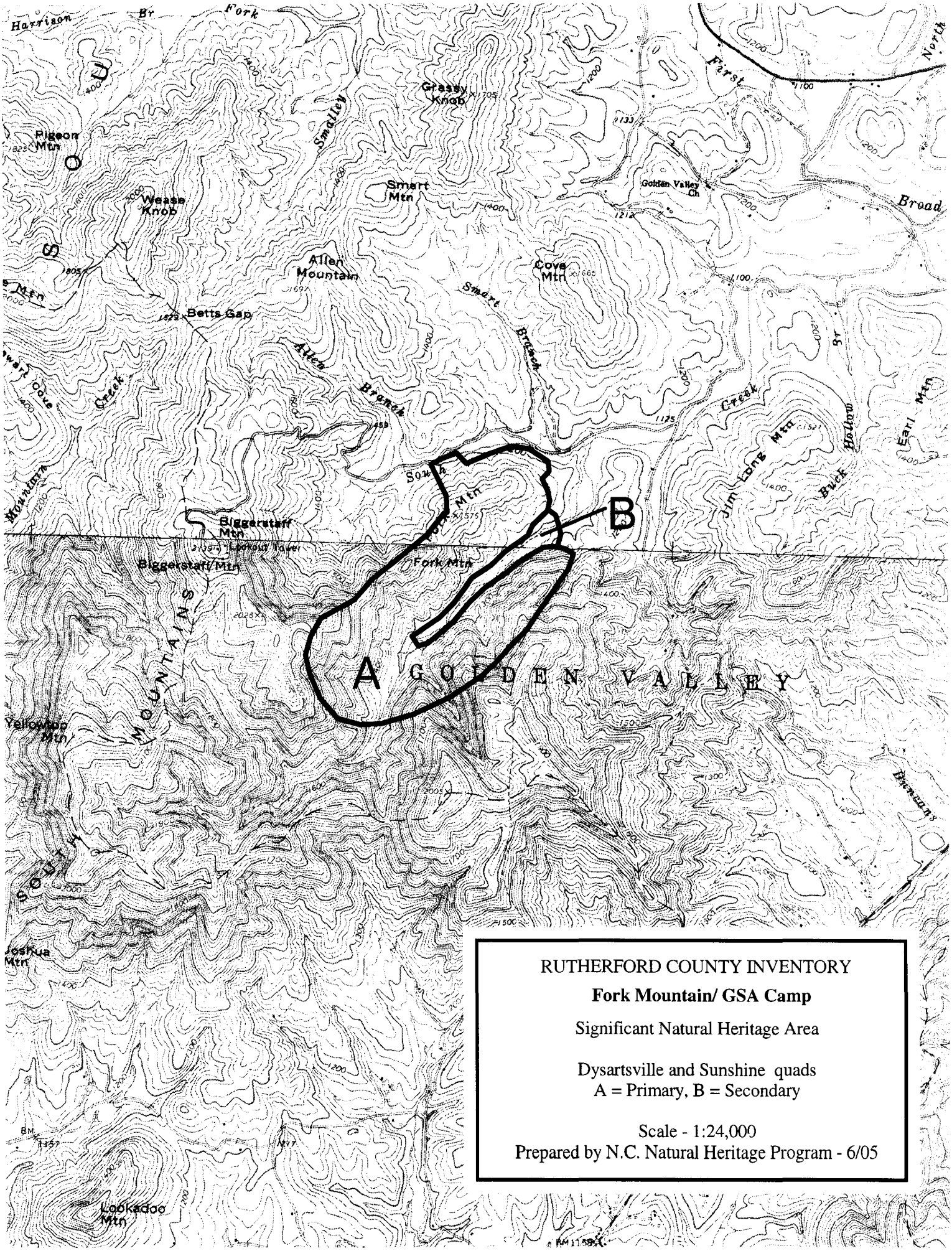
protected by stream buffers. The remainder of the site has no formal protection. Although measurements taken by N.C. Division of Water Quality indicate good water quality throughout the aquatic habitat, a special status such as High Quality Water (HQW) has not been designated.

RARE ANIMALS: Broad River stream crayfish (*Cambarus lenati*).

REFERENCES:

Cooper, J. E. 2000. A New Species of Crayfish of the Genus CAMBARUS, subgenus CAMBARUS (Decapoda: Cambaridae) from the Broad River Basin of North Carolina. Journal of the Elisha Mitchell Society, 116(1): 1-12.

Oakley, S. C. 2002. Inventory of the Natural Areas of Cleveland County, North Carolina. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Fork Mountain/ GSA Camp

Significant Natural Heritage Area

Dysartsville and Sunshine quads
A = Primary, B = Secondary

Scale - 1:24,000
Prepared by N.C. Natural Heritage Program - 6/05

Rutherford County Natural Area Inventory

FORK MOUNTAIN/GSA CAMP
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Dysartsville and Sunshine
Size: 351 acres (325 primary; 26 secondary)
Ownership: Pioneer Girl Scouts Council, Private

SIGNIFICANT FEATURES: This site contains examples of several common community types and possesses one of the few populations of the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*) in the South Mountains. A suite of Watch List plant species is also present within this site.

LANDSCAPE RELATIONSHIPS: This site is situated within the South Mountains/Foothills Megasite in north-central Rutherford County four miles from the McDowell County line, and lies nearly enclosed within the adjacent Yellowtop/Biggerstaff Mountain site. Other significant natural areas near this site include the South Mountains Macrosite, the Rollins/South Mountains Natural Area, First Broad River Headwater Aquatic Habitat, Lisenberry Mountain, and Cherry Mountain.

SITE DESCRIPTION: This site is a creek valley surrounded by moderately steep slopes with narrow ridgelines. The site is located midway along South Creek, as it flows from the mountain into the First Broad River. The site contains several common forest community types.

A good quality Mesic Mixed Hardwood Forest runs along the creek. The canopy is closed except along the creek and in anthropogenic clearings. The canopy is dominated by species such as tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), beech (*Fagus grandifolia*), sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), and river birch (*Betula nigra*). The understory and shrub layer contains witch hazel (*Hamamelis virginiana*), ironwood (*Carpinus caroliniana*), Carolina silverbell (*Halesia tetraptera*), and tag alder (*Alnus serrulata*). Common herbs include New York fern (*Thelypteris noveboracensis*), broad beech fern (*Phegopteris hexagonoptera*), beechdrops (*Epifagus virginiana*), reed (*Juncus effusus*), and panic grass (*Panicum* sp.).

The southeast-facing slopes contain a Dry-Mesic Oak–Hickory Forest along the lower slopes and a Chestnut Oak Forest along the upper slopes. The canopy is generally closed with the dominant species being white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), chestnut oak (*Q. montana*), northern red oak (*Q. rubra*), mockernut hickory (*Carya alba*), tulip poplar, and black gum (*Nyssa sylvatica*). The understory and shrub layer has sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), and mountain laurel (*Kalmia latifolia*). The herb layer has white irisette, roundleaf ragwort (*Packera obovata*), large yellow lady's-slipper (*Cypripedium parviflorum* var. *pubescens*), pipsissewa (*Chimaphila maculata*), poverty grass (*Danthonia* sp.), Christmas fern (*Polystichum acrostichoides*), and goldenrods (*Solidago* spp.).

The northwest-facing slope has higher moisture levels being near the creek and sheltered. Drier conditions occur upslope. The lower slopes contain a Dry-Mesic Oak–Hickory Forest and the upper slopes have small examples of embedded Pine-Oak/Heath. Shrubs are comprised of dense areas of great laurel (*Rhododendron maximum*) and mountain laurel. Along the creek the herb layer is very diverse with species such as little brown jugs (*Hexastylis arifolia* var. *arifolia*), variable-leaf heartleaf (*Hexastylis heterophylla*), liverleaf (*Hepatica americana*), alumroot (*Heuchera americana*), foam flower (*Tiarella cordifolia*), and rattlesnake plantain (*Goodyera pubescens*).

The shrub layer in this Pine-Oak/Heath Forest community type is dominated by heath species that include sparkleberry (*Vaccinium arboreum*), deerberry (*V. stamineum*), pinxter-flower (*Rhododendron periclymenoides*), and lowbush blueberry (*V. pallidum*). The herb layer has poverty grass (*Danthonia* sp.), broomsedge (*Andropogon virginicus*), pipsissewa, yellow stargrass (*Hypoxis hirsuta*), and cinquefoil (*Potentilla canadensis*) present.

MANAGEMENT AND PROTECTION: The owners of the Pioneer Girl Scout Camp have selectively logged the slopes, and dead pines have been removed from the dry ridgelines. This may have some detrimental effects on the overall quality of the site, but if it is allowed to regenerate naturally and managed as a natural area, the forest community integrity should be regained over time.

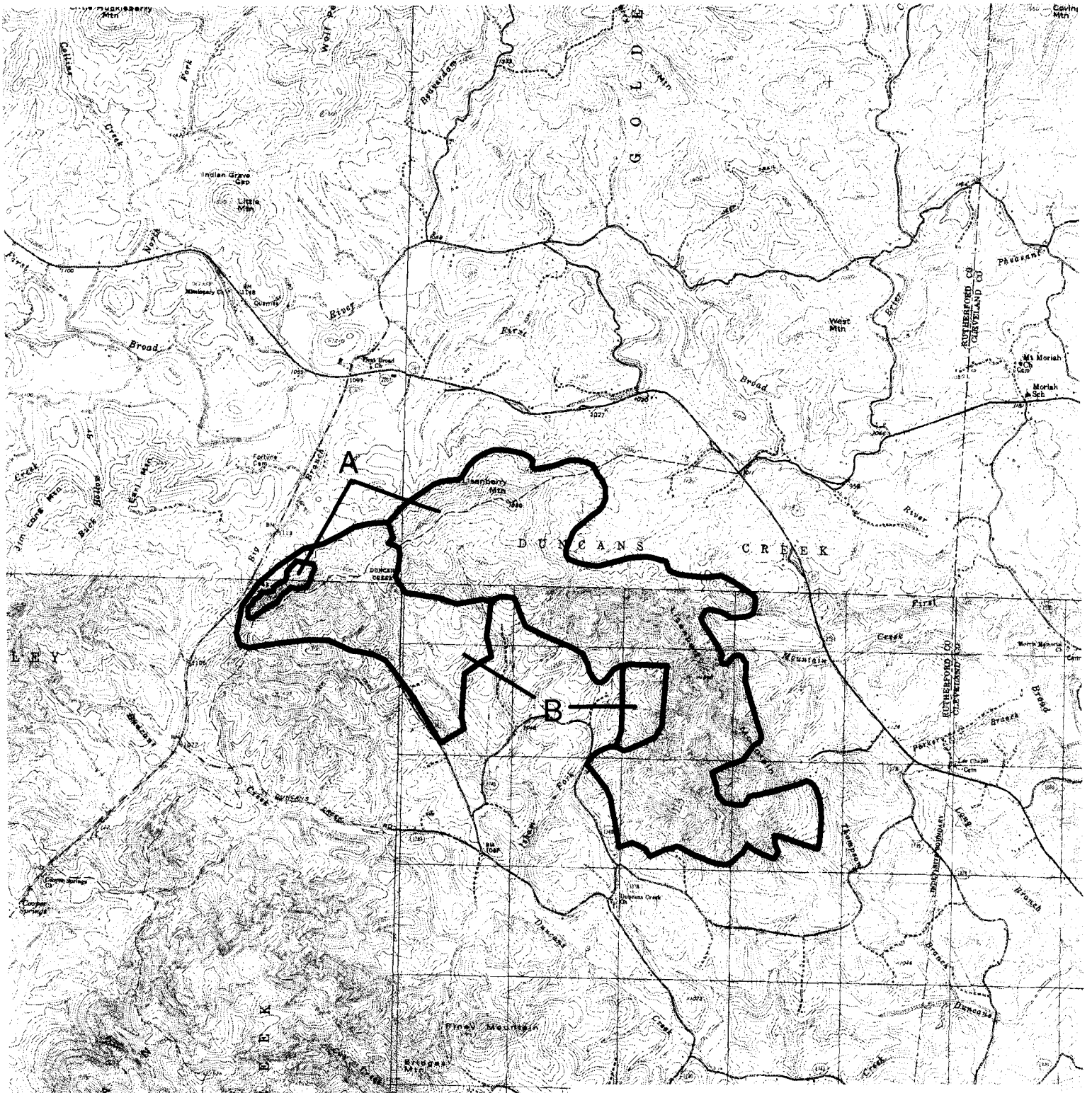
NATURAL COMMUNITIES: Chestnut Oak Forest, Dry-Mesic Oak–Hickory Forest, Mesic Mixed Hardwood Forest, and Pine-Oak/Heath.

RARE PLANTS: White irisette (*Sisyrinchium dichotomum*); Watch List – large yellow lady's-slipper (*Cypripedium parviflorum* var. *pubescens*), and roundleaf ragwort (*Packera obovata*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2004. Site Survey Report: Fork Mountain. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Lisenberry Mountain Natural Area

Significant Natural Heritage Area

Benn Knob, Dysartsville, Polkville,
and Sunshine quads

A = Primary, B = Secondary
Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

LISENBERRY MOUNTAIN
Significant Natural Heritage Area

Site Significance: Regional
Quadrangles: Benn Knob, Dysartsville, Polkville, Sunshine

Size: 1,404 acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains good to excellent examples of extensive mature forest community types. The extent of these forest communities as well as the presence of the Significantly Rare Godfrey's thoroughwort (*Eupatorium godfreyanum*) within the site, lends to the overall significance. Alabama grape fern (*Botrychium jenmanii*) has been reported just south of this site.

LANDSCAPE RELATIONSHIPS: This site is located in the northeastern portion of Rutherford County near Cleveland County and just south of NC Hwy 226. This site lies within the South Mountains/Foothills Megasite, just south of the Rollins/South Mountains Natural Area and the South Mountains Macrosite.

SITE DESCRIPTION: This site consists of series of moderate to steep slopes with long narrow ridgelines and numerous spur ridges that extend for approximately five miles in a U-shaped ring facing southwest above the surrounding valley.

Chestnut Oak Forest, a common forest community type found throughout the South Mountains region is dominant throughout this site's upper slopes and ridge tops. The canopy is fairly closed with pockets of open canopy occurring in tree fall gaps. Dominant canopy species include chestnut oak (*Quercus montana*), northern red oak (*Q. rubra*), and white oak (*Q. alba*). Scarlet oak (*Q. coccinea*), pignut hickory (*Carya glabra*), and tulip poplar (*Liriodendron tulipifera*) are scattered through the canopy as well. The understory is sparse with sourwood (*Oxydendrum arboreum*), red maple (*Acer rubrum*), and black gum (*Nyssa sylvatica*) common. Common shrubs are sparkleberry (*Vaccinium arboreum*), deerberry (*V. stamineum*), lowbush blueberry (*V. pallidum*), and maple-leaf viburnum (*Viburnum acerifolium*). Woody vines include Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), and muscadine (*Vitis rotundifolia*). The herbaceous layer possess pipsissewa (*Chimaphila maculata*), trailing arbutus (*Epigaea repens*), partridgeberry (*Mitchella repens*), Virginia snakeroot (*Aristolochia serpentaria*), asters (*Asters* spp.), blackberry (*Rubus* sp.), jumpseed (*Persicaria virginiana*), Solomon's seal (*Polygonatum biflorum*), Pokeweed (*Phytolacca americana*), poverty grass (*Danthonia* sp.), and broom sedge (*Andropogon virginicus*).

From midslope down to the valley below, the dominant community type is Dry-Mesic Oak-Hickory Forest. The canopy is a mixture of co-dominant oak and hickory tree species that include white oak, scarlet oak, southern red oak (*Quercus falcata*), northern red oak, mockernut hickory (*Carya alba*), pignut hickory, and bitternut hickory (*Carya cordiformis*). Mesophytic tree species such as tulip

poplar, red maple, yellow buckeye (*Aesculus flava*), and beech (*Fagus grandifolia*) are scattered in the canopy where conditions are favorable. The understory is diverse and contains canopy species as well as sourwood, black gum, and a few flowering dogwood (*Cornus florida*). The shrub layer varies in diversity according to aspect and moisture. Along more northerly slopes in acidic soils, the common shrubs are great laurel (*Rhododendron maximum*), gorge rhododendron (*R. minus*), and mountain laurel (*Kalmia latifolia*). They often form thick patches along with sparkleberry, deerberry, and lowbush blueberry. On other various slopes with an open understory, common shrubs include maple-leaf viburnum, strawberry bush (*Euonymus americanus*), sweet shrub (*Calycanthus floridus*), and sassafras (*Sassafras albidum*). Woody vines are diverse within this community type and include muscadine, poison ivy, coral honeysuckle (*Lonicera sempervirens*), Virginia creeper, and the invasive Japanese honeysuckle (*Lonicera japonica*). Herbs include black cohosh (*Cimicifuga racemosa*), false Solomon's seal (*Maianthemum racemosum*), pipsissewa, variable leaf heartleaf (*Hexastylis heterophylla*), Indian tobacco (*Lobelia inflata*), blue-eyed grass (*Sisyrinchium mucronatum*), and bloodroot (*Sanguinaria canadensis*).

Small good quality examples of Acidic Cove Forest are embedded throughout the site in sheltered coves. The closed canopy is comprised of a combination of acid-tolerant mesophytic trees such as tulip poplar, cucumber tree (*Magnolia acuminata*), Canada hemlock (*Tsuga canadensis*), Fraser magnolia (*M. fraseri*), sweet birch (*Betula lenta*), northern red oak, and chestnut oak. The understory has red maple, flowering dogwood, Carolina silverbell (*Halesia tetraptera*), witch hazel (*Hamamelis virginiana*), and black gum. The common shrub layer species include sweet shrub, spicebush (*Lindera benzoin*), mountain laurel, pinxter-flower (*Rhododendron periclymenoides*), hydrangea (*Hydrangea arborescens*), and low bush blueberry. Some of the more common herbs present in acidic coves are black cohosh, Christmas fern, New York fern (*Thelypteris noveboracensis*), beech fern (*Phegopteris hexagonoptera*), mayapple (*Podophyllum peltatum*), and rattlesnake plantain (*Goodyera pubescens*). Occasionally herbs generally found in more rich coves occur in small numbers in acidic coves. Examples of these are maidenhair fern (*Adiantum pedatum*), and ginseng (*Panax quinquefolius*).

MANAGEMENT AND PROTECTION: This site has no formal protection but is well suited as a potential protection/conservation project. The mature Chestnut Oak Forest should be managed for old growth conditions, and the removal of invasive plant species is desirable.

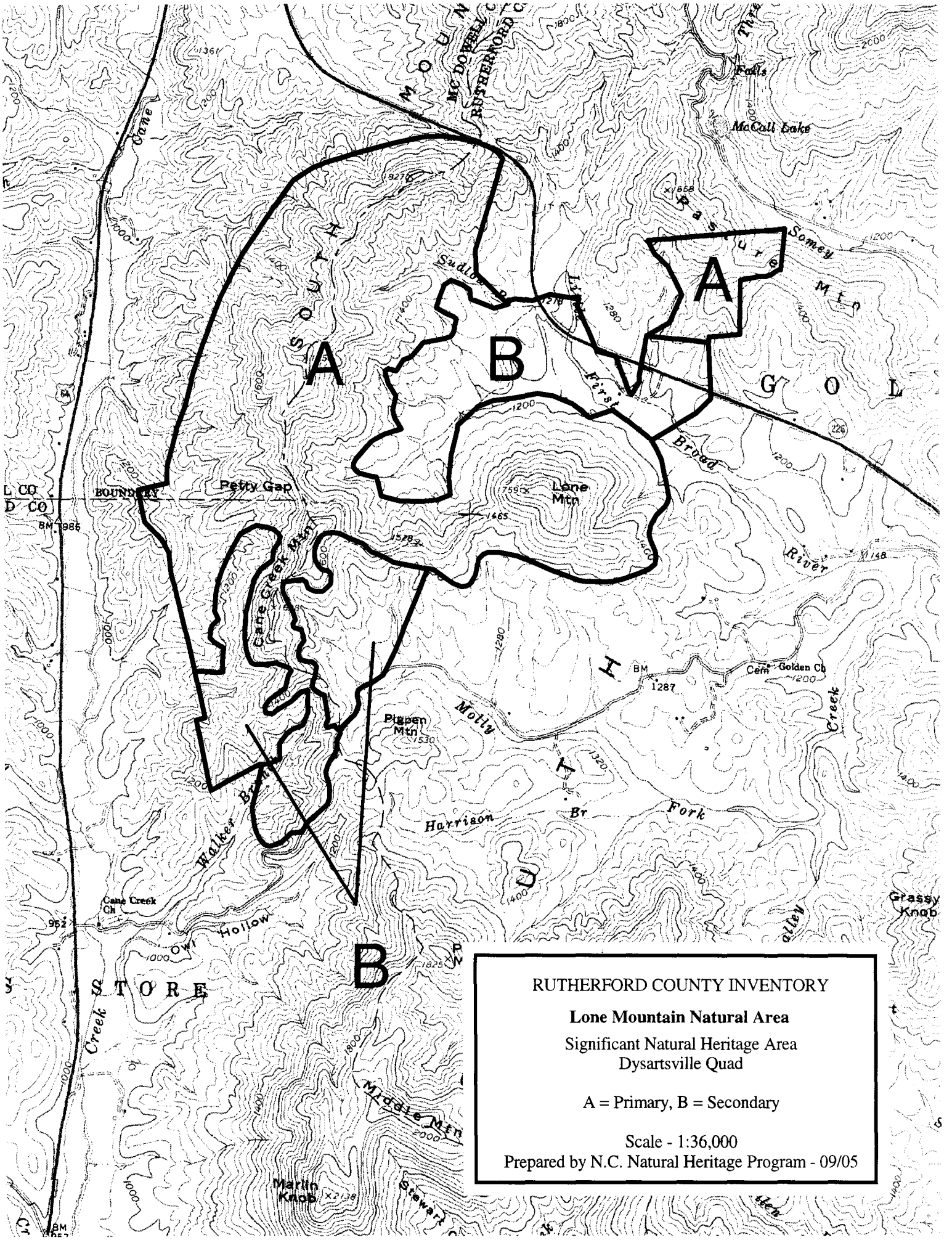
NATURAL COMMUNITIES: Chestnut Oak Forest, Dry Oak-Hickory Forest, Dry Mesic Oak-Hickory Forest, and Acidic Cove Forest.

RARE PLANTS: Godfrey's thoroughwort (*Eupatorium godfreyanum*), Alabama grape fern (*Botrychium jenmanii*); Watch List – ginseng (*Panax quinquefolius*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: Lisenberry Mountain. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


A
B
A
B
B
RUTHERFORD COUNTY INVENTORY
Lone Mountain Natural Area
Significant Natural Heritage Area
Dysartsville Quad
A = Primary, B = Secondary
Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Areas Inventory

LONE MOUNTAIN NATURAL AREA
Significant Natural Heritage Area

Site Significance: State
Quadrangle: Dysartsville
Size: 1,439 acres (1022 primary; 417 secondary)
Ownership: State of North Carolina

SIGNIFICANT FEATURES: The site contains good examples of four natural community types. This site also houses nine rare plant species, of which sweet pinesap (*Monotropsis odorata*) is a Federal Species of Concern. Also present within the site is a large suite of Watch List plant species.

LANDSCAPE RELATIONSHIPS: This site has a good landscape connection to one of the largest expanses of natural land in the western Piedmont, the Rollins/South Mountains Natural Area. The N.C. Highway 226 corridor is the primary division between these sites. Yellowtop/Biggerstaff Mountain, adjacent to the south, is also is part of the landscape of significant sites located along the McDowell-Rutherford County line.

SITE DESCRIPTION: The Lone Mountain Natural Area lies at the southernmost end of the South Mountain range, in Rutherford and McDowell Counties. Some of the information about this site was discovered during the McDowell County Natural Areas Inventory (Oakley 2005). Most of the site lies in Rutherford County, except for the west-facing slopes of South Mountain, which trail over into McDowell County. The site contains habitats for populations of nine rare plant species. Lone Mountain is a prominent outlier peak. Most of the site lies below 1800 feet in elevation. About one-fourth of the site is comprised of grassy clearings that contain a large population of the Significantly Rare Godfrey's thoroughwort (*Eupatorium godfreyanum*) growing throughout them. Several intermittent streams that form the headwaters of the First Broad River are contained within the cleared area. The adjacent forested lands are typical of the foothills region, with moderately steep slopes, convoluted ridges, and occasional knobs and peaks facing in various directions.

Chestnut Oak Forest is predominant on the drier uplands in the site, occurring on upper slopes and ridge crests from South Mountain to Cane Creek Mountain, as well as on Lone Mountain. It has a canopy dominated by chestnut oak (*Quercus montana*), in a mixture with northern red oak (*Q. rubra*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), and tulip poplar (*Liriodendron tulipifera*). The understory supports canopy species, red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), serviceberry (*Amelanchier arborea*), and black gum (*Nyssa sylvatica*). The shrub layer is variable, but supports frequent patches of great laurel (*Rhododendron maximum*), mountain laurel (*Kalmia latifolia*), lowbush blueberry (*Vaccinium pallidum*), and maple-leaved viburnum (*Viburnum acerifolium*). The herb layer is moderately dense with typical species such as partridgeberry (*Mitchella repens*), Canadian snakeroot (*Sanicula canadensis*), galax (*Galax urceolata*), and pipsissewa (*Chimaphila maculata*). More open, rocky portions of these uplands support most of the localities for rare species such as yellow honeysuckle (*Lonicera flava*), Godfrey's thoroughwort, and rough blazing star (*Liatris aspera*).

Along the lower slopes are several good examples of Dry-Mesic Oak-Hickory Forest. This forest community is interspersed with both more mature and younger maturing forest. Several areas appear to be over circumnetural soils especially around the lower slopes of Lone Mountain. The canopy is dominated by several oak species including white oak (*Quercus alba*), scarlet oak, chestnut oak, as well as other dry upland oak species. Hickory species present in the canopy include mockernut hickory (*Carya alba*) and pignut hickory (*C. glabra*). The understory is composed of sourwood, flowering dogwood, and black gum. The shrub layer is represented by the mountain laurel, great laurel, and pinxter-flower (*Rhododendron periclymenoides*). The herb layer includes poverty grass (*Danthonia* spp.), pipsissewa (*Chimaphila maculata*), Virginia snakeroot (*Aristolochia serpentaria*), and sedges (*Carex* spp.). In areas where moisture levels are higher, partridgeberry, little brown jugs (*Hexastylis arifolia* var. *arifolia*), and rattlesnake plantain (*Goodyera pubescens*) commonly occur. The Significantly Rare Carolina thistle (*Cirsium carolinianum*) and Piedmont horsebalm (*Collinsonia tuberosa*) occur along old logging roads on the lower slopes of Lone Mountain, along with Virginia marbleseed (*Onosmodium virginianum*). Sweet pinesap (*Monotropsis odorata*), pink lady's slipper (*Cypripedium acaule*), autumn coralroot (*Corallorhiza odontorhiza*), and ginseng (*Panax quinquefolius*) can also be found in the herb layer. Smooth sunflower (*Helianthus laevigatus*) is reported from this location, but was not verified during this inventory.

Fair examples of Low Elevation Rocky Summit are found in a few locations on Cane Creek Mountain and Lone Mountain. At these locations the canopy bordering it is like that found in the Chestnut Oak Forest. The shrub layer representatives are often scattered mountain laurel, sassafras (*Sassafras albidum*), indigo bush (*Amorpha glabra)*, Carolina rose (*Rosa carolina*), and Georgia hackberry (*Celtis tenuifolia*). Woody vines include virgin's bower (*Clematis virginiana*), yellow honeysuckle, butterfly pea (*Clitoria mariana*), and Carolina milkvine (*Matelea carolinensis*). Herbs common to the rock outcrops include sunflowers (*Helianthus divaricatus, H. hirsutus* and *H. atrorubens*), flowering spurge (*Euphorbia corollata*), bottlebrush grass (*Hystrix patula*), goldenrod (*Solidago* sp.), Christmas fern (*Polystichum acrostichoides*), Godfrey's thoroughwort, blue curls (*Trichostema dichotomum*), Virginia stick-seed (*Hackelia virginiana*), nettleleaf noseburn (*Tragia urticifolia*), and blackberry (*Rubus* sp.).

Large open meadows/grassy areas are located between South Mountain and Lone Mountain. Godfrey's thoroughwort is common throughout the grassy areas along with herbaceous species such as sessile-leaf eupatorium (*Eupatorium sessilifolium*), boneset (*Eupatorium perfoliatum*), common roundleaf eupatorium (*Eupatorium rotundifolium*), hyssopleaf eupatorium (*Eupatorium hyssopifolium*), Vasey's eupatorium (*Eupatorium vaseyi*), dog fennel (*Eupatorium capillifolium*), purple-node Joe-pye-weed (*Eupatoriadelphus purpureus*), hollow stem Joe-pye-weed (*Eupatoriadelphus fistulosus*), blazing star (*Liatris* sp.), sunflowers (*Helianthus* spp.), Indian grass (*Sorghastrum nutans*), gall-of-the-earth (*Prenanthes trifoliolata*), rosinweed (*Silphium compositum* var. *reniforme*), nettleleaf noseburn, and gerardia (*Agalinis tenuifolia*).

MANAGEMENT AND PROTECTION: This site is owned and managed by the North Carolina Wildlife Resources Commission as a state game land. Much of the site is proposed as a Dedicated State Nature Preserve. Grassy fields within the secondary buffer are being converted from fescue to native warm-season grasses in order to enhance wildlife habitat. With the presence of Godfrey's thoroughwort in the fields, a management plan for that species should be implemented.

NATURAL COMMUNITIES: Chestnut Oak Forest, Dry-Mesic Oak–Hickory Forest, Piedmont/Low Mountain Alluvial Forest, and Low Elevation Rocky Summit.

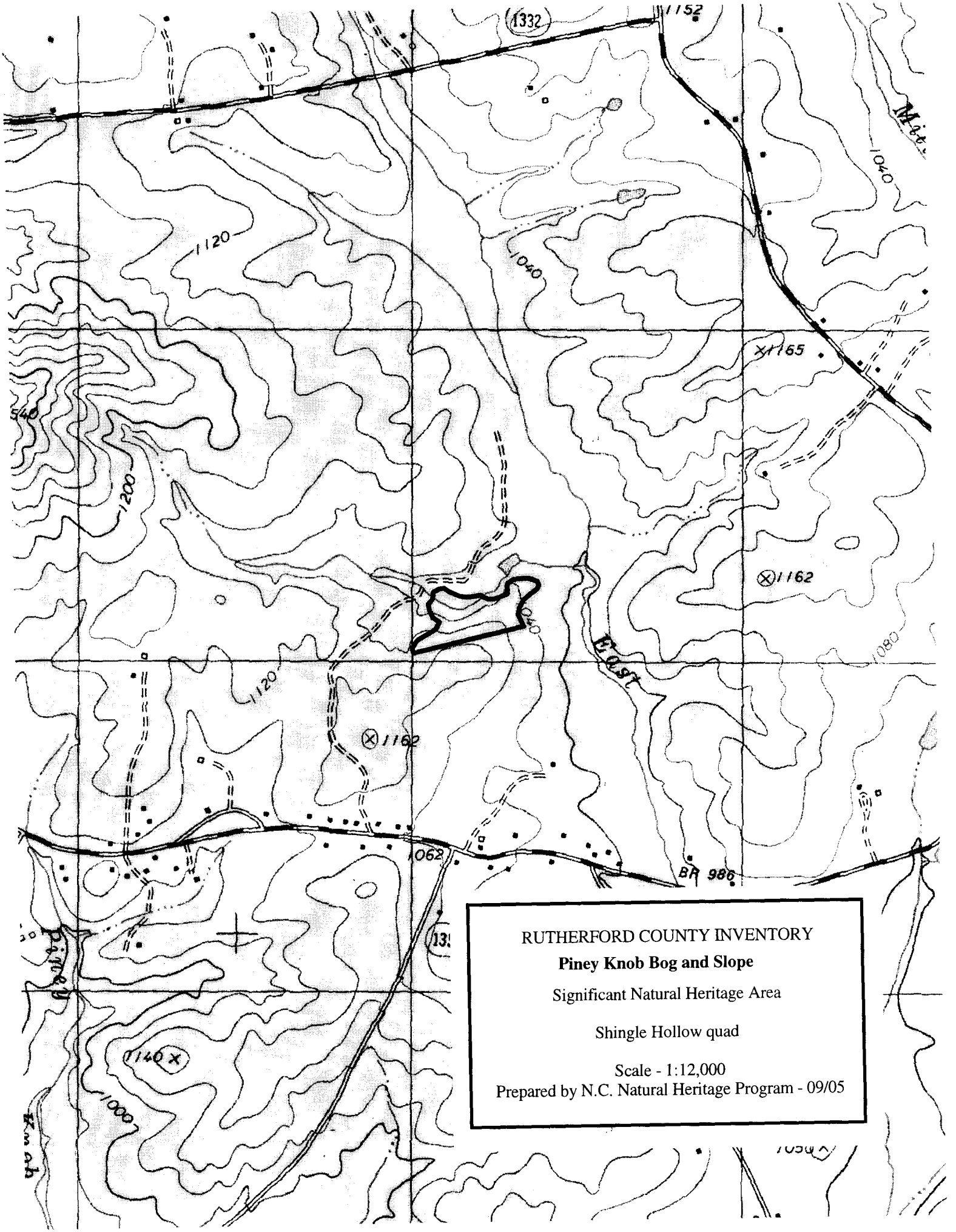
RARE PLANTS: yellow honeysuckle (*Lonicera flava*), American barberry (*Berberis canadense*), Piedmont horsebalm (*Collinsonia tuberosa*), Carolina thistle (*Cirsium carolinianum*), Godfrey's thoroughwort (*Eupatorium godfreyanum*), smooth sunflower (*Helianthus laevigatus*), rough blazing star (*Liatris aspera*), small head blazing star (*Liatris microcephala*) and sweet pinesap (*Monotropsis odorata*); Watch List – Carolina buckthorn (*Frangula caroliniana*), spotted Joe-pye weed (*Eupatoriadelphus maculatus*), whiteleaf sunflower (*Helianthus glaucophyllus*), roundleaf ragwort (*Packera obovata*), ginseng (*Panax quinquefolius*), Virginia stick-seed (*Hackelia virginiana)*, and Virginia marbleseed (*Onosmodium virginianum*).

RARE ANIMALS: None known.

REFERENCES:

Oakley, S.C. 2004b. Ecosystem Enhancement Program Report: Lone Mountain Natural Area. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.

Padgett, J. E. 2005. Site Survey Report: Lone Mountain Natural Area. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Piney Knob Bog and Slope

Significant Natural Heritage Area

Shingle Hollow quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

PINEY KNOB BOG AND SLOPE
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Shingle Hollow
Size: 10 acres
Ownership: Private

SIGNIFICANT FEATURES: This site has fair examples of a small swamp Forest-Bog Complex along a small stream, and a good quality north-facing slope with an assemblage of rich forest habitat species in a Mesic Mixed Hardwood Forest remnant. A suite of Watch List species are is present within this site that includes the uncommon golden saxifrage (*Chrysosplenium americanum*).

LANDSCAPE RELATIONSHIPS: This site lies within the western most portion of the South Mountains/ Foothills Megasite and is located 2.5 miles east of Anderson Shoal. The regional landscape is fairly well forested; however many pine plantations and clear cuts occur adjacent to the site, to the north and west. This site is 4.5 air miles north of Green Hill in the northwestern section of Rutherford County. It is one air mile east southeast of Piney Knob (1540 ft.).

SITE DESCRIPTION: Natural communities present include a small Swamp Forest-Bog Complex and an adjacent slope containing an assemblage of plant species in a Mesic Mixed Hardwood Forest.

A small example of a Mesic Mixed Hardwood Forest community runs the length of the slope and a small upland flat above the unnamed stream. Dominant canopy species include beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), cucumber magnolia (*Magnolia acuminata*), Canada hemlock (*Tsuga canadensis*), white oak (*Quercus alba*), and northern red oak (*Q. rubra*). The understory is sparse and includes flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), Carolina silverbell (*Halesia tetraptera*), and American holly (*Ilex opaca*). The shrub layer is comprised of strawberry bush (*Euonymus americanus*), sparkleberry (*Vaccinium arboreum*), maple-leaf viburnum (*Viburnum acerifolium*), spicebush (*Lindera benzoin*), mountain laurel (*Kalmia latifolia*), dog hobble (*Leucothoe fontanesiana*), pinxter-flower (*Rhododendron periclymenoides*), and the invasive Chinese privet (*Ligustrum sinense*). Common herbs include snakeroot (*Prenanthes serpentaria*), rattlesnake plantain (*Goodyera pubescens*), Indian pipe (*Monotropa uniflora*), beech drops (*Epifagus virginiana*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), and green orchid (*Platanthera clavellata*).

The stream channel contains a small Swamp Forest-Bog Complex area. The water in the streambed flows slowly over a deep layer of organic muck (over 18" deep in some places), and begins flowing again further downstream where it eventually flows into a small pond. The same forest canopy mentioned previously in the Mesic Mixed Hardwood Forest community is present along the stream, with buckeye (*Aesculus flava*) and sweetgum (*Liquidambar styraciflua*) present.

MANAGEMENT AND PROTECTION: No formal protection exists for this site. This site well suited for conservation.

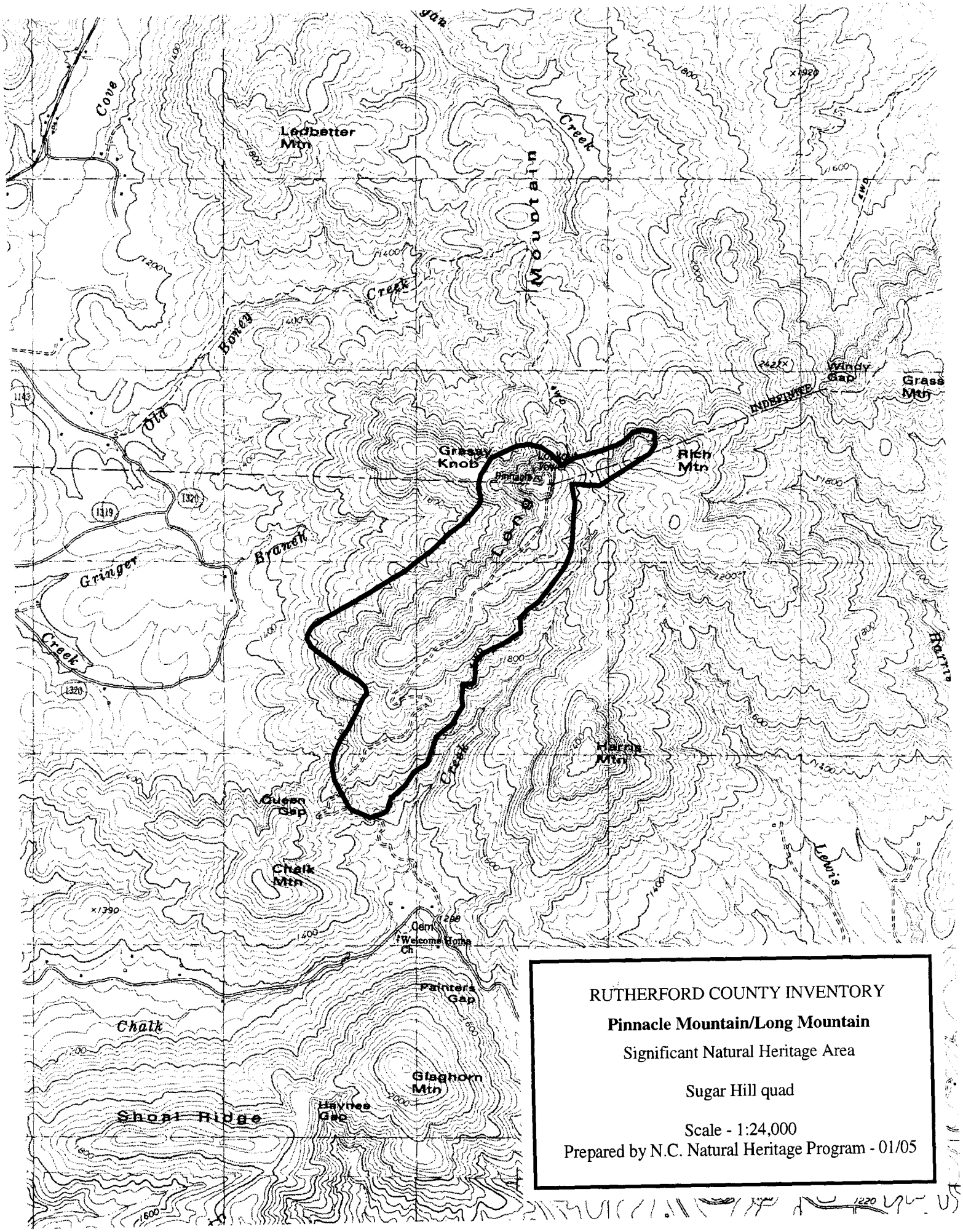
NATURAL COMMUNITIES: Mesic Mixed Hardwood Forest, Swamp Forest-Bog Complex.

RARE PLANTS: Watch List – golden saxifrage (*Chrysosplenium americanum*) and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: Piney Mountain Bog and Slope. N. C. Natural Heritage Program. OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Pinnacle Mountain/Long Mountain

Significant Natural Heritage Area

Sugar Hill quad

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 01/05

Rutherford County Natural Area Inventory

PINNACLE MOUNTAIN/LONG MOUNTAIN
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Sugar Hill
Size: 340 acres
Ownership: Private

SIGNIFICANT FEATURES: The site contains good to excellent examples of four community types. It also contains three rare plant species and one rare animal species. Of those species, the divided-leaf ragwort (*Packera millefolium*) is a Federal Species of Concern.

LANDSCAPE RELATIONSHIPS: This site occurs in both Rutherford and McDowell Counties, with the majority in Rutherford County. This site is located within the western third of the South Mountains/Foothills Megasite. It is located about three miles southeast of Hickorynut Mountain Natural Area in McDowell County. It is in close proximity to Upper Cathey's Creek/Harris Mountain, and 0.5 miles to the northeast of Shoal Ridge. The areas to the east are under increasing residential development pressure, especially along and to the north of Harris Mountain. Small farms are located in the valley to the west.

SITE DESCRIPTION: The site is located in north-central Rutherford County on the McDowell County line. Portions of this site description are from the McDowell County Natural Areas Inventory (Oakley 2005). The site includes a steep-sided knob, slopes, and ridge top areas on the upper slopes of Long Mountain. A lookout tower occupies a small area on the summit of the knob, known as Pinnacle Mountain. A series of relatively small rock outcrops lie near the tower on the north and northwest sides of the knob. Forested areas, in variable condition, extend in all directions from the knob. The rock outcrops are fair examples of the rare Low Elevation Granitic Dome community type. An excellent example of the Carolina Hemlock Bluff community occupies steep slopes to the southwest of the summit. The site extends eastward to Rich Mountain to include a fairly good example of Montane Oak–Hickory Forest.

The Low Elevation Granitic Dome community consists of three outcrop areas separated by dry forests. The outcrops are open with no tree canopy. The rock has greatly-sloping smooth to undulating surfaces. Soil accumulations in the gently-sloping areas provide habitats for various herbs and shrubs. The middle and lower parts of the rock are smooth and nearly vertical, with few habitats for plants. Herb species include small populations of the rare divided-leaf ragwort and Greenland sandwort (*Minuartia groenlandica*), as well as fameflower (*Talinum teretifolium*), Michaux's saxifrage (*Saxifraga michauxii*), little bluestem (*Schizachyrium scoparium*), pineweed (*Hypericum gentianoides*), rock spikemoss (*Selaginella rupestris*), Solomon's-seal (*Polygonatum biflorum*), marginal wood fern (*Dryopteris marginalis*), rockcap fern (*Polypodium appalachianum*), goat's-rue (*Tephrosia virginiana*), hairy lipfern (*Cheilanthes lanosa*), rough buttonweed (*Diodia teres*), galax (*Galax urceolata*), and Appalachian bell-flower (*Campanula divaricata*). Mats of haircap mosses (*Polytrichum* sp.) cover some rock surfaces and foliose lichens cover many areas that slope steeply.

Small numbers of shrubs such fragrant sumac (*Rhus aromatica*), beautyberry (*Callicarpa americana*), gorge rhododendron (*Rhododendron minus*), and mountain laurel (*Kalmia latifolia*) occur in some areas with deeper soil accumulations. Vines such as muscadine (*Vitis rotundifolia*) and common greenbrier (*Smilax rotundifolia*) form dense tangles in some areas. Parts of one outcrop area have been trampled from previous human visitation.

Mature Montane Oak–Hickory Forest occurs along the ridge top of Long Mountain north off of Pinnacle Mountain into McDowell County. It has a canopy of pignut hickory (*Carya glabra*), white oak (*Quercus alba*), black locust (*Robinia pseudoacacia*), black gum (*Nyssa sylvatica*), black oak (*Q. velutina*), and red maple (*Acer rubrum*). The understory contains species such as silverbell (*Halesia tetraptera*), sourwood (*Oxydendrum arboreum*), Fraser magnolia (*Magnolia fraseri*), mountain holly (*Ilex montana*), and basswood (*Tilia heterophylla*). Shrubs are sparse and include maple-leaf viburnum (*Viburnum acerifolium*), hazelnut (*Corylus* sp.), and hairy mock-orange (*Philadelphus hirsutus*). Herbs include partridgeberry (*Mitchella repens*), Solomon's-seal, bloodroot (*Sanguinaria canadensis*), black cohosh (*Cimicifuga racemosa*), pink turtleheads (*Chelone lyonii*), black snakeroot (*Ageratina altissima*), pale Indian-plantain *(Arnoglossum atriplicifolium*), and others. Areas of Chestnut Oak Forest are embedded in this community.

Along the middle and lower slopes of Long Mountain is a good example of a Chestnut Oak Forest. The Canopy is dominated chestnut oak (*Quercus montana*). The remaining canopy is a mosaic of northern red oak (Q. rubra), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), tulip poplar, and a few basswood (*Tilia heterophylla*). The understory contains red maple, sourwood, flowering dogwood (*Cornus florida*) serviceberry (*Amelanchier arborea*), and black gum. Common shrubs include great laurel (*Rhododendron maximum*), mountain laurel, sparkleberry (*Vaccinium arboreum*), blueberry (*V. pallidum*), maple-leaved viburnum, and sassafras (*Sassafras albidum*). Vines include greenbrier (*Smilax glauca* and *S. rotundifolia*), grape (*Vitis* sp.), and trumpet vine (*Campsis radicans*). The herb layer contains partridgeberry, snakeroot (*Sanicula canadensis*), galax, pipsissewa (*Chimaphila maculata*), and goldenrod (*Solidago* sp.).

On the upper north-facing slopes of Long Mountain, around to Pinnacle Mountain, is a fair quality Carolina Hemlock Bluff. It is dominated by Carolina hemlock (*Tsuga caroliniana*) along steep rocky bluffs. No evidence of hemlock woolly adelgid (*Adelges tsugae*), a small insect introduced from Asia in 1924 which is destroying Canadian and Carolina hemlocks in the eastern United States, was observed on the trees. The Carolina hemlocks range from the upper ridgeline down to about mid-slope. They are scattered throughout a 10-acre area along the steep north-facing slopes. Other dominant canopy species include white oak, chestnut oak, hickories, northern red oak, scarlet oak, Canada hemlock, tulip poplar, and red maple. Shrubs are sparse or thick with mountain laurel, gorge rhododendron, and maple-leaf viburnum. The understory contains sourwood, flowering dogwood, and blackgum. Woody vines are sparse with Virginia creeper (*Parthenocissus quinquefolia*) and muscadine most common. The herb layer contains pipsissewa, partridgeberry, galax, and sedges (*Carex* spp.).

MANAGEMENT AND PROTECTION: This site has no formal protection. Because of development pressure, this site should be a high conservation target. Efforts should be made to

manage the site, especially along the access road and the rock outcrops, in order to reduce trampling of high quality areas.

NATURAL COMMUNITIES: Carolina Hemlock Bluff, Chestnut Oak Forest, Montane Oak-Hickory Forest, and Low Elevation Granitic Dome.

RARE PLANTS: yellow honeysuckle (*Lonicera flava*), Greenland sandwort (*Minuartia groenlandica*), and dissected leaf ragwort (*Packera millefolium*); Watch List – Carolina hemlock (*Tsuga caroliniana*), roundleaf ragwort (*Packera obovata*), and white-leaf Sunflower (*Helianthus glaucophyllus*).

RARE ANIMALS: northern long-eared myotis (*Myotis septentrionalis*); Watch List – black vulture (*Coragyps atratus*) and common raven (*Corvus corax*).

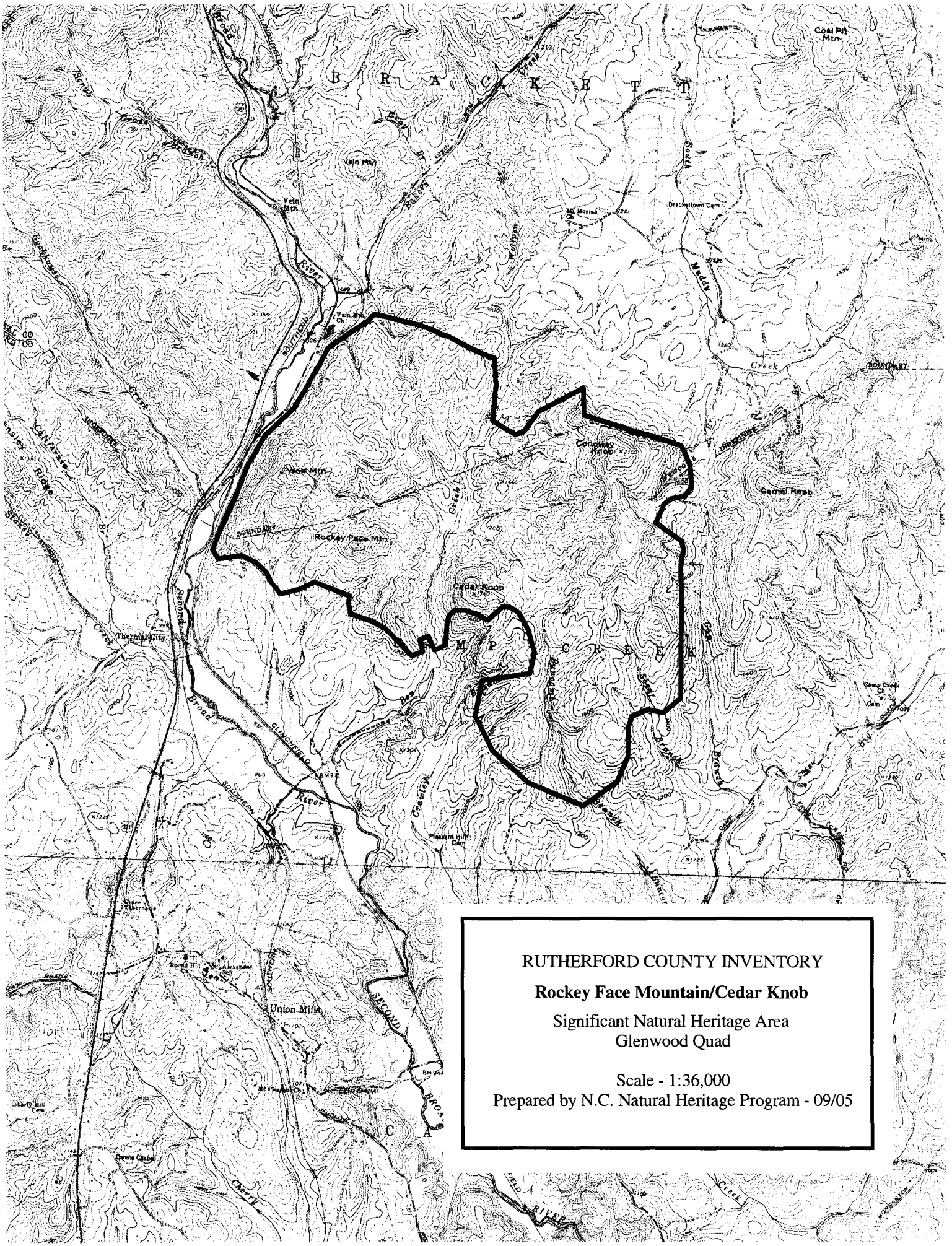
REFERENCES:

Gaddy, L. L. 1986. Preliminary Site Reconnaissance Survey, Long Mountain. N.C. Natural Heritage Program, DPR, DENR, Raleigh, N.C.

Oakley, S.C. 2004c. Site Survey Report: Pinnacle Mountain/Long Mountain. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.

Oakley, S. C. 2005. Inventory of the Natural areas of McDowell County, North Carolina. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.

Padgett, J.E. 2005. Site Survey Report: Pinnacle Mountain/Long Mountain. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


RUTHERFORD COUNTY INVENTORY
Rockey Face Mountain/Cedar Knob
Significant Natural Heritage Area
Glenwood Quad
Scale - 1:36,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

ROCKEY FACE MOUNTAIN AND CEDAR KNOB
Significant Natural Heritage Area

Site Significance: State
Quadrangle: Glenwood
Size: 2,448 acres
Ownership: Private

SIGNIFICANT FEATURES: This site supports several forest and outcrop natural communities as well as a cluster of seven rare plant species. Present are two excellent examples of the rare Low Elevation Rocky Summit community type with clear influence from nutrient-rich mafic rock. These contain the Significantly Rare yellow honeysuckle (*Lonicera flava*), lobed spleenwort (*Asplenium pinnatifidum*), American barberry (*Berberis canadensis*), and the State Threatened/Federal Species of Concern divided-leaf ragwort (*Packera millefolium*). A small example of the rare Carolina Hemlock Bluff community is also present. The presence of purple-stem cliffbrake (*Pellaea atropurpurea*), a Watch List species, is significant because it provides a link in the species' distribution within North Carolina.

Even though the site has been managed for timber, its forest communities are quite extensive and representative of the region. They include Chestnut Oak Forest, Dry Oak–Hickory Forest, Dry-Mesic Oak–Hickory Forest, and Montane Oak–Hickory Forest. The forests also support reported, but not yet confirmed occurrences of the Significantly Rare Piedmont indigo-bush (*Amorpha schwerinii*) and smooth sunflower (*Helianthus laevigatus*).

LANDSCAPE RELATIONSHIPS: This site is located in the South Mountains/Foothills Megasite, which forms an important landscape linkage between the Blue Ridge Mountains and the South Mountains. The site is roughly centered between the South Mountains Game Land in Burke and Rutherford Counties and Hickorynut Mountain in McDowell County. The South Mountains Game Land is about six miles to the east and Hickorynut Mountain is about eight miles to the west. The significant wetland sites Brackettown Seepage Bogs and Brackettown Valley Bog are within 1 to 1.5 miles to the north, and Camel Knob is directly to the east.

SITE DESCRIPTION: The site is situated on the McDowell-Rutherford County line, part of the elevated terrain that forms part of the divide between the Catawba River and the Broad River drainages. Portions of this site description are from the McDowell County Natural Areas Inventory (Oakley 2005).

Most of the site consists of a convoluted topography of ridge tops, small peaks, and slopes with numerous intervening coves and ravines that contain small intermittent streams. Much of the site lies between 1400 and 2000 feet in elevation. The most outstanding features of the site are located in the Rutherford County portion of the site at Rockey Face Mountain and Cedar Knob, where mafic rock is exposed at large summit outcrops. Other parts of the site, including the McDowell County portions, support extensive examples of forest community types that are well represented in the western Piedmont region: Chestnut Oak Forest, Dry Oak–Hickory Forest, Dry-Mesic Oak–Hickory

Forest, Montane Oak–Hickory Forest and Acidic Cove Forest. Though quite large, the forested portions of the site have been managed as a timberland for many decades and are now in various stages of maturity, ranging from 10 years to perhaps 60 years old. Some recent clearcuts are contained within the site boundary.

Excellent Low Elevation Rocky Summit communities exist on the south-facing upper slopes of Rockey Face Mountain and on the east-facing upper slopes of Cedar Knob. Both support numerous species which are strong indicators of basic influence by mafic rock and many which are uncommon or rare. Both areas contain very steep, open habitats without a tree canopy, though scattered shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*), chestnut oak *(Quercus montana*), black oak (*Q. velutina*), northern red oak (*Q. rubra*), fringetree *(Chionanthus virginicus*), and other dry-site trees are present. Shrubs at both locations include indicators of high pH conditions such as Georgia hackberry (*Celtis tenuifolia*), fragrant sumac (*Rhus aromatica*), the uncommon hairy mock-orange (*Philadelphus hirsutus*), and the rare yellow honeysuckle (*Lonicera flava*), as well as strawberry bush (*Euonymus americana*) and downy serviceberry (*Amelanchier arborea*). The Rockey Face rocky summit also supports the rare American barberry (*Berberis canadensis*) while that of Cedar Knob supports an abundance of the uncommon wafer-ash (*Ptelea trifoliata*); both species are strong indicators of high pH conditions derived from mafic or calcareous rock. Another indicator, the rare lobed spleenwort (*Asplenium pinnatifidum*), occurs at the outcrops of Rockey Face Mountain.

Although extensive areas consist of bare or lichen covered rock, well-developed herb layers are present at both locations in areas where soils have accumulated. Herb composition at Rockey Face Mountain, the larger of the two outcrop areas, includes pineweed (*Hypericum gentianoides*), fameflower (*Talinum teretifolium*), rock spikemoss (*Selaginella rupestris*), common ragwort (*Packera anonyma*), and grasses such as broomsedge (*Andropogon* spp.), little bluestem (*Schizachyrium scoparium*), three-awn grass (*Aristida* sp.), panic grasses (*Panicum* spp.), and sedges (*Carex* spp.). Also present are a lady's-tresses (*Spiranthes* sp.) and the uncommon roundleaf ragwort (*Packera obovata*). The outcrop also features a small example of the rare Carolina Hemlock Bluff community on its northeastern edge.

Cedar Knob contains outcrops of similar quality, though they exist as a series of outcrops with intervening islands of woodland. An even greater number of mafic indicator species are present, including herbs such as live-for-ever (*Sedum telephioides*), woolly lipfern *(Cheilanthes tomentosa*), hairy lipfern (*Cheilanthes lanosa*), and the uncommon narrow-leaf bluecurls (*Trichostema setaceum*). Its population of the uncommon purple-stem cliffbrake (*Pellaea atropurpurea*) is of special note: its occurrence is an eastward extension of its range within the state. In North Carolina, it is known to be extant only in Buncombe, Swain, Cherokee, Jackson, Madison, and Transylvania Counties and in northern McDowell County. Cedar Knob also supports the rare divided-leaf ragwort (*Packera millefolium*). Rock spikemoss forms thin scattered mats. Others include zigzag spiderwort (*Tradescantia subaspera*), gerardia (*Agalinis tenuifolia*), alumroot (*Heuchera* sp.), greater coreopsis (*Coreopsis major*), grass-leaved golden-aster (*Pityopsis* sp.), sensitive brier (*Schrankia microphylla*), little bluestem *(Schizachyrium scoparium*), witch-grasses (*Dichanthelium* spp.), and Carolina wild-petunia (*Ruellia caroliniensis*).

The top of Cedar Knob is forested, supporting a mature example of Montane Oak–Hickory Forest with high amounts of white oak and red oak species present. Chestnut Oak Forest communities occupy many areas on dry middle and upper slopes around these two mountains and are widespread across the remainder of the site except along drainage areas. These chestnut oak-dominated forests typically support a variety of other oaks, hickories, and dry-site hardwoods along with shrubs such as mountain laurel (*Kalmia latifolia*), lowbush blueberry *(Vaccinium pallidum*), St. John's-wort (*Hypericum stragalum*), black huckleberry (*Gaylussacia baccata*), and horse-sugar (*Symplocos tinctoria*). A sparse herb layer includes greater coreopsis, wild oregano (*Cunila origanoides*), galax (*Galax urceolata*), trailing arbutus (*Epigaea repens*), and pipsissewa (*Chimaphila maculata*) among others.

Dry Oak–Hickory Forest is present on some dry, lower slopes. This Piedmont type supports trees such as white oak (*Quercus alba*), northern red oak, black oak , mockernut hickory (*Carya alba*), and pignut hickory (*C. glabra*) with occasional post oak (*Quercus stellata*), sourwood (*Oxydendrum arboreum*), and black gum (*Nyssa sylvatica*). Those trees occur in the understory along with shrubs such as mountain laurel, deerberry (*Vaccinium stamineum*), lowbush blueberry, rhododendrons (*Rhododendron* spp.). The herb layer contains many common species of dry to mesic oak forests.

Dry-Mesic Oak–Hickory Forest are a predominant type over the site, occupying many ridge and slope positions. They support a collection of common oaks, hickories, and other hardwoods. Sweetgum (*Liquidambar styraciflua*) and tulip poplar (*Liriodendron tulipifera*) are abundant in many areas due disturbance from logging. Red maple (*Acer rubrum*), flowering dogwood (*Cornus florida),* Piedmont indigo-bush (*Amorpha schwerinii*), American holly (*Ilex opaca*), silverbell (*Halesia tetraptera*), and witch-hazel (*Hamamelis virginiana*) are frequent understory components. Vines such as muscadine (*Vitis rotundifolia*) and poison ivy (*Toxicodendron radicans*) are prominent. The herb layer includes heartleaf (*Hexastylis* sp.), rattlesnake plantain *(Goodyera pubescens*), Appalachian golden-banner (*Thermopsis mollis*), pipsissewa, and tick-trefoils (*Desmodium* spp.)

Acidic Cove Forests occur in numerous locations on the sheltered sides of coves and in narrow ravines. Due to logging, tulip poplar is quite common. Other canopy and understory trees include red oak, sweet birch (*Betula lenta*), Fraser magnolia (*Magnolia fraseri*), cucumber-tree (*Magnolia acuminata*), Canada hemlock (*Tsuga canadensis*), silverbell, red maple, and others. A dense layer of great laurel (*Rhododendron maximum*) is diagnostic for this community type. Highland dog-hobble (*Leucothoe fontanesiana*) is frequent near the streams. Herbs occur in openings in the shrub layer and include southern lady fern (*Athyrium asplenioides*), Christmas fern (*Polystichum acrostichoides*), New York fern *(Thelypteris noveboracensis*), partridgeberry (*Mitchella repens*), false Solomon's-seal (*Maianthemum racemosum*), black cohosh (*Cimicifuga racemosa*), jack-in-the-pulpit (*Arisaema triphyllum*), roundleaf violet (*Viola rotundifolia*), galax, and others. Wet stream-side areas support green-head coneflower (*Rudbeckia laciniata*), jewelweed (*Impatiens capensis*), and occasional branch lettuce (*Saxifraga micranthidifolia*).

MANAGEMENT AND PROTECTION: The site is without formal protection. Part of one of the largest tracts has been recently sold and the fate of that tract is unknown. Evidence of past southern pine beetle and drought damage exist around the outcrops, as numerous dead pines are found there. The small Carolina Hemlock Bluff is vulnerable to impact from the invasive, non-native hemlock

wooly adelgid (*Adelges tsugae*), which kills Canadian and Carolina hemlock trees. Evidence of fire along the western upper slopes of Cedar Knob near the rocky summit was observed. The extensive forests in this section of the county may serve as a corridor for wide-ranging animal species, such as the black bear (*Ursus americanus*). The forests should be managed to promote older growth conditions and natural disturbance patterns.

NATURAL COMMUNITIES: Low Elevation Rocky Summit, Carolina Hemlock Bluff, Chestnut Oak Forest, Dry Oak–Hickory Forest, Dry-Mesic Oak–Hickory Forest, Montane Oak–Hickory Forest, Acidic Cove Forest.

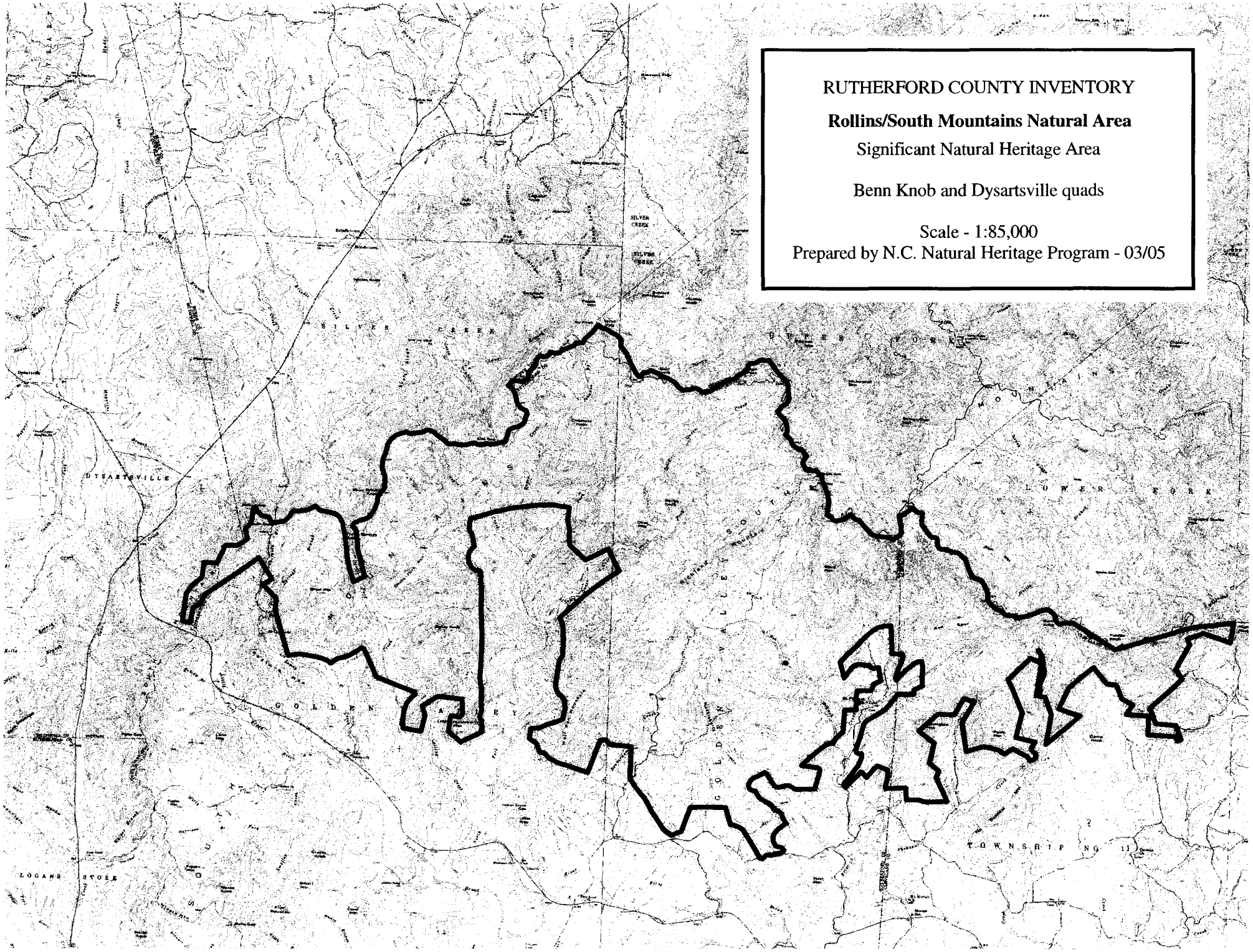
RARE PLANTS: Appalachian golden-banner (*Thermopsis mollis*), American barberry *(Berberis canadensis*), yellow honeysuckle (*Lonicera flava*), divided-leaf ragwort (*Packera millefolium*), smooth sunflower (*Helianthus laevigatus*), lobed spleenwort (*Asplenium pinnatifidum*), Piedmont indigo-bush (*Amorpha schwerinii*); Watch List – narrow-leaf bluecurls *(Trichostema setaceum*), wafer-ash (*Ptelea trifoliata*), hairy mock-orange (*Philadelphus hirsutus*), roundleaf ragwort (*Packera obovata*), purple-stem cliffbrake (*Pellaea atropurpurea*), Seneca snakeroot (*Polygala senega*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Oakley, S.C. 2004a. Site Survey Report: Wolf Mountain (part of the Rockey Face Mountain and Cedar Knob ecological site). N.C. Natural Heritage Program, Office of Conservation and Community Affairs, DENR, Raleigh, N.C.

Padgett, J. 2005. Site Survey Report: Rockey Face Mountain and Cedar Knob. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


RUTHERFORD COUNTY INVENTORY
Rollins/South Mountains Natural Area
Significant Natural Heritage Area
Benn Knob and Dysartsville quads
Scale - 1:85,000
Prepared by N.C. Natural Heritage Program - 03/05
SILVER CREEK
DYSARTSVILLE
GOLDEN VALLEY
LOGANS STORE
LOWER FORK
TOWNSHIP NO. 11

Rutherford County Natural Areas Inventory

ROLLINS/SOUTH MOUNTAINS NATURAL AREA
Significant Natural Heritage Area

Site Significance: National
Quadrangles: Benn Knob, Dysartsville
Size: 16,990 acres
Ownership: State of North Carolina, Private

SIGNIFICANT FEATURES: The site lies at the core of the South Mountains and one of the largest sites in Rutherford County. Extensive examples of mountain community types such as Rich Cove Forest, Montane Oak-Hickory Forest, and Chestnut Oak Forest are present. Mature forests are widespread and pockets of old-growth forest are documented in several locations. Also present are good examples of Pine-Oak/Heath, the rare Low Elevation Rocky Summit type, and two examples of the rare Spray Cliff type. The site supports an outstanding cluster of 13 rare plant species, including the Federally and State Endangered white irisette (*Sisyrinchium dichotomum*), and two Federal Species of Concern: Carolina saxifrage (*Saxifraga caroliniana*) and sweet pinesap (*Monotropsis odorata*). Rare animal species present include Diana fritillary (*Speyeria diana*), a Federal Species of Concern, and the very rare Broad River stream crayfish (*Cambarus lenati*) which is documented from the Pot Branch section of First Broad River Headwaters Aquatic Habitat that flows through the Rutherford and Cleveland County part of the site.

LANDSCAPE RELATIONSHIPS: The South Mountains are the most extensive natural landscape in the western Piedmont. They are a major part of the South Mountains Macrosite, and are part of the even larger South Mountains/Foothills Megasite that extends into Burke County. To the west, the site has a direct connection to the Blue Ridge escarpment through a forested, semi-roadless corridor across northern Rutherford County and southern McDowell County. Contiguity with other large sites such as South Mountains Henry Fork Watershed and South Mountains Jacob Fork Watershed, which border it to the north, greatly enhances the long-term viability of this site. Brindletown Forests borders the northwest corner of the site. The headwaters of Pheasant Creek in Cleveland County, and the headwaters of Brier Creek and Pot Branch in Rutherford County, originate within the boundaries of the site. Camp Knob borders on the southeast boundary of the site. High Rock/Gilead Ridge is contiguous with the easternmost end of the site.

SITE DESCRIPTION: The Rollins/South Mountains Natural Area encompasses the entire southern flank of the South Mountains, an area that extends from northwestern Cleveland County west for ten miles to include the northeastern section of Rutherford County. It is a topographically rugged area of mountainous land characterized by small, steep gorges, sharp ridges, and steep slopes. Rock outcrops are scattered at various locations across the site. The northern edge of the site follows the primary crest of the South Mountains, where elevations range from 1400 feet on lower slopes to over 2880 feet at Benn Knob.

Rutherford County contains roughly 80% of the total acreage of the site. Various oak-dominated natural communities, such as Chestnut Oak Forest and Montane Oak-Hickory Forest, are widespread throughout the site on slopes, ridge tops, and crests. Rare species here include sweet pinesap

(*Monotropsis odorata*), and Appalachian golden-banner (*Thermopsis mollis*). The Federal and State Endangered white irisette (*Sisyrinchium dichotomum*) is associated with these habitats at Oakey Knob, Shoal Mountain, and Devils Fork Mountain. Its presence is a good indicator of mafic rock (Oakley et al 1995).

Spur ridges and crests with thinner soils support Pine-Oak/Heath communities. Although these communities have probably been logged and burned in the past, several good examples are concentrated east and west of Benn Knob. They are often associated with rock outcrops. The semi-open canopy is dominated by shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*), chestnut oak (*Quercus montana*), and several other species. These areas have characteristically dense shrub layers that include mountain laurel (*Kalmia latifolia*), gorge rhododendron (*Rhododendron minus*), and several other shrubs of dry, acidic soils and open habitats. The rare shale-barren blazing star (*Liatris turgida*) and the uncommon beargrass (*Xerophyllum asphodeloides*) are documented from these communities.

Numerous examples of the rare Low Elevation Rocky Summit natural community are an important feature of the site. Several examples occur on the upper slopes in Cleveland County, from Painter Knob westward into Rutherford County. These examples range from a few acres up to 15 acres in size, and are very dry and open. Smaller examples occur at Richland Mountain, Chestnut Knob, and near Camp McCall. The rock outcrop surfaces range from gently sloping to vertical, and are generally very uneven, and craggy. They support few trees and shrubs except where they are rooted in crevices, shallow soil pockets, or outcrop margins. Herbs are often dense in shallow soil accumulations and may include Carolina alum-root (*Heuchera caroliniana*), mountain spleenwort (*Asplenium montanum*), grass-leaved goldenaster (*Pityopsis graminifolia*), goldenrods (*Solidago* spp.), red-berried moonseed (*Cocculus carolinus*), fameflower (*Talinum teretifolium*), blunt-lobe woodsia (*Woodsia obtusa*), and others. Rare species known from these communities include Carolina saxifrage (*Saxifraga caroliniana*), rough blazing star (*Liatris aspera*), and yellow honeysuckle (*Lonicera flava*). In deeper soil islands and fissures, trees and shrubs such as Virginia pine, shortleaf pine, chestnut oak, and shrubs such as gorge rhododendron (*Rhododendron minus*), pinxter-flower (*Rhododendron periclymenoides*), lowbush blueberry (*Vaccinium pallidum*), and mountain laurel are present. Some outcrops contain species associated with mafic rock types, including columbine (*Aquilegia canadensis*), and yellow honeysuckle, maidenhair spleenwort (*Asplenium trichomanes*), woolly lipfern (*Cheilanthes tomentosa*), and the uncommon Seneca snakeroot (*Polygala senega*).

Examples of the rare Spray Cliff community type are known from waterfalls in Cleveland County near the Rutherford County line and on Sally Queen Creek in Rutherford County. The Cleveland County Spray Cliff supports plants of seepages and moist habitats such as Michaux's saxifrage (*Saxifraga michauxii*), Carolina alum-root, northern sundrops (*Oenothera tetragona*), zigzag spiderwort (*Tradescantia subaspera*), and Carolina saxifrage. Areas at the base of the waterfall are dominated by the uncommon wafer-ash (*Ptelea trifoliata*). The Spray Cliff on Sally Queen Creek supports Carolina hemlocks and crag-jangle (*Heuchera villosa*) around the waterfall. Cold, well-oxygenated water, spraying, and flowing on its rock faces support an abundance of threadfoot (*Podostemum ceratophyllum*), an unusual aquatic flowering plant usually found in stream beds, that superficially resembles a moss or alga.

Rich Cove Forests occur at scattered locations in sheltered coves with rich soils. Good examples are found at Benn Knob and along the Sally Queen Creek drainage. These communities have a well-developed canopy dominated by hardwoods such as northern red oak (*Quercus rubra*), yellow buckeye (*Aesculus flava*), white ash (*Fraxinus americana*), basswood (*Tilia heterophylla*), cucumber-tree (*Magnolia acuminata*), tulip poplar (*Liriodendron tulipifera*), and American beech (*Fagus grandifolia*). Their well-developed understory may include saplings of the canopy trees, as well as flowering dogwood (*Cornus florida*), silverbell (*Halesia tetraptera*), Canada hemlock (*Tsuga canadensis*), Fraser magnolia (*Magnolia fraseri*), ironwood (*Carpinus caroliniana*), and others. Shrubs are typically sparse, but may include spicebush (*Lindera benzoin*), sweet-shrub (*Calycanthus floridus*), and smooth hydrangea (*Hydrangea arborescens*). The herb layer is dense and species-diverse, with false goat's-beard (*Astilbe biternata*), maidenhair fern (*Adiantum pedatum*), hay-scented fern (*Dennstaedtia punctilobula*), Christmas fern (*Polystichum acrostichoides*), rattlesnake fern (*Botrychium virginianum*), black cohosh (*Cimicifuga racemosa*), blue cohosh (*Caulophyllum thalictroides*), bloodroot (*Sanguinaria canadensis*), sanicle (*Sanicula canadensis*), jack-in-the-pulpit (*Arisaema triphyllum*), white snakeroot (*Ageratina altissima*), sharp-lobed hepatica (*Hepatica acutiloba*), orange jewelweed (*Impatiens capensis*), bearsfoot (*Smallanthus uvedalius*), and wood nettle (*Laportea canadensis*). Green violet (*Hybanthus concolor*) and the rare sweet white trillium (*Trillium simile*), good indicators of influence from mafic rock, both occur in the Sally Queen Creek forest. The rare Blue Ridge bindweed (*Calystegia catesbiana* ssp. *sericata*) occurs in Cleveland County along the edges of the CCC Road following the high crest of the South Mountains. The rare bindweed grows with small-head blazing star (*Liatris microcephala*) at the margins of the CCC Road in Rutherford County. Purple coneflower (*Echinacea purpurea*), documented in 1951 from a road clearing on Hardbargain Branch at the westernmost end of the site, was not observed, but may still be extant.

MANAGEMENT AND PROTECTION: The site is managed as a public game land by the North Carolina Wildlife Resources Commission (South Mountains Game Land). It is protected as a Dedicated State Nature Preserve. All streams benefit from 500-foot buffers that are special management areas. Large amounts of timber were sold before the state acquired the land, and regenerating clearcuts of up to 1000 acres in size are now present. Many of the areas supporting white irisette were clearcut before they were acquired by the state, but their habitats are now special management areas. In the past, populations of the rare sweet white trillium have been impacted by the foraging of wild pigs, and the population likely still remains vulnerable. Some trampling impacts have been noted at the more accessible, better-known outcrop areas. Measures should be taken to reduce the amount of impact into at these areas.

NATURAL COMMUNITIES: Pine-Oak/Heath, Low Elevation Rocky Summit, Rich Cove Forest, Spray Cliff, Chestnut Oak Forest, Montane Oak-Hickory Forest.

RARE PLANTS:

Rutherford County: Purple coneflower (*Echinacea purpurea*), small-head blazing star (*Liatris microcephala*), shale-barren blazing star (*Liatris turgida*), Blue Ridge bindweed (*Calystegia*

catesbiana ssp. *sericata*), yellow honeysuckle (*Lonicera flava*), sweet pinesap (*Monotropsis odorata*), Appalachian golden-banner (*Thermopsis mollis*), Carolina saxifrage (*Saxifraga caroliniana*), white irisette (*Sisyrinchium dichotomum*), sweet white trillium (*Trillium simile*); Watch List – ginseng (*Panax quinquefolius*) and white-leaf sunflower (*Helianthus glaucophyllus*).

Cleveland County: Carolina saxifrage (*Saxifraga caroliniana*), sweet pinesap (*Monotropsis odorata*), Blue Ridge bindweed (*Calystegia catesbiana* ssp. *sericata*), shale-barren blazing star (*Liatris turgida*), rough blazing star (*Liatris aspera*).

Burke County: Blue Ridge bindweed (*Calystegia catesbiana* ssp. *sericata*).

McDowell County : Yellow honeysuckle (*Lonicera flava*).

RARE ANIMALS:

Rutherford County: Watch List - Diana fritillary (*Speyeria diana*) and Appalachian azure (*Celastrina neglectamajor*).

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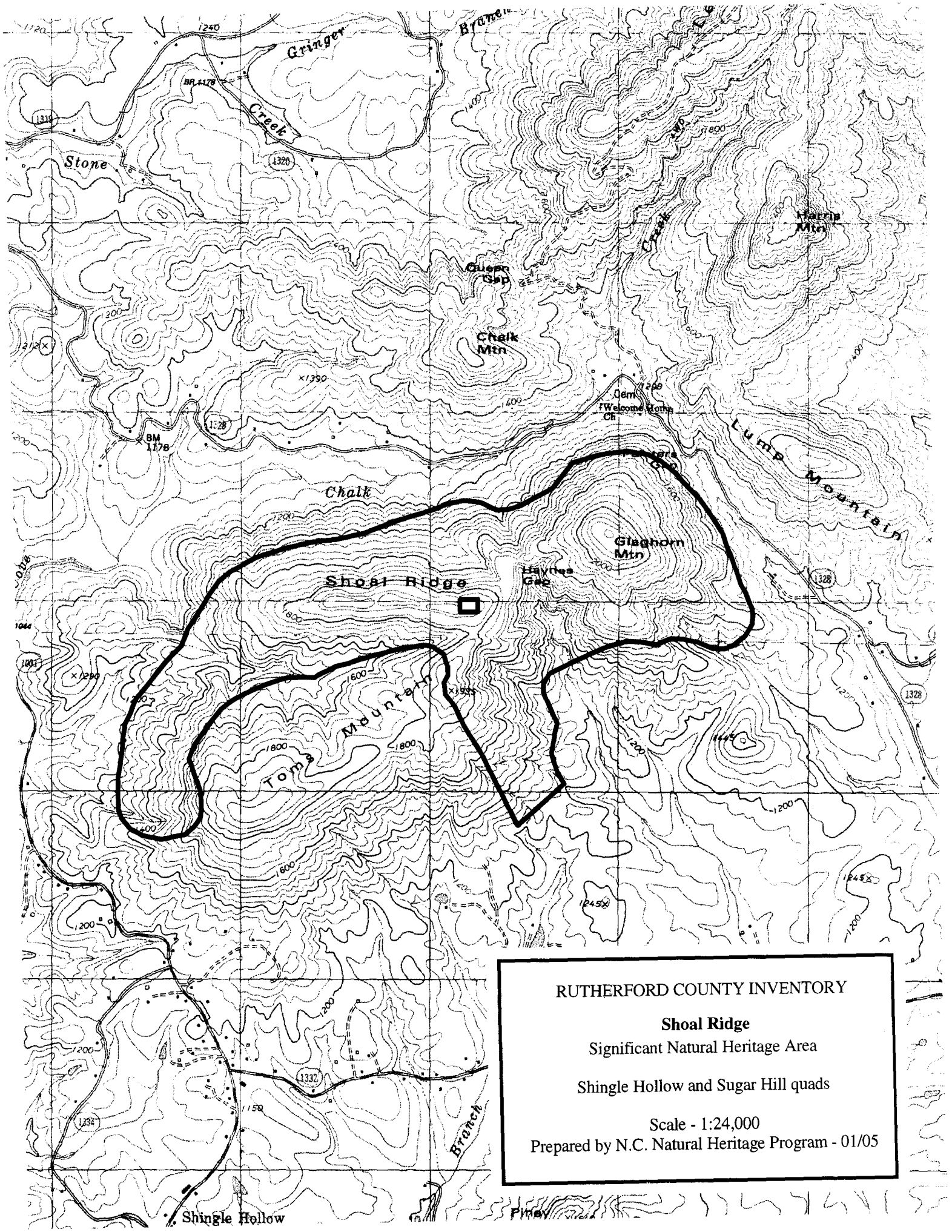
Oakley, S. C. 2002. Inventory of the Natural Areas of Cleveland County, North Carolina. OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Shoal Ridge

Significant Natural Heritage Area

Shingle Hollow and Sugar Hill quads

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 01/05

Rutherford County Natural Area Inventory

SHOAL RIDGE
Significant Natural Heritage Area

Site Significance: Regional
Quadrangles: Shingle Hollow, Sugar Hill
Size: 732 acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains a matrix of good to excellent examples of four common natural community types. It also contains one rare plant species and one rare animal species. The eastern woodrat (*Neotoma floridana haematoreia*) is a Federal Species of Concern. A suite of Watch List plant species are also present within this site.

LANDSCAPE RELATIONSHIPS: This site is located in northwest Rutherford County in the western portion of the South Mountains/Foothills Megasite. Upper Catheys Creek/Harris Mountain and Pinnacle Mountain/Long Mountain are located less than one mile to the north-northeast . Anderson Shoal is located 0.75 miles to the southwest, and Piney Knob Bog and Slope lies 2.7 miles to the southeast.

SITE DESCRIPTION: The mountainous topography at this site includes long broad and narrow ridgelines, deep coves, gaps, and moderate to steep slopes. Rock outcrops line the upper portions of the slopes of Glaghorn Mountain above Haynes Gap. The area between Glaghorn Mountain and Shoal Ridge a steep gorge-like appearance. The unnamed stream at the bottom of the site is fed by a number of small springs and seeps that flow off of the steep slopes of Glaghorn Mountain and Shoal Ridge. Several waterfalls are located within the site, ranging from 10-80 feet in height. Along Glaghorn Mountain and Shoal Ridge's steep upper slopes are good examples of Low Elevation Rocky Summit communities that contain several small fissure caves.

Chestnut Oak Forest is the most common natural community found along the upper slopes and ridgelines throughout the site. Over half of the canopy is dominated by chestnut oak (*Quercus montana*). The remaining canopy is a mosaic of northern red oak (*Q. rubra*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), pignut hickory (*Carya glabra*), tulip poplar (*Liriodendron tulipifera*), a few basswood (*Tilia heterophylla*), and cucumber tree (*Magnolia acuminata*). The understory is comprised of red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), downy serviceberry (*Amelanchier arborea*), and black gum (*Nyssa sylvatica*). Common shrubs are great laurel (*Rhododendron maximum*), gorge rhododendron (*Rhododendron minus*), mountain laurel (*Kalmia latifolia*), sparkleberry (*Vaccinium arboreum*), maple-leaved viburnum (*Viburnum acerifolium*), and sassafras (*Sassafras albidum*). Woody vine species include Virginia creeper (*Parthenocissus quinquefolia*), coral honeysuckle (*Lonicera sempervirens*), crossvine (*Bignonia capreolata*), and yellow honeysuckle (*Lonicera flava*). Common in the herb layer is partridgeberry (*Mitchella repens*), poverty grass (*Danthonia* sp.), Canadian snakeroot (*Sanicula canadensis*), galax (*Galax urceolata*), pipsissewa (*Chimaphila maculata*),

Christmas fern (*Polystichum acrostichoides*), Biltmore carrion flower (*Smilax biltmoreana*), and bracken fern (*Pteridium aquilinum*).

Dry-Mesic Oak-Hickory Forest is scattered along the middle and lower slopes. Dominant canopy species include white oak (*Quercus alba*), chestnut oak, northern red oak, mockernut hickory (*Carya alba*), pignut hickory, bitternut hickory (*C. cordiformis*), tulip poplar, and sweetgum. The understory consists of canopy species, sourwood, flowering dogwood, and Carolina silverbell (*Halesia tetraptera*). The shrub layer varies according to aspect and moisture. Great laurel, mountain laurel, and pinxter-flower (*Rhododendron periclymenoides*) are common along the steep north-facing slopes. In the open forest, horse sugar, American beautyberry (*Callicarpa americana*), sweet shrub (*Calycanthus floridus*), and strawberry bush (*Euonymus americanus*) are present. Common herbs are pipsissewa, Virginia snakeroot (*Aristolochia serpentaria*), partridgeberry, little brown jugs (*Hexastylis arifolia* var. *arifolia*), rattlesnake plantain (*Goodyera pubescens*), Indian tobacco (*Lobelia inflata*), false foxglove (*Aureolaria laevigata*), and mountain mint (*Pycnanthemum pycanthemoides*).

At he the margins of the Dry-Mesic Oak-Hickory Forest along the spur ridges, shortleaf pine (*Pinus echinata*) and Virginia pine (*P. virginiana*) are present, and form small pockets of Pine-Oak/Heath community. The southern pine beetle (*Dendroctonus frontalis*) has destroyed most of these pines and numerous dead snags and tree falls are now present in those small areas.

Good examples of Acidic Cove Forest are present in several deep coves throughout the site. The canopy has tulip poplar, cucumber tree, basswood, Canada hemlock (*Tsuga canadensis*), Fraser magnolia (*Magnolia fraseri*), sweet birch (*Betula lenta*), northern red oak, and chestnut oak. The understory is fairly open and contains red maple (*Acer rubrum*), flowering dogwood, Carolina silverbell, and witch hazel (*Hamamelis virginiana*). Shrubs includes spicebush (*Lindera benzoin*) and sweet shrub. Along the steep north-facing slopes and the stream, great laurel and mountain laurel are present. The herb layer contains black cohosh (*Cimicifuga racemosa*), Christmas fern, New York fern (*Thelypteris noveboracensis*), broad beech fern (*Phegopteris hexagonoptera*), Solomon's seal (*Polygonatum biflora*), and rattlesnake plantain (*Goodyera pubescens*).

Along the upper slopes of Shoal Ridge and Glaghorn Mountain are Low Elevation Rocky Summits. The canopy surrounding the rock outcroppings consist of mostly chestnut oak, bitternut hickory, and shortleaf pine. Along the margins of the rock scarlet oak and mockernut hickory occur. The understory exists only along the margins of the rock with red maple, black gum, and an occasional sourwood present. The shrub layer extends onto the rock surface with Georgia hackberry (*Celtis tenuifolia*), fragrant sumac (*Rhus aromatica*), American beautyberry, and strawberry bush present. Woody vines include Virginia creeper, coral honeysuckle, greenbrier (*Smilax glauca*), muscadine (*Vitis rotundifolia*), and poison ivy (*Toxicodendron radicans*). The herb layer possess black-stemmed spleenwort (*Asplenium resiliens*), Canadian snakeroot, erect dayflower (*Commelina erecta*), poverty grass (*Danthonia spicata*), and Pennsylvania sedge (*Carex pennsylvanica*).

A Spray Cliff along with an 80-90 foot waterfall can be found along the western portion of the site in a gap between Shoal Ridge and Toms Mountain. It is located on a primary tributary of Cove Creek that flows northwest from Toms Mountain. The surrounding forest community is an Acidic Cove

Forest. The surrounding canopy has Canada hemlock, basswood, white ash (*Fraxinus americana*), tulip poplar, northern red oak, slippery elm (*Ulmus rubra*), and sweet birch. The understory is comprised of canopy species, red maple and sourwood. Shrubs include great laurel, mountain laurel, hydrangea, hairy mock-orange (*Philadelphus hirsutus*), strawberry bush, and sparkleberry. Common herbs are foamflower (*Tiarella cordifolia*), hairy alumroot (*Heuchera villosa*), saxifrage (*Saxifraga* sp.), walking fern (*Asplenium rhizophyllum*), partridgeberry, spikemoss (*Selaginella* sp.), ginseng (*Panax quinquefolius*), marginal wood fern (*Dryopteris marginalis)*, acute-leaf liverleaf (*Hepatica acutiloba*), Catesby's trillium (*Trillium catesbaei*), maidenhair fern (*Adiantum pedatum*), sweet white violet (*Viola blanda*), Carolina wild petunia (*Ruellia carolinensis*), and black-stemmed spleenwort.

MANAGEMENT AND PROTECTION: This site has no formal protection, but is an excellent potential site for protection.

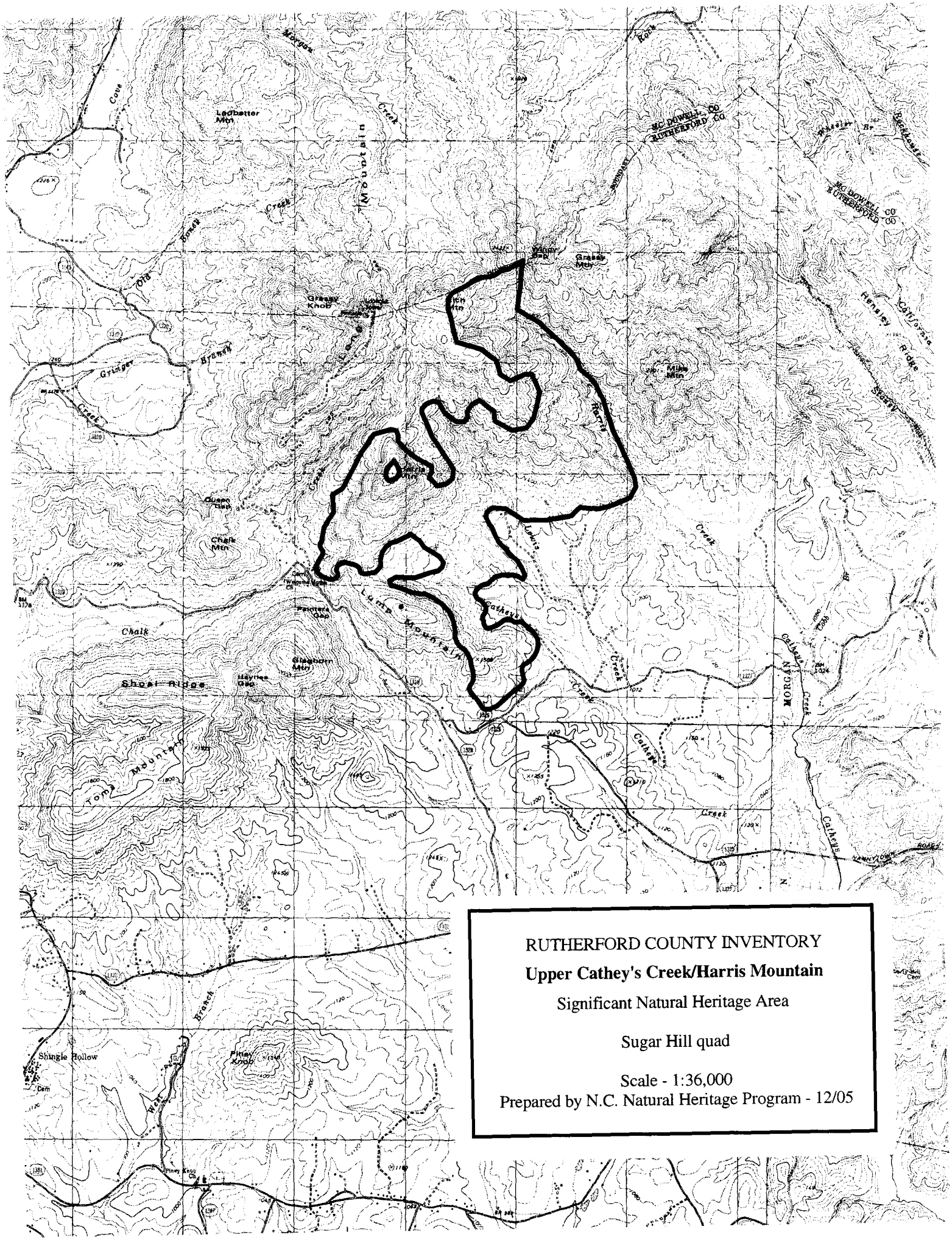
NATURAL COMMUNITIES: Low Elevation Rocky Summit, Acidic Cove Forest, Dry-Mesic Oak-Hickory Forest, remnants of Pine-Oak/Heath, and Spray Cliff.

RARE PLANTS: yellow honeysuckle (*Lonicera flava*); Watch List – ginseng (*Panax quinquefolius*), lance-leaf bedstraw (*Galium lanceolatum*), Biltmore carrion flower (*Smilax biltmoreana*), hairy mock-orange (*Philadelphus hirsutus*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: eastern woodrat (*Neotoma floridana haematoreia*); Watch List – black vulture (*Coragyps atratus*).

REFERENCES:

Padgett, J. E. 2005. Site Survey Report: Shoal Ridge Natural Area. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Upper Cathey's Creek/Harris Mountain

Significant Natural Heritage Area

Sugar Hill quad

Scale - 1:36,000

Prepared by N.C. Natural Heritage Program - 12/05

Rutherford County Natural Area Inventory

UPPER CATHEYS CREEK/HARRIS MOUNTAIN
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Sugar Hill
Size: 1,028 acres
Ownership: Private

SIGNIFICANT FEATURES: This site is a mostly undeveloped mountainous area that extends from the core of the South Mountains westward towards the Blue Ridge Escarpment. It is a vital link that extends the South Mountains/Foothills Megasite westward. This site has good examples of six natural community types. It contains rare plant species including the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*),the Significantly Rare (*Eupatorium godfreyanum*), and yellow honeysuckle (*Lonicera flava*). The site also possess a large suite of Watch List plant species. A cave is located near the summit of Harris Mountain.

LANDSCAPE RELATIONSHIPS: This site lies within the western portion of the South Mountains/Foothills Megasite in northwestern Rutherford County near the McDowell County line. It lies 0.25 miles south of Pinnacle Mountain/Long Mountain, 0.4 miles northeast of Shoal Ridge, and 2.5 miles west of Rockey Face Mountain and Cedar Knob.

SITE DESCRIPTION:. This site is comprised of a series of steep slopes and narrow ridgelines, with some moderately steep coves and peaks. This site is part of a large landscape that is sparsely developed and provides a corridor from the South Mountains across to the Blue Ridge Escarpment. This is a large area containing a wide range of habitats.

A maturing good quality Chestnut Oak Forest community is located on the upper slopes and ridges throughout the site. Chestnut oak (*Quercus montana*) dominates the canopy, with the remaining canopy a mosaic of northern red oak (*Quercus rubra*), white oak (*Q. alba*), mockernut hickory (*Carya alba*), bitternut hickory (*C. cordiformis*), and tulip poplar (*Liriodendron tulipifera*). The understory contains red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and downy serviceberry (*Amelanchier arborea*). Shrubs vary according to moisture, soils, and aspect and include great laurel (*Rhododendron maximum*), mountain laurel (*Kalmia latifolia*), sparkleberry (*Vaccinium arboreum),* and sassafras (*Sassafras albidum*). The sparse herb layer has poverty grass (*Danthonia* sp.), Godfrey's thoroughwort (*Eupatorium godfreyanum*), goldenrod (*Solidago* sp.), galax (*Galax urceolata*), and pipsissewa (*Chimaphila maculata*) commonly present.

An extensive, good quality Montane Oak-Hickory to Dry-Mesic Oak-Hickory Forest is located along the middle and lower slopes throughout the site. Dominant canopy species include white oak, post oak (*Quercus stellata*), chestnut oak, northern red oak, scarlet oak (*Q. coccinea*), pignut hickory (*C. glabra*), and sand hickory (*C. pallida*). Red maple, sourwood, flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), and downy serviceberry are common in the understory. Sparkleberry, deerberry (*Vaccinium stamineum*), and strawberry bush (*Euonymus americanus*) are common shrubs

found throughout this community type. Woody vines often seen are muscadine (*Vitis rotundifolia*), trumpet vine (*Campsis radicans*), and Virginia creeper (*Parthenocissus quinquefolia*). Common herbs include rattlesnake plantain (*Goodyera pubescens*), white-leaf sunflower (*Helianthus glaucophyllus*), Indian tobacco (*Lobelia inflata*), and hairy lobelia (*Lobelia puberula*).

Along the lower slopes and sheltered coves are a few good examples of Acidic Cove Forest. Canopy species include tulip poplar, cucumber tree (*Magnolia acuminata*), Canada hemlock (*Tsuga canadensis*), sweet birch (*Betula lenta*), basswood (*Tilia heterophylla*), and northern red oak. The understory contains flowering dogwood, Carolina silverbell (*Halesia tetraptera*), and witch hazel (*Hamamelis virginiana*). Shrubs include sweet shrub (*Calycanthus floridus*), spicebush (*Lindera benzoin*), gorge rhododendron (*Rhododendron minus*), and pinxter-flower (*Rhododendron periclymenoides*). The more common herbs are black cohosh (*Cimicifuga racemosa*), Christmas fern, New York fern (*Thelypteris noveboracensis*), broad beech fern (*Phegopteris hexagonoptera*), zigzag spiderwort (*Tradescantia subaspera*), Solomon's seal (*Polygonatum biflora*), and partridgeberry (*Mitchella repens*).

In a few of the sheltered coves exist small fair examples of Rich Cove Forest. The forest canopy has a diverse mixture of mesophytic trees including tulip poplar, basswood, buckeye (*Aesculus flava*), sweet birch, slippery elm (*Ulmus rubra*), cucumber magnolia. The understory is comprised of flowering dogwood, and at higher elevations alternate-leaved dogwood (*Cornus alternifolia*). The open shrub layer has smooth hydrangea (*Hydrangea arborescens*), spicebush, and sweet shrub present. The lush herb layer includes black cohosh, little sweet Betsy (*Trillium cuneatum*), blue cohosh (*Caulophyllum thalictroides*), touch-me-not (*Impatiens* sp.), stinging nettle (*Urtica dioica*), foamflower (*Tiarella cordifolia)*, bedstraw (*Galium* sp.), maidenhair fern (*Adiantum pedatum*), liverleaf (*Hepatica americana*), violet (*Viola* sp.), and chickweed (*Stellaria media*).

Along the upper slopes of Harris Mountain is a good example of the rare Low Elevation Rocky Summit community type. Canopy and understory species along the rock margin include bitternut hickory, scarlet oak, chestnut oak, red maple, black gum, and sourwood. The shrub layer extends onto the rock surface with Georgia hackberry (*Celtis tenuifolia*), shrubby St.-John's-wort (*Hypericum prolificum*), hairy mock-orange (*Philadelphus hirsutus*), nine-bark (*Physocarpus opulifolius*), and fragrant sumac (*Rhus aromatica*) present. Woody vines include yellow honeysuckle (*Lonicera flava*), greenbrier (*Smilax bona-nox* and *S. glauca*), and Carolina milkvine (*Matelea carolinensis*). Herbaceous species include Appalachian sundrops (*Oenothera tetragona*), Appalachian cliff fern (*Woodsia appalachiana*), live-for-ever (*Sedum telephioides*), tickseed (*Coreopsis major*), sunflowers (*Helianthus atrorubens, H. glaucophyllus,* and *H. divaricatus*), columbine (*Aquilegia canadense*), and erect dayflower (*Commelina erecta*).

MANAGEMENT AND PROTECTION: This site has no formal protection. With increasing threats from residential development, this site should be a high priority for conservation.

NATURAL COMMUNITIES: Chestnut Oak Forest, Montane Oak-Hickory Forest, Dry Mesic Oak-Hickory Forest, Acidic Cove Forest, Rich Cove Forest, and Low Elevation Rocky Summit.

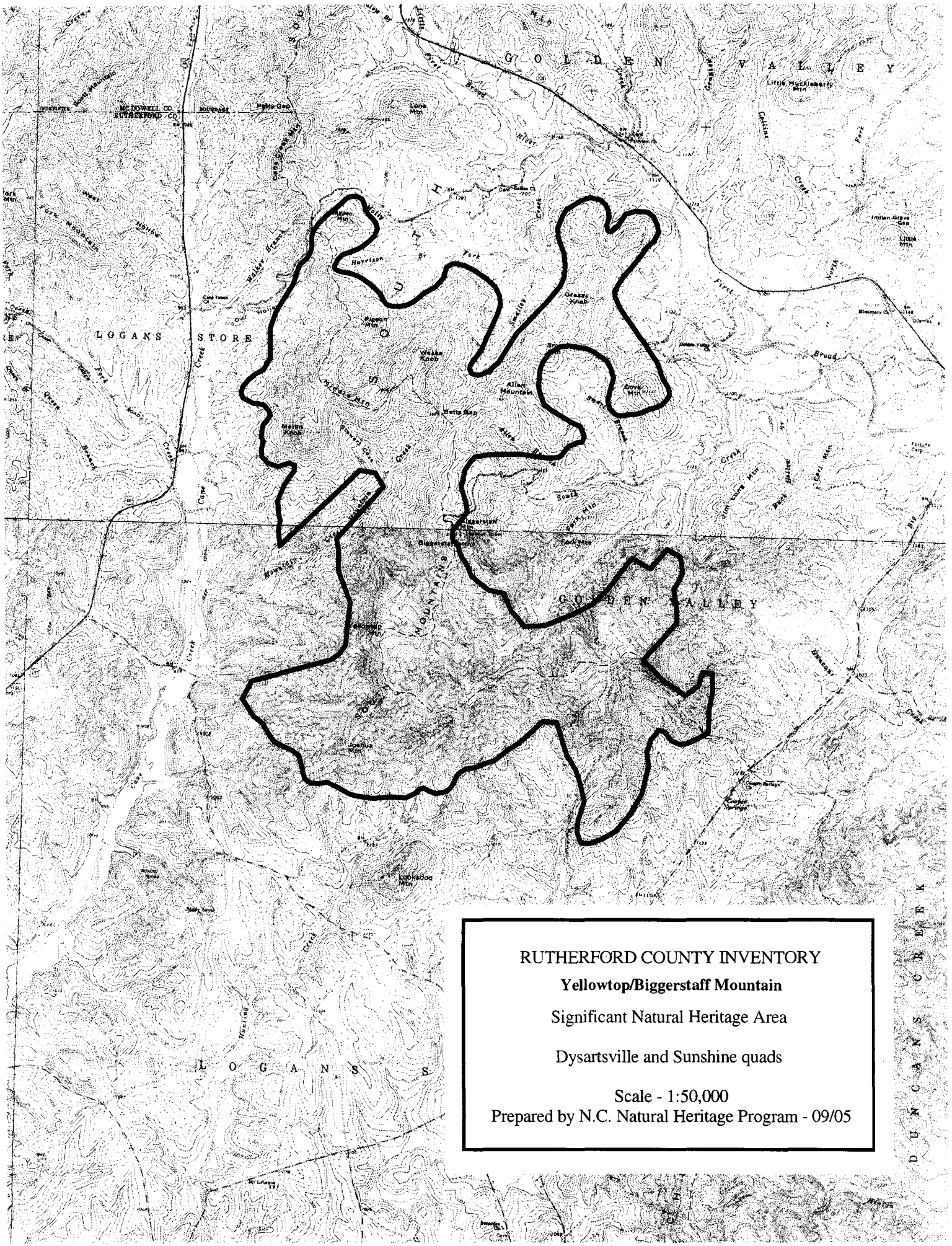
RARE PLANTS: white irisette (*Sisyrinchium dichotomum*)**,** Godfrey's thoroughwort (*Eupatorium*

godfreyanum), Appalachian cliff fern (*Woodsia appalachiana*); Watch List – white-leaf sunflower (*Helianthus glaucophyllus*), ginseng (Panax quinquefolius), buckthorn (*Frangula caroliniana*), hairy mock-orange (*Philadelphus hirsutus*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: Upper Cathey's Creek/Harris Mountain. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Yellowtop/Biggerstaff Mountain

Significant Natural Heritage Area

Dysartsville and Sunshine quads

Scale - 1:50,000

Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

YELLOWTOP/BIGGERSTAFF MOUNTAIN
Significant Natural Heritage Area

Site Significance: State
Quadrangles: Dysartsville and Sunshine
Size: 4,884 acres
Ownership: Private

SIGNIFICANT FEATURES: The site supports fairly extensive, good quality examples of six natural community types. This site also houses ten rare plant species and one rare animal species. Among the rare plant species present within the site, two have federal status. They include the Federal and State Endangered white irisette (*Sisyrinchium dichotomum*), and the Federal Species of Concern divided-leaf ragwort (*Packera millefolium*).

LANDSCAPE RELATIONSHIPS: This site is located within the South Mountains/Foothills Megasite, and is just southwest of the South Mountains Macrosite. Lone Mountain Natural Area borders this site to the north. Fork Mountain/GSA Camp is adjacent this site to the east. Lands to the south are much more fragmented, with numerous farms and residential developments south towards the town of Rutherfordton. Within the site, past and recent logging events provide habitat ranging from young forest to mature pockets of old growth forest communities. This provides a wide array of cover and forage species for a diverse suite of animals, but may reduce habitat for area-sensitive species such as black bear.

SITE DESCRIPTION: This site covers an extensive area of distinct foothills clustered together to the east of US Highway 64 in northern Rutherford County. Within the site, a number of peaks are present ranging in elevation from 1,100 to just over 2,200 feet. The terrain consists of steep valleys and slopes with narrow to broad ridgelines. Chestnut Oak Forest are dominant throughout the site along the upper slopes and ridge tops. Embedded are small, but excellent, examples of the Low Elevation Rocky Summit and Pine-Oak/Heath natural communities. Acidic Cove and Rich Cove Forests are present along the lower slopes and sheltered coves scattered throughout this site. Along the lower unsheltered slopes, Dry-Mesic Oak-Hickory Forest dominates the site. Small embedded areas of Piedmont/Low Mountain Alluvial Forest occur along the larger streams.

The Chestnut Oak Forest varies in maturity from mid-aged to fairly mature and hahas a canopy dominated by chestnut oak (*Quercus montana*), scarlet oak (*Q. coccinea*), white oak (*Q. alba*), and mockernut hickory (*Carya alba*). The understory contains black gum (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), wild cherry (*Prunus serotina*), American holly (*Ilex opaca*), and sassafras (*Sassafras albidum*). Shrubs present include mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), gorge rhododendron (*Rhododendron minus*), haw (*Viburnum prunifolium*), maple-leaf viburnum (*Viburnum acerifolium*), strawberry bush (*Euonymus americanus*), and deerberry (*Vaccinium stamineum*). Vines include muscadine (*Vitis rotundifolia*), greenbrier (*Smilax glauca*), and Carolina milkvine (*Matelea carolinensis*). The herb layer is generally sparse throughout. Common herbs include crested (*Iris cristata*), dwarf iris *(I. verna*), goldenrods (*Solidago* spp.), poverty grass (*Danthonia* sp.), panic grass (*Panicum* sp.), pipsissewa

(*Chimaphila maculata*), and little brown jugs (*Hexastylis arifolia* var. *arifolia*).

Good quality Dry-Mesic Oak-Hickory Forest covers the majority of the lower slopes in the site. The canopy is generally closed with dominant canopy species including white oak, chestnut oak, bitternut hickory (*Carya cordiformis*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). Occasionally, Virginia pine (*Pinus virginiana*) and shortleaf pine (*P. echinata*) are found in the canopy, especially where canopy contains gaps occur due to windstorm damage or tree fall. In embedded areas near streams, the canopy has river birch (*Betula nigra*), and sycamore (*Platanus occidentalis*). The understory is comprised of canopy species, sourwood, blackgum, flowering dogwood (*Cornus florida*), witch hazel (*Hamamelis virginiana*), and mountain holly (*Ilex montana*). The more common shrubs are mountain laurel, great laurel, pinxter-flower (*Rhododendron periclymenoides*), strawberry bush (*Euonymus americanus*), sparkleberry (*Vaccinium arboreum*), deerberry, and lowbush blueberry (*V. pallidum*). Vines include summer grape (*Vitis aestivalis*), Virginia creeper (*Parthenocissus quinquefolia*), and the invasive Japanese honeysuckle (*Lonicera japonica*). Pipsissewa, trailing arbutus (*Epigaea repens*), dwarf iris, little brown jugs, horse gentian (*Gentiana* sp.), turtlehead (*Chelone lyonii*), ginseng (*Panax quinquefolius*), and galax (*Galax urceolata*) are common in the herbaceous layer.

Small examples of fair quality Acidic Cove and Rich Cove Forest occurs in a number of the more sheltered coves throughout the site. The acidic coves have closed canopies dominated by red maple, white pine (*Pinus strobus*), cucumber tree (*Magnolia acuminata*), Fraser magnolia, tulip poplar, with scattered white oak and chestnut oak. The rich coves are similar, but possess more mesophytic canopy species present and include basswood (*Tilia heterophylla*) northern red oak (*Quercus rubra*) and Canada hemlock (*Tsuga canadensis*). The understory is generally comprised of canopy species as well as sourwood, black gum, redbud (*Cercis canadensis*), and flowering dogwood (*Cornus florida*). The shrub layer varies greatly between the acidic and rich coves. The acidic coves often have very dense shrub layers of mountain laurel, great laurel, gorge rhododendron, as well as various heath species. The rich coves tend to have few shrubs with occasional mountain laurel and rhododendrons. Herbs in the acidic coves are often sparse, as the thick shrub layers often shade out most of the herb layer. The most common herbs found are black cohosh (*Cimicifuga racemosa*), ragwort (*Packera* sp.), partridgeberry (*Mitchella repens*), violets (*Viola* spp.), and galax. In the rich coves, herbs occur in a much higher density and diversity. Basophiles are often present and include blue cohosh (*Caulophyllum thalictroides*), ginseng, roundleaf ragwort (*Packera obovata*), and along margins at the Oak-Hickory Forest interface, the Federal and State Endangered white irisette occurs.

Along a few of the predominant south-facing ridge crest slopes are several small examples of Pine-Oak/Heath communities. They have damaged by recent drought and the southern pine bark beetle (*Dendroctonus frontalis*). The dominant canopy species are pitch pine (*Pinus rigida*), shortleaf pine, and Virginia pine. The understory is sparse and generally consist of canopy species. Shrubs most often present include mountain laurel and various heaths (*Vaccinium* spp.), which often form thick patches. Vines, if present, are generally limited to muscadine and greenbrier. Herbs are sparse and include bracken fern (*Pteridium aquilinum*) yellow stargrass (*Hypoxis hirsuta*), and kidney-leaf rosinweed (*Silphium compositum* var. *reniforme*).

Along a few of the upper summits on the higher peaks, are excellent examples of Low Elevation

Rocky Summit. The canopy is generally open with scattered canopy species such as pitch pine, Virginia pine, chestnut oak, and hickories. The shrub layer when present consist of sassafras, wafer ash (*Ptelea trifoliata*), nine-bark (*Physocarpus opulifolius*), fringe tree (*Chionanthus virginicus*), and shrubby St.-Johns-wort (*Hypericum prolificum*). Vines include the Significantly Rare yellow honeysuckle (*Lonicera flava*), greenbrier (*Smilax bona-nox*), poison ivy, Virginia creeper, Carolina milkvine, and virgin's bower (*Clematis virginiana*). Herbs occur along the margins of rock surfaces and on soil mats scattered across the rock surface. Common herbs present include rock spikemoss (*Selaginella rupestris*), woolly lipfern (*Cheilanthes tomentosa*), Godfrey's thoroughwort (*Eupatorium godfreyanum*), Appalachian bellwort (*Campanula divaricata*), fameflower (*Talinum teretifolium*), Small's ragwort (*Packera anonyma*), flowering spurge (*Euphorbia corollata*), live-for-ever (*Sedum telephioides*), blue curls (*Trichostema dichotomum*), and October ladies' tresses (*Spiranthes cernua*).

MANAGEMENT AND PROTECTION: This site has no formal protection, and residential development is ongoing at several locations within the site. The steep rocky slopes are protected from human intrusion and development because they are mostly inaccessible. The more moderate slopes are subject to being logged or becoming housing developments.

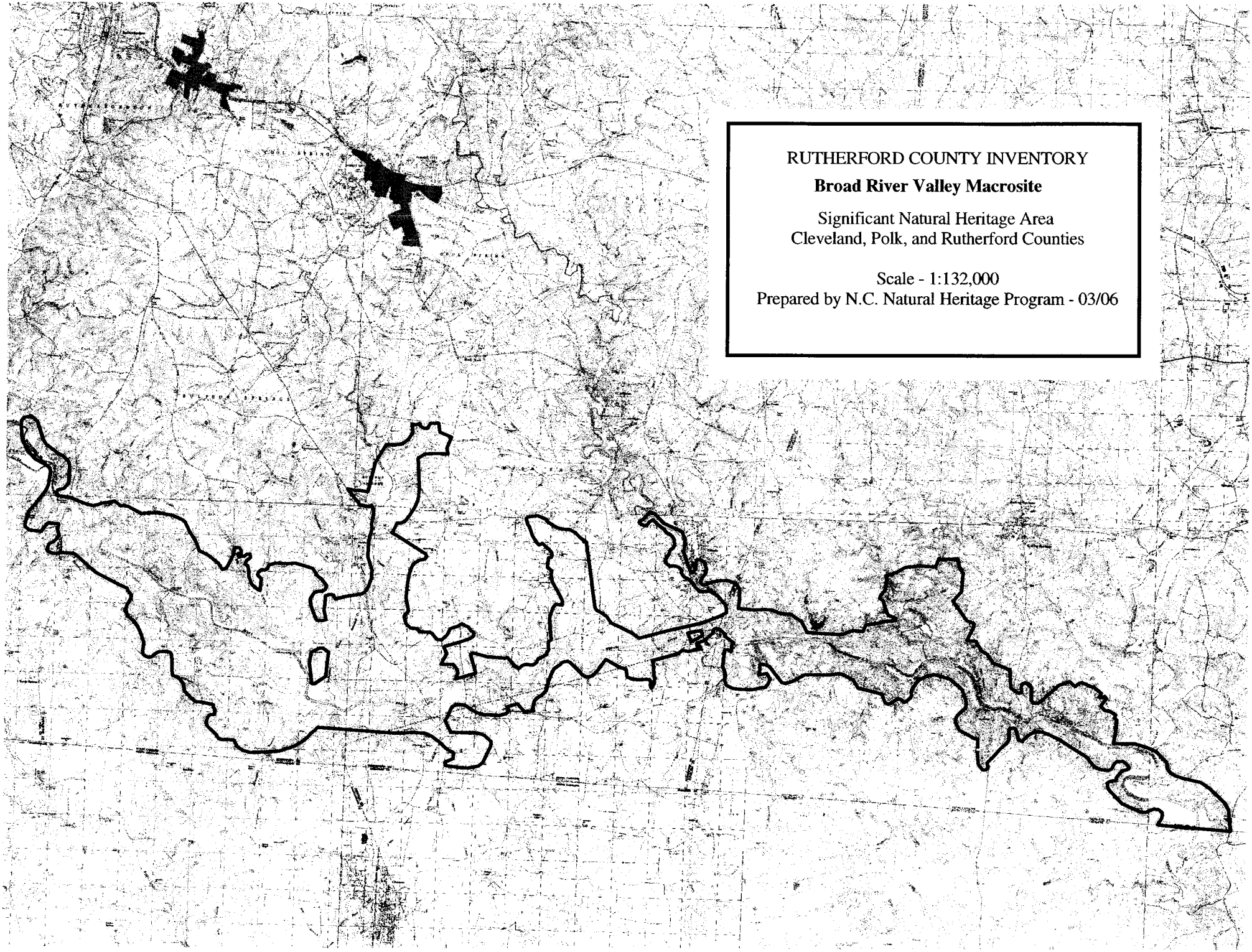
NATURAL COMMUNITIES: Chestnut Oak Forest, Acidic Cove Forest, Rich Cove Forest, Dry-Mesic Oak-Hickory Forest, Pine-Oak/Heath, and Low Elevation Rocky Summit.

RARE PLANTS: yellow honeysuckle (*Lonicera flava*), Godfrey's thoroughwort (*Eupatorium godfreyanum*), white irisette (*Sisyrinchium dichotomum*), dissected-leaf ragwort (*Packera millefolium*), thin-pod wild white indigo (*Baptisia albescens*), Appalachian woodfern (*Woodsia appalachiana*), Earl's blazing star (*Liatris squarrulosa*), sweet white trillium (*Trillium simile*), Piedmont horsebalm (*Collinsonia tuberosa*), Appalachian golden banner (*Thermopsis mollis*); Watch List – wafer ash (*Ptelea trifolia*), Carolina hemlock (*Tsuga caroliniana*), hairy mock-orange (*Philadelphus hirsutus*), roundleaf ragwort (*Packer obovata*), Virginia marbleseed (*Onosmodium virginianum*), Small's beardtongue (*Penstemon smallii*), ginseng (*Panax quinquefolius*), whiteleaf sunflower (*Helianthus glaucophyllus*), turkey-beard grass (*Xerophyllum asphodeloides*), mountain hackberry (*Celtis occidentalis*), and spreading small pogonia (*Cleistes bifaria*).

RARE ANIMALS: Timber rattlesnake (*Crotalus horridus*).

REFERENCES:

Moye, W. S. 2004. Rare plants of the Biffle Tract, Rutherford County, North Carolina. Unpublished data.


RUTHERFORD COUNTY INVENTORY
Broad River Valley Macrosite
Significant Natural Heritage Area
Cleveland, Polk, and Rutherford Counties
Scale - 1:132,000
Prepared by N.C. Natural Heritage Program - 03/06

Rutherford County Natural Area Inventory

BROAD RIVER VALLEY MACROSITE
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Cleveland, Polk, and Rutherford Counties

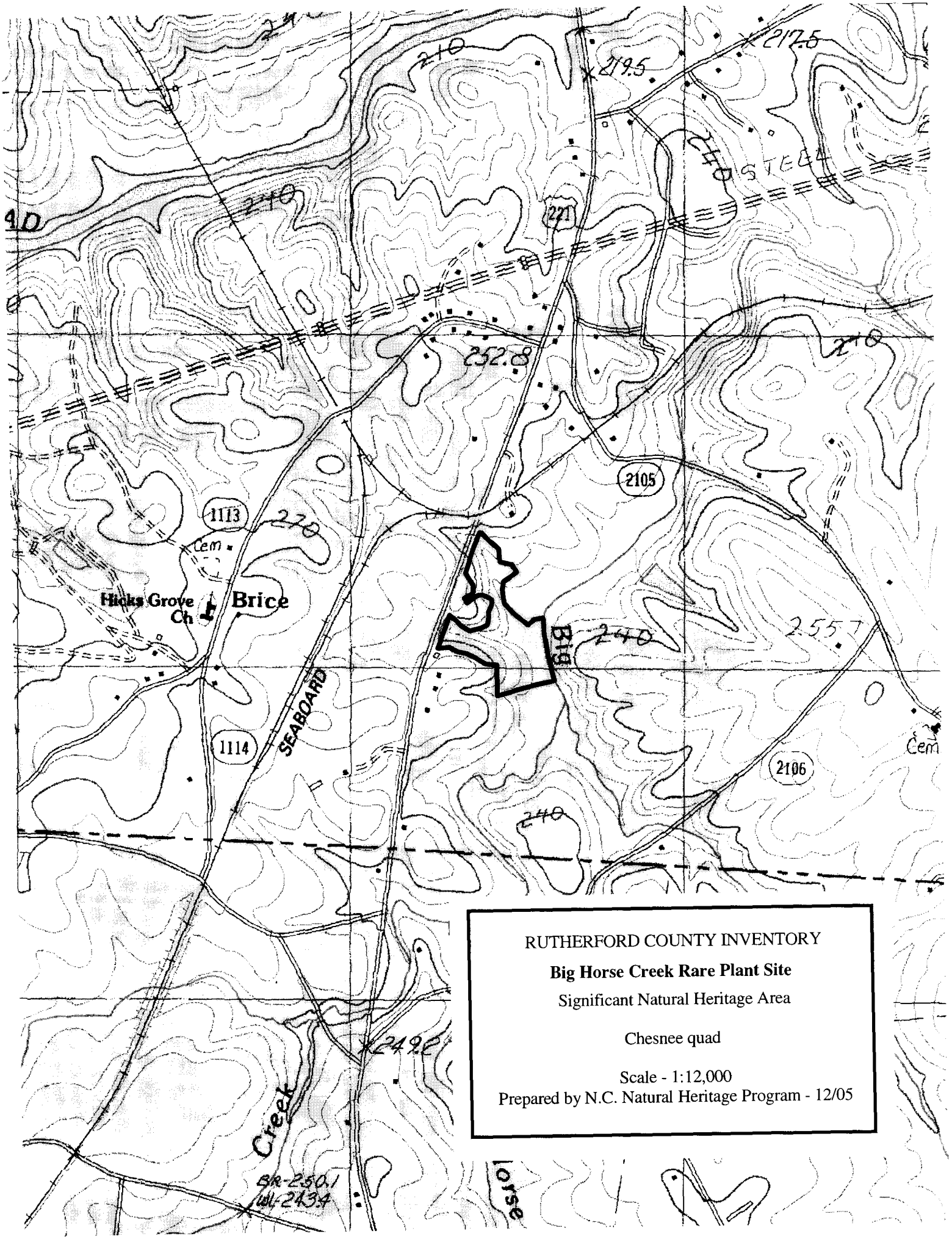
Size: 22,706 acres
Ownership: Private

The Broad River Valley Macrosite contains numerous special status animals, plants, and natural communities. This Macrosite lies along the Broad River after its confluence with Green River near the Polk/Rutherford County line and extends eastward into Cleveland County until it makes a turn southward into South Carolina. With minor fragmentation over a large area, and areas of intact bottomland forest, the Broad River Valley Macrosite has a good overall prospect for long-term ecological viability. The viability of the Macrosite is further increased by a good landscape connection eastward along the Broad River into South Carolina. Large, unfragmented areas provide benefits to species at the local forest level as well as to disturbance-sensitive species. Perhaps the most important benefit is for long-ranging animal species that require large areas of unfragmented habitat. Strong landscape connections and corridors provide essential habitat for large mammal species such as bobcat and black bear.

The Rutherford County portion of this Macrosite includes Big Horse Creek Rare Plant Site (Parris Heartleaf Registered Heritage Area), Big Island Carolina Hemlock Bluff, Brice Rare Plant Site, Floyds Creek Tributary Rare Plant Site, Hensons Creek Natural Area, Hogpen Branch Flatrocks, Island Ford Flatrocks, Jenkins Flatrock, Jonas Road Rare Plant Site, Kudzu Farm Rare Plant Site, McKinney Bridge Site, McKinney Creek Low Elevation Seep, New Bethel Rare Plant Site, Sandy Mush Outcrop, and numerous dwarf-flowered heartleaf (*Hexastylis naniflora*) populations.

This Macrosite contains a diverse assemblage of natural communities that are spread along the river and include several rare natural communities such as Carolina Hemlock Bluff and Granitic Flatrocks. Significantly rare plants within the site include thin pod indigo (*Baptisia albescens*), single-flowered stitchwort (*Minuartia uniflora*), horned bladderwort (*Utricularia cornuta*), and Piedmont quillwort (*Isoetes piedmontana*). Significantly rare animal species include old field mouse (*Peromyscus polionotus*). The mouse is known only from southern Rutherford County and perhaps southern Cleveland County where it reaches the northern end of its range. At numerous locations along the Broad River, habitat for the State Species of Concern loggerhead shrike (*Lanius ludovicianus*) most likely exists. The Significantly Rare Santee chub (*Cyprinella zanema*) is known from two locations within the Macrosite.

Within the Macrosite, most of the Standard Sites have no formal protection. However, the Broad River Greenway in Cleveland County is a protected park and contains the largest protected population of dwarf-flowered heartleaf in the world.



RUTHERFORD COUNTY INVENTORY

Big Horse Creek Rare Plant Site

Significant Natural Heritage Area

Chesnee quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 12/05

Rutherford County Natural Area Inventory

BIG HORSE CREEK RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Chesenee
Size: 17 Acres
Ownership: Private

SIGNIFICANT FEATURES: This site is significant because it contains a population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*).

LANDSCAPE RELATIONSHIPS: This site is located in south central Rutherford County four miles south-southeast of the community of Harris near the South Carolina state line. It is located within the Broad River Valley Macrosite near several small to moderate-sized populations of dwarf-flowered heartleaf (*Hexastylis naniflora*), a State and Federally threatened spices with distribution limited to small streams feeding into the Broad River. The Brice Rare Plant Site is located less than one-half mile to the northwest, and the Floyds Creek Tributary Rare Plant Site is about 1.5 miles to the north.

SITE DESCRIPTION: This site lies along a small tributary of Big Horse Creek, along the east side of US Hwy 221 South near the South Carolina state line. It consists of an east-west running slope with maturing forest communities ranging from a Mesic Mixed Hardwood Forest to a Dry-Mesic Oak-Hickory Forest along the unnamed tributary. Dominant canopy species include white oak (*Quercus alba*), pig nut hickory (*Carya glabra*), mockernut hickory (*C. alba*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). The understory is comprised of flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), and scattered occurrences of downy serviceberry (*Amelanchier arborea*). Shrubs include chinquapin (*Castanea pumila*), mountain laurel (*Kalmia latifolia*), pinxter-flower (*Rhododendron periclymenoides*), and sassafras (*Sassafras albidum*). Woody vines include Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), and the invasive Japanese honeysuckle (*Lonicera japonica*). The herb layer is diverse with partridgeberry (*Mitchella repens*), bellwort (*Uvularia* sp.), trailing arbutus (*Epigaea repens*), violets (*Viola* sp.), rattlesnake plantain (*Goodyera pubescens*), bloodroot (*Sanguinaria canadensis*), dwarf-flowered heartleaf, cinnamon fern (*Osmunda cinnamomea*), ebony spleenwort (*Asplenium platyneuron*), Christmas fern (*Polystichum acrostichoides*), and sedges (*Carex* spp.) present.

MANAGEMENT AND PROTECTION: This site has no formal protection, but the dwarf-flowered heartleaf population is within a Registered Natural Heritage Area (RHA). RHAs are non binding voluntary agreements with the North Carolina Natural Heritage Program that provide some recognition of the landowners commitment to site conservation.

NATURAL COMMUNITIES: Mesic Mixed Hardwoods and Dry-Mesic Oak-Hickory Forest.

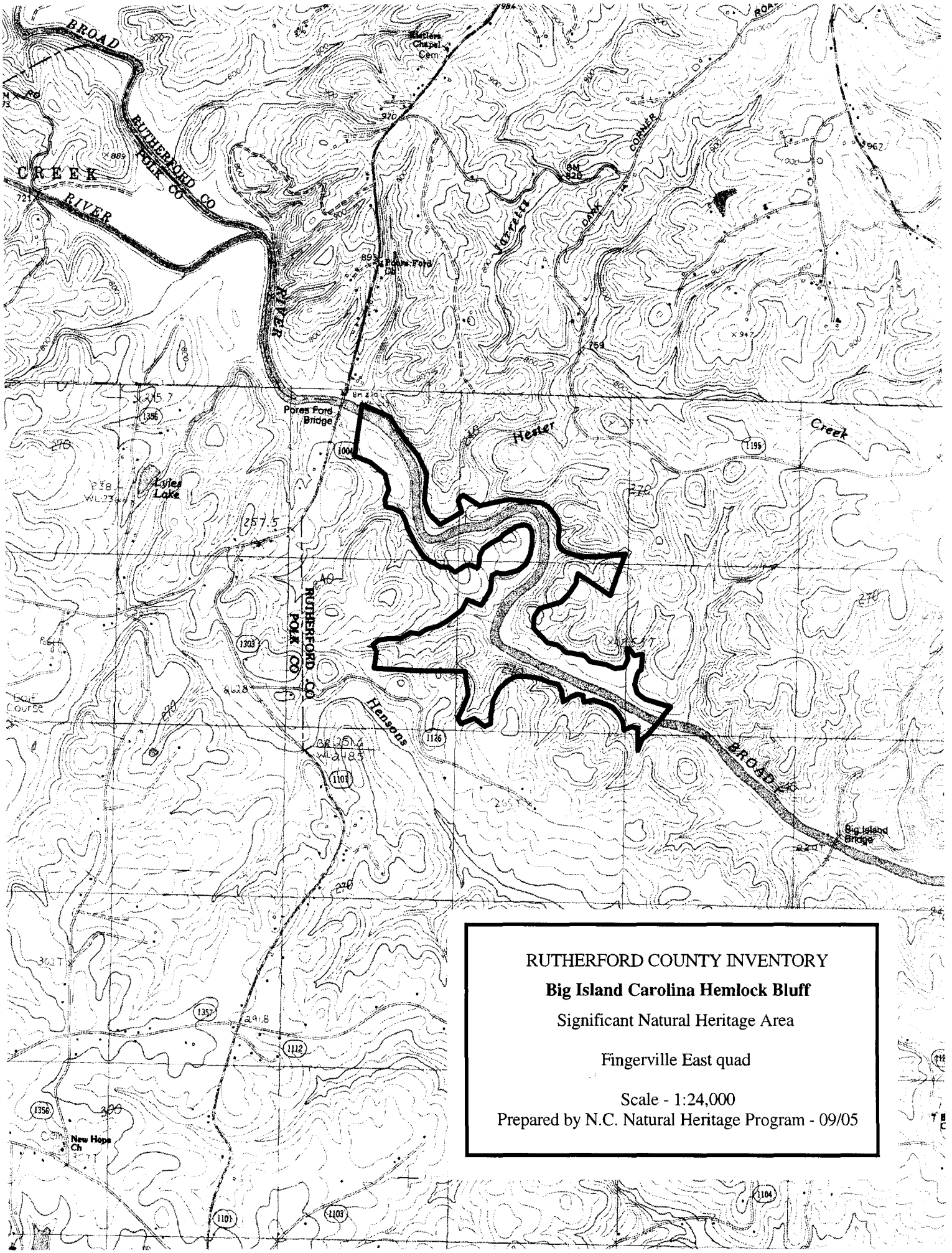
RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*).

RARE ANIMALS: None known.

REFERENCES:

H.W. Lochner. 2005. Letter regarding *Hexastylis naniflora* survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp.

Renninger H. 2003. Field forms or similar data contributed to the N. C. Natural Heritage Program by persons or organizations outside the program.



RUTHERFORD COUNTY INVENTORY

Big Island Carolina Hemlock Bluff

Significant Natural Heritage Area

Fingerville East quad

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

BIG ISLAND CAROLINA HEMLOCK BLUFF
Significant Natural Heritage Area

Site Significance: State
Quadrangle: Fingerville East
Size: 217 acres
Ownership: Private

SIGNIFICANT FEATURES: This site has very good examples of two common natural community types and a fair example of the rare Carolina Hemlock Bluff natural community, a population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*), and a suite of Watch List species that includes nestronia (*Nestronia umbellula*).

LANDSCAPE RELATIONSHIPS: This site lies within the Broad River Valley Macrosite about 4.3 miles west of Harris. It is located 0.5 miles west of Hensons Creek Natural Area. Along this stretch of the Broad River, little or no residential development has taken place. This site is part of a continuous forested corridor which runs approximately 8.5 miles along the Broad River from the Rutherford-Polk County line east to US Hwy 221. Most land fragmentation in this landscape mostly comes from pasture and crop land along and near the river.

SITE DESCRIPTION: The site consists of a steep bluff and floodplain along a 1.75 mile length of river. The site includes a small, unnamed tributary that flows into Broad River. Along that tributary is a good-sized population of dwarf-flowered heartleaf.

A small, but fair example of the rare Carolina Hemlock Bluff natural community is found along a steep rocky north-facing ridge overlooking the Broad River. The canopy here is co-dominated by Carolina hemlock (*Tsuga caroliniana*), white oak (*Quercus alba*), chestnut oak (*Q. montana*), northern red oak (Q. *rubra*), scarlet oak (*Q. coccinea*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). The understory contains sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), and black gum (*Nyssa sylvatica*). Dominant shrubs include mountain laurel (*Kalmia latifolia*), great laurel (*Rhododendron maximum*), sparkleberry (*Vaccinium arboreum*), and scattered areas of nestronia. Woody vine species are sparse with only Virginia creeper (*Parthenocissus quinquefolia*) and muscadine (*Vitis rotundifolia*) present. The herb layer varies according to location with respect to the Carolina hemlock stands and available light. Pipsissewa (*Chimaphila maculata*), partridgeberry (*Mitchella repens*), galax (*Galax urceolata*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), and sedges (*Carex* spp.) are common in the herbaceous layer.

Along the Broad River is a very good example of Piedmont/Mountain Levee Forest. This community is located east of the oxbow and the Carolina Hemlock Bluff and extends along the river almost four miles. The canopy trees are those typical for a floodplain forest with river birch (*Betula nigra*) and box elder (*Acer negundo*) being the dominant species. white ash (*Fraxinus americana*), and sycamore (*Platanus occidentalis*), are also present. On higher ground, tulip poplar, red maple, and shortleaf pine (*Pinus echinata*) occur with sweetgum (*Liquidambar styraciflua*), water oak (*Q. nigra*), and willow oak (*Q. phellos)* in the canopy. The understory consists of ironwood (*Carpinus caroliniana*),

sourwood, American holly (*Ilex opaca*), and Carolina silverbell (*Halesia tetraptera*). Along the higher floodplain, a few sparkleberry, strawberry bush (*Euonymus americanus*), and nestronia occur. Common woody vines include greenbrier (*Smilax* sp.), Virginia creeper, trumpet vine (*Campsis radicans*), poison ivy (*Toxicodendron radicans*), crossvine (*Bignonia capreolata*), grapes (*Vitis aestivalis*, and *V. rotundifolia*), wild yam (*Dioscorea villosa*), and the invasive Japanese honeysuckle (*Lonicera japonica).* Common herbs include river oats (*Chasmanthium latifolium*), bottlebrush grass (*Hystrix patula*), goldenrods (*Solidago* spp.), rattlesnake fern (*Botrychium virginianum*), little sweet Betsy (*Trillium cuneatum*), and Christmas fern (*Polystichum acrostichoides*).

Dry-Mesic Oak-Hickory Forest occurs away from the river on the moderately steep slopes in the southern portion of the site. The canopy is dominated by white oak, post oak (*Q. stellata*), southern red oak (*Q. falcata*), northern red oak, and scarlet oak. Hickories present include bitternut hickory (*C. cordiformis*), mockernut hickory (*C. alba*), and pignut hickory (*C. glabra*). The understory consists of red maple, sourwood, American holly, and black gum. Shrubs present are mountain laurel, lowbush blueberry (*Vaccinium pallidum*), deerberry (*V. stamineum*), and strawberry bush. Little brown jugs, dwarf-flowered heartleaf, partridgeberry, Canadian cinquefoil (*Potentilla canadensis*), rattlesnake plantain *(Goodyera pubescens),* and naked trefoil (*Desmodium nudiflorum*) are common herbs present.

MANAGEMENT AND PROTECTION: This site currently has no formal protection. Logging has already occurred near this site and may extend into it during the near future. The bluffs are fairly protected due to the steep slopes leading down to the river and the rocky substrate they occur on. Future residential development is a potential threat to this area and could prove detrimental to the rare and watch list species present. This site should be a high priority candidate for protection.

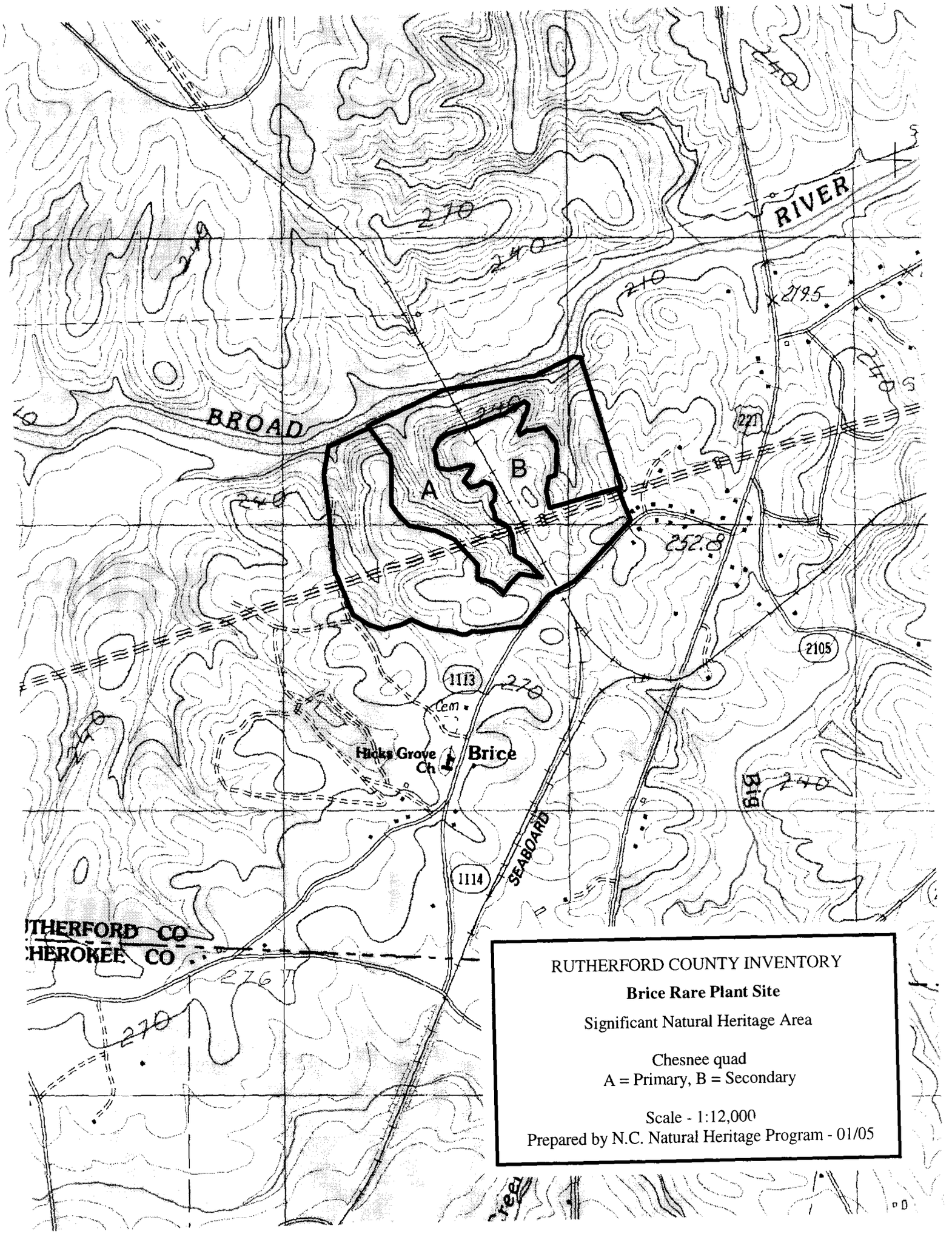
NATURAL COMMUNITIES: Carolina Hemlock Bluff, Piedmont/Mountain Levee Forest**,** and Dry Mesic Oak-Hickory Forest.

RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*); Watch List – lance-leaf bedstraw (*Galium lanceolatum*), nestronia (*Nestronia umbellula*), little sweet Betsy (*Trillium cuneatum*), and Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2004. Site Survey Report: Big Island Carolina Hemlock Bluff. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Brice Rare Plant Site

Significant Natural Heritage Area

Chesnee quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 01/05

Rutherford County Natural Area Inventory

BRICE RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: State
Quadrangle: Chesenee
Size: 185 acres (72 primary; 113 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains one of the best significant populations of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) in the state along several small unnamed streams flowing into the Broad River, and the Watch List species leatherwood (*Dirca palustris*).

LANDSCAPE RELATIONSHIPS: This site is located within the Broad River Valley Macrosite, three miles south-southeast of Harris along the Broad River just west of US Hwy 221. Several small dwarf-flowered heartleaf populations are in this area with Big Horse Creek Rare Plant Site, and the Floyds Creek Tributary Rare Plant Site nearby. Two miles upstream from this site along the Broad River are McKinney Bridge Site, and Hensons Creek Natural Area.

SITE DESCRIPTION: The site includes the river floodplain, a steep north-facing bluff, and upland deep coves with primary streams that flow into the Broad River. Natural communities present include Chestnut Oak Forest, Dry-Mesic Oak-Hickory Forest, and Piedmont/Low Mountain Alluvial Forest.

The site contains a steep north-facing bluff extending north to the Broad River with a natural community of Chestnut Oak Forest. Chestnut oak (*Quercus montana*) dominates the canopy, reaching over 95 percent of the canopy in some places. It is a maturing uneven aged forest, with regeneration occurring in light gaps created by tree fall. The remaining canopy is a mixture of northern red oak (*Q. rubra*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), tulip poplar (*Liriodendron tulipifera*), and a few basswood (*Tilia heterophylla*). Cucumber trees (*Magnolia acuminata*) occur along a small stream. The understory is comprised of red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), and black gum (*Nyssa sylvatica*). Common shrubs are great laurel (*Rhododendron maximum*), mountain laurel (*Kalmia latifolia*), sparkleberry (*Vaccinium arboreum*), horse sugar (*Symplocos tinctoria*), leatherwood (*Dirca palustris*), and hackberry (*Celtis* spp.). Dominant herbs include partridgeberry (*Mitchella repens*), galax (*Galax urceolata*), rattlesnake plantain (*Goodyera pubescens*), trefoil (*Desmodium* sp.), and pipsissewa (*Chimaphila maculata*).

A Dry-Mesic Oak-Hickory Forest occurs in a cove-like area leading away from the river. It trails southward along an unnamed stream, adjacent slopes, and uplands. The uppermost portion of the slopes and ridge tops have been logged in the recent past. The more abundant oak species include white oak (*Quercus alba*), chestnut oak, and post oak (*Q. stellata*), northern red oak, mockernut hickory (*C. alba*), red maple, and Virginia pine (*Pinus virginiana*). The understory is comprised of

flowering dogwood, American holly (*Ilex opaca*), sourwood, and black gum. Shrubs include lowbush blueberry, strawberry bush (*Euonymus americanus*), and mountain laurel. Common woody vines include muscadine (*Vitis rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*). Herbs present include dwarf-flowered heartleaf, Virginia snakeroot (*Aristolochia serpentaria*), showy skullcap (*Scutellaria serrata*), and naked trefoil (*Desmodium nudiflorum*).

Along the floodplain of the Broad River, a strip of Piedmont/Low Mountain Alluvial Forest community occurs which extends up and down the river beyond the site boundary. Canopy species are those typical of a floodplain forest with river birch (*Betula nigra*), white ash (*Fraxinus americana*), sweetgum (*Liquidambar styraciflua*), box elder (*Acer negundo*), and tulip poplar common. Out of the immediate floodplain, basswood, red maple, and water oak (*Q. nigra*) are in the canopy. The understory consists of ironwood (*Carpinus caroliniana*), American holly, and Carolina silverbell (*Halesia tetraptera*). Shrubs present include sweet shrub (*Calycanthus floridus*), dog hobble (*Leucothoe fontanesiana*), and hairy mock-orange (*Philadelphus hirsutus*). Woody vines present along the river include greenbrier (*Smilax* sp.), Virginia creeper, trumpet vine (*Campsis radicans)*, poison ivy, crossvine (*Bignonia capreolata*), the invasive Japanese honeysuckle, and wild yam (*Dioscorea villosa*). Common in the herbaceous layer are river oats (*Chasmanthium latifolium*), bottlebrush grass (*Hystrix patula*), ironweed (*Vernonia* sp.), river cane (*Arundinaria gigantea*), violets (*Viola palmata, V. pedata,* and *V. hastata*), chickweed (*Stellaria media*), Indian tobacco (*Lobelia inflata*), monkey flower (*Mimulus ringens*), little sweet Betsy (*Trillium cuneatum*), Catesby's trillium (*Trillium catesbaei*), and cardinal flower (*Lobelia cardinalis*).

MANAGEMENT AND PROTECTION: This site has no formal protection. This site would be an excellent are for mitigation or conservation.

NATURAL COMMUNITIES: Chestnut Oak Forest**,** Dry-Mesic Oak-Hickory Forest, and Piedmont/Low Mountain Alluvial Forest.

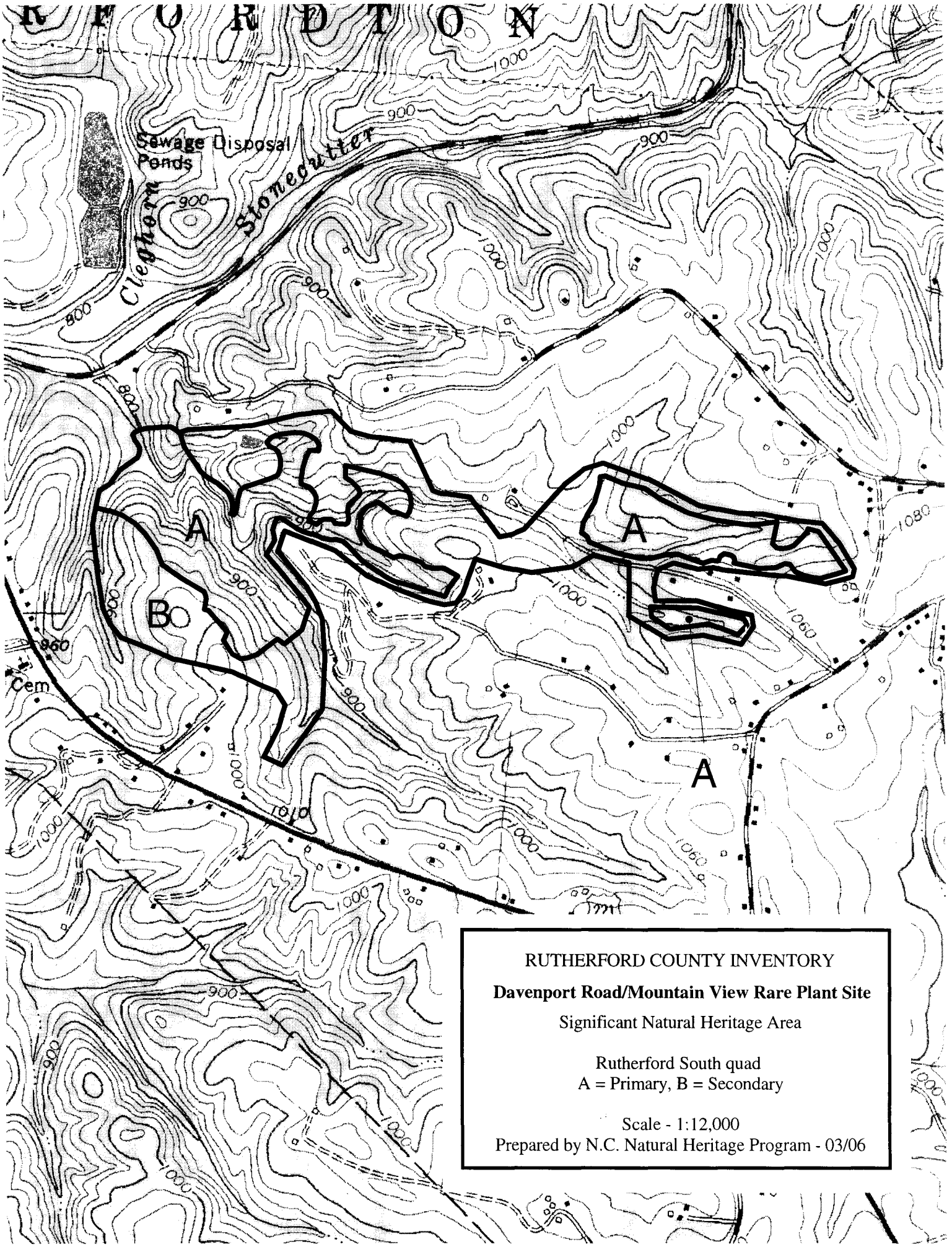
RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*); Watch List – leatherwood (*Dirca palustris*), galax (*Galax urceolata*), hairy mock-orange (*Philadelphus hirsutus*), little sweet Betsy (*Trillium cuneatum*), and showy skullcap (*Scutellaria serrata.*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2003. Field forms or similar data contributed to the N.C. Natural Heritage Program by persons or organizations outside the program.

Padgett, J. E. 2004. Site Survey Report: Brice Rare Plant Site. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Davenport Road/Mountain View Rare Plant Site

Significant Natural Heritage Area

Rutherford South quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 03/06

Rutherford County Natural Area Inventory

DAVENPORT ROAD/MOUNTAIN VIEW RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: State **Size:** 219 acres (96 primary; 123 secondary)
Quadrangle: Rutherfordton South **Ownership:** Private

SIGNIFICANT FEATURES: This site contains one of the largest known populations of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) in the state with over 3,400 plants growing along a stream corridor.

LANDSCAPE RELATIONSHIPS: This site lies two miles south of Rutherfordton. There are no other Significant Natural Heritage Areas (SNHAs) in this area due to a fragmented landscape of rural residential areas, some agricultural areas, and the urban centers of Rutherfordton and Spindale.

SITE DESCRIPTION: This site, located along a tributary of Stonecutter Creek, is a twisting ravine of moderate to steep slopes with narrow ridgelines. Along the lower slopes in several areas, the community type is close to being an Acidic Cove Forest where mountain laurel (*Kalmia latifolia*) grows in thick patches.

Good examples of a Dry-Mesic Oak-Hickory Forest occur throughout most of the site. Dominant canopy species include white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), southern red oak (*Q. falcata*), mockernut hickory (*Carya alba*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*). The understory includes flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), Carolina silverbell (*Halesia tetraptera*), silky dogwood (*Cornus amomum*), and black gum (*Nyssa sylvatica*). Shrubs present include strawberry bush (*Euonymus americanus*), black haw (*Viburnum prunifolium*), sparkleberry (*Vaccinium arboreum*), and beaked hazelnut (*Corylus cornuta*). Along the stream, shrubs such as tag alder (*Alnus serrulata*), sweet shrub (*Calycanthus floridus*), dog hobble (*Leucothoe fontanesiana*), spicebush (*Lindera benzoin*), and the invasive Chinese privet (*Ligustrum sinense*) are common. Vines include Virginia creeper (*Parthenocissus quinquefolia*), muscadine (*Vitis rotundifolia*), and crossvine (*Bignonia capreolata*). The more common herbaceous species present are dwarf-flowered heartleaf, pipsissewa (*Chimaphila maculata*), Christmas fern (*Polystichum acrostichoides*), rattlesnake weed (*Hieracium venosum*), partridgeberry (*Mitchella repens*), galax (*Galax urceolata*), rattlesnake plantain (*Goodyera pubescens*), wood rush (*Luzula multiflora*), and cinquefoil (*Potentilla canadensis*).

Along a small primary tributary is a small cove-like area that contains a Mesic Mixed Hardwood Forest community. Dominant canopy species are beech (*Fagus grandifolia*), white oak, post oak (*Quercus stellata*), mockernut hickory, and tulip poplar. The understory is represented by flowering dogwood, sourwood, silky dogwood, and scattered Carolina silverbell. Dominant shrub species are strawberry bush, black haw, sparkleberry, pinxter-flower (*Rhododendron periclymenoides*), possum haw (*Viburnum nudum*), sweet shrub, and spicebush. Dominant woody vine species include muscadine and Virginia creeper. Herbs include dwarf-flowered heartleaf, pipsissewa, New York fern

(*Thelypteris noveboracensis*), Christmas fern, partridgeberry, devil's-bit (*Chamaelirium luteum*), rattlesnake plantain, and Indian cucumber root (*Medeola virginiana*).

MANAGEMENT AND PROTECTION: This site has no formal protection, but is potentially an excellent candidate for conservation by a local land trust.

NATURAL COMMUNITIES: Dry-Mesic Oak–Hickory Forest and Mesic Mixed Hardwood Forest.

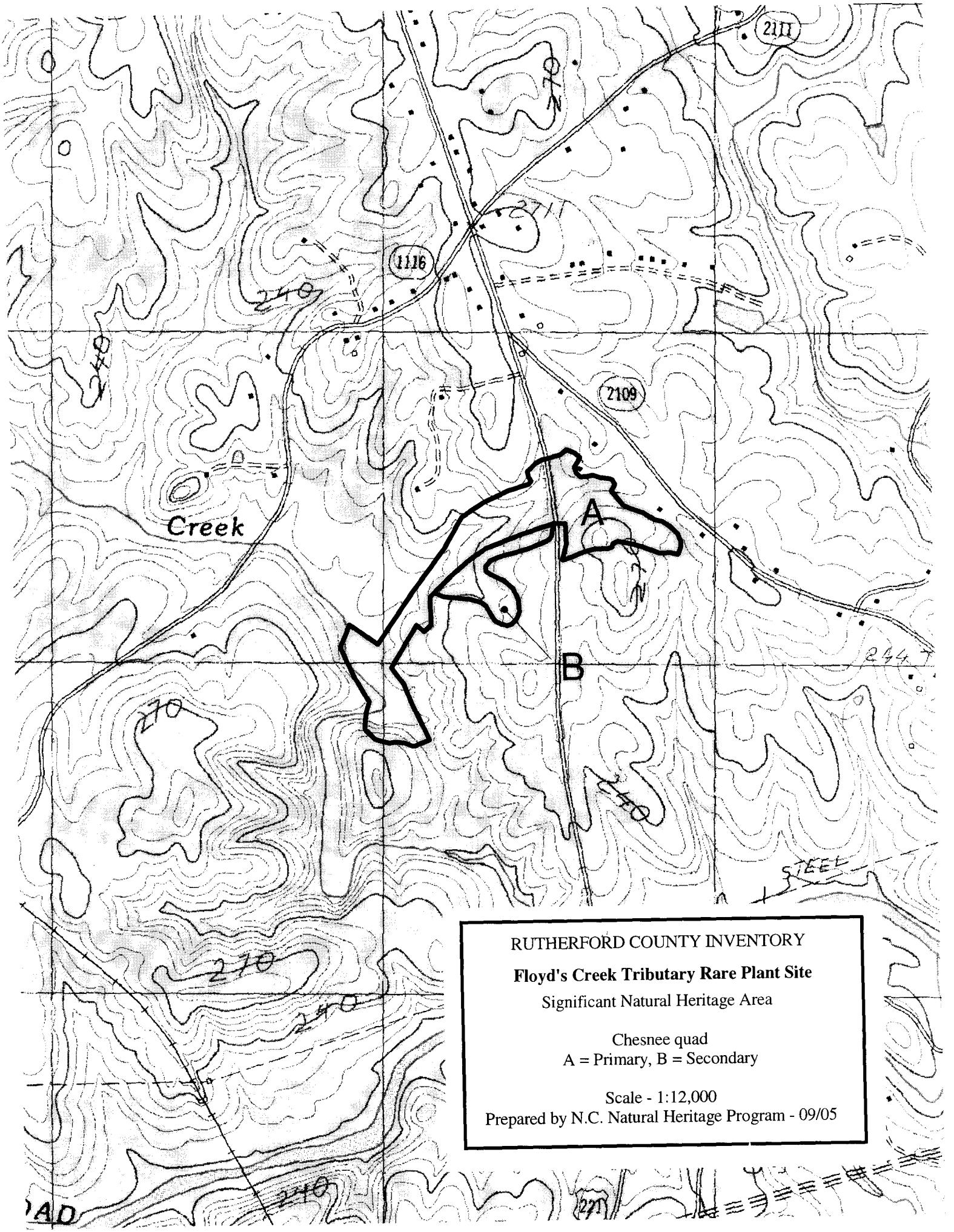
RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*); Watch List – wood rush (*Luzula multiflora*) and little sweet Betsy (*Trillium cuneatum*).

RARE ANIMALS: None known.

REFERENCES:

H.W. Lochner. 2005. Letter regarding *Hexastylis naniflora* survey data, Rutherfordton Bypass (T.I.P. R-2233A&B). 3pp

Padgett, J.E. 2005. Site Survey Report: Mountain View Rare Plant Site. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Floyd's Creek Tributary Rare Plant Site

Significant Natural Heritage Area

Chesnee quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

FLOYDS CREEK TRIBUTARY RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Chesnee
Size: 54 acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains a significant population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) located in a small but good quality Mesic Mixed Hardwood Forest.

LANDSCAPE RELATIONSHIPS: This site is located in southern Rutherford County and is within the Broad River Valley Macrosite. It is an isolated forested patch situated between pastures and homes to the north and Riverstone industrial park to the south. The eastern third of the site is divided by US Highway 221, which is scheduled to be widened.

SITE DESCRIPTION: This site is a steep ravine along an unnamed tributary of Floyd's Creek. It contains a good quality Mesic Mixed Hardwood Forest. The canopy is closed with uneven aged trees located in and along several cove like areas and lower slopes. Dominant canopy species include beech (*Fagus grandifolia)*, tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), scarlet oak (*Quercus coccinea*), white oak (*Q. alba*), and northern red oak (*Q. rubra*). The understory is sparse and includes flowering dogwood (*Cornus florida*), sourwood (*Oxydendrum arboreum*), Carolina silverbell (*Halesia tetraptera*), downy serviceberry (*Amelanchier arborea*), ironwood (*Carpinus caroliniana*), and American holly (*Ilex opaca*). The shrub layer is fairly diverse with strawberry bush (*Euonymus americanus*), sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), maple-leaf viburnum (*Viburnum acerifolium*), spicebush (*Lindera benzoin*), dog hobble (*Leucothoe fontanesiana*), mountain laurel (*Kalmia latifolia*), pinxter-flower (*Rhododendron periclymenoides*), and the invasive Chinese privet (*Ligustricum sinense*) is abundant. Herbs include rattlesnake root (*Prenanthes serpentaria*), rattlesnake plantain (*Goodyera pubescens*), Northern horsebalm (*Collinsonia canadensis*), Indian pipe (*Monotropa uniflora*), elephant's foot (*Elephantopus caroliniana* and *E. tomentosa*), galax (*Galax urceolata*), little brown jugs (*Hexastylis arifolia* var. *arifolia*), devil's-bit (*Chamaelirium luteum*), bloodroot (*Sanguinaria canadensis*), dwarf-flowered heartleaf, and small green wood orchid (*Platanthera clavellata*).

MANAGEMENT AND PROTECTION: This site has no formal protection and is subject to partial destruction due to the scheduled widening of US 221. This site has high potential as a mitigation site, or as a conservation project for a local land trust.

NATURAL COMMUNITIES: Mesic Mixed Hardwood Forest.

RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*).

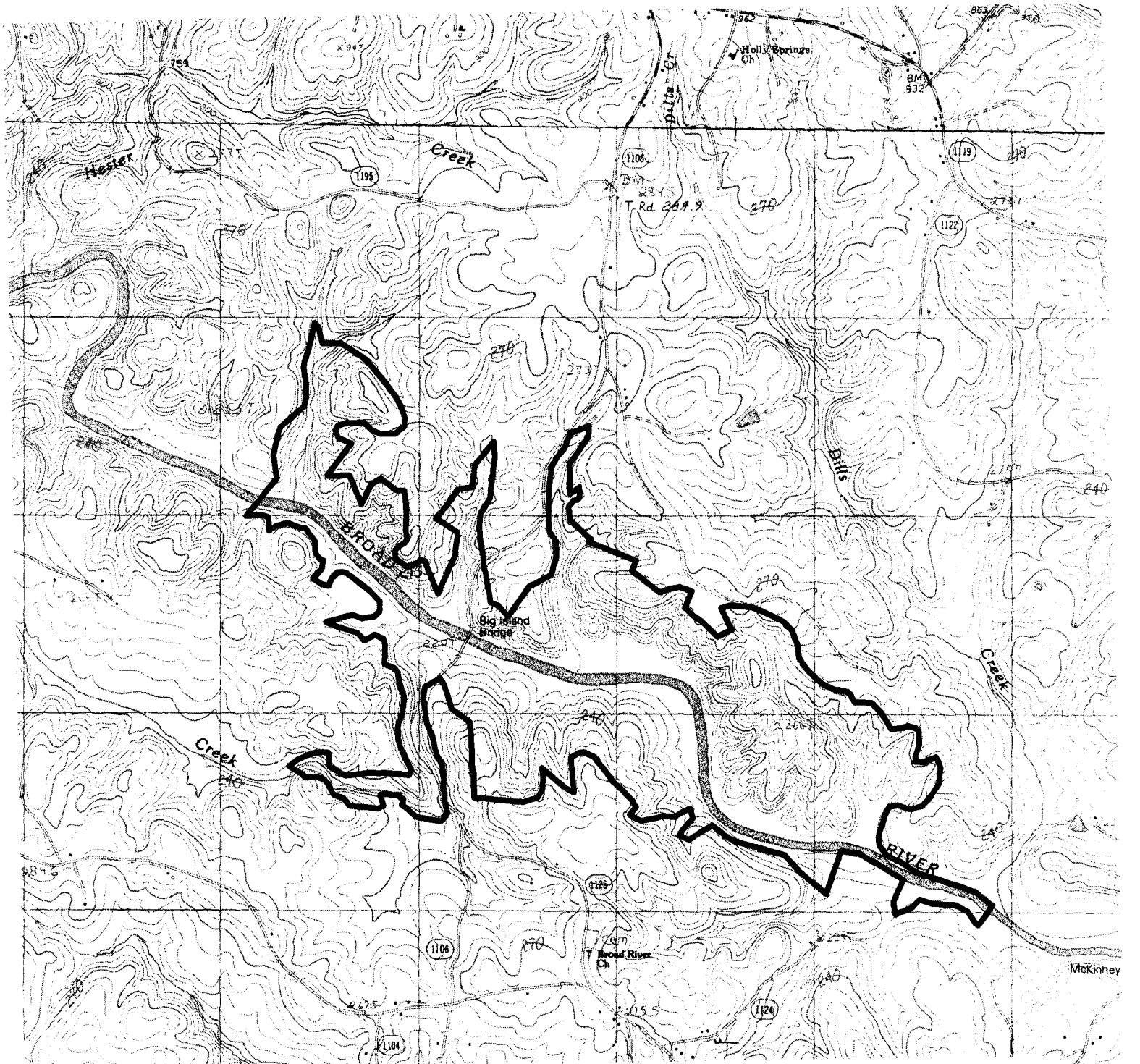
RARE ANIMALS: None Known.

REFERENCES:

HDR Engineering, Inc. of the Carolinas (HDR) and Habitat Assessment and Restoration Program (HARP) for NC Department of Transportation (NC DOT). 2005. Dwarf-flowered Heartleaf (*Hexastylis naniflora*) Inventory: Burke, Caldwell, Catawba, Cleveland, and Polk Counties, North Carolina. NCDOT TIP No. R-2824. 39pp.

H. W. Lochner Inc. 2005. Dwarf-flowered heartleaf Survey; NC DOT Project R-2233 A&B Rutherfordton Bypass.

Padgett, J.E. 2005. Site Survey Report: Floyd's Creek Tributary and Rare Plant Site. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Hensons Creek Natural Area

Significant Natural Heritage Area

Fingerville East quad

Scale - 1:24,000

Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

HENSONS CREEK NATURAL AREA
Significant Natural Heritage Area

Site Significance: National
Quadrangle: Fingerville East
Size: 600 acres
Ownership: Private

SIGNIFICANT FEATURES: The site is significant for an extensive matrix of good to very good quality natural communities located along the Broad River. It has one of the largest known populations of dwarf-flowered heartleaf (*Hexastylis naniflora*) in the world. Several small populations of the Watch List species nestronia (*Nestronia umbellate*) are also present.

LANDSCAPE RELATIONSHIPS: This site is located along within the Broad River Valley Macrosite, three air-miles west of Harris, in the southern part of Rutherford County. It extends from the Polk County line eastward along both sites of the Broad River for nearly five miles. Very little development has occurred within the site. Big Island Carolina Hemlock Bluff is located 0.5 miles to the west, and the Kudzu Farm Rare Plant Site is located 0.75 miles to the northeast.

SITE DESCRIPTION: This site runs about two miles along the Broad River and contains moderate to steep slopes along the north side of the river with areas of raised floodplain along the south side of the river. The north side of the river contains alluvial forest along the floodplain and oak-hickory forest along steep slopes and ridgelines.

Along Hensons Creek, south of the Broad River is a small but good example of a Dry Oak-Hickory Forest. The canopy is like that in the Dry-Mesic Oak-Hickory Forest, except for higher percentages of shortleaf pine (*Pinus echinata*), Virginia pine (*P. virginica*), and dry-tolerant oak species. The dominant canopy species are those common to south-facing dry/rocky habitats. Canopy species present include scarlet oak (*Quercus coccinea*), northern red oak (*Q. rubra*), southern red oak *(Q. falcata*), pignut hickory (*Carya glabra*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and a few beech (*Fagus grandifolia*) are present. The shrub layer is similar to the Dry-Mesic Oak-Hickory Forest, but has marked differences such as high numbers of haw (*Viburnum prunifolium*), and widely scattered mountain laurel (*Kalmia latifolia*). Common woody vines are crossvine (Bignonia capreolata) and muscadine (*Vitis rotundifolia*). Herbs tend to be dry/drought tolerant species such as golden asters (*Chrysopsis graminifolia* and *C. mariana*), tickseed (*Coreopsis major*), thin-pod wild white indigo (*Baptisia albescens*), ground pine (*Lycopodium digitatum*), blazing star (*Liatris* sp.), pipsissewa (*Chimaphila maculata*), and dwarf-flowered heartleaf.

The largest community type present is Dry-Mesic Oak-Hickory Forest. It occurs throughout the site on the lower and upper slopes. Canopy dominates include white oak (*Q. alba*), scarlet oak, and northern red oak, mockernut hickory (*C. alba*), bitternut hickory (*C. cordiformis*) and pignut hickory. Tulip poplar, sweetgum (*Liquidambar styraciflua*), shortleaf pine, and Virginia pine are often present. Common understory species include sourwood (*Oxydendrum arboreum*), flowering dogwood

(*Cornus florida*), and black gum (*Nyssa sylvatica*). Dominant shrubs include mountain laurel, great laurel (*Rhododendron maximum*), and pinxter-flower (*Rhododendron periclymenoides*). Woody vines include poison ivy (*Toxicodendron radicans*), crossvine, and Virginia creeper (*Parthenocissus quinquefolia*). Dominant herbs are poverty grass (*Danthonia* spp.), pipsissewa), Virginia snakeroot (*Aristolochia serpentaria*), partridgeberry (*Mitchella repens*), dwarf-flowered heartleaf, little brown jugs (*Hexastylis arifolia* var. *arifolia*), and rattlesnake plantain (*Goodyera pubescens*).

Along small stream corridors throughout the site, small areas of Mesic Mixed Hardwoods and Acidic Cove Forest are present. The canopy in both community types is similar, with the Mesic Mixed Hardwoods having a higher percentage of tulip poplar and beech. The remainder of the canopy is comprised of a combination of acid-tolerant mesophytic trees such as few northern red oak, a few yellow buckeye (*Aesculus flava*), mockernut hickory, pignut hickory, white oak, scarlet oak, and southern red oak). Depending on moisture and aspect, the understory can appear as either thick and robust with uneven-aged trees, or sparse with larger more even aged trees. The understory is dominated by red maple, flowering dogwood, witch hazel (*Hamamelis virginiana*), and black gum. Common shrubs include sweet shrub (*Calycanthus floridus*) and spicebush (*Lindera benzoin*). Along the north-facing slopes, common shrubs include mountain laurel, great laurel, hydrangea (*Hydrangea arborescens*) and lowbush blueberry (*V. pallidum*). Common herbs are black cohosh (*Cimicifuga racemosa*), Christmas fern (*Polystichum acrostichoides*) New York fern (*Thelypteris noveboracensis*), Solomon's seal (*Polygonatum biflora*), mayapple (*Podophyllum peltatum*), Canadian horse balm (*Collinsonia canadense*), and maidenhair fern (*Adiantum pedatum*).

Both Piedmont/Low Mountain Alluvial Forest and Piedmont/Mountain Levee Forest are found along the Broad River within and extending beyond this site to the east and west. The canopy trees are those typical in a floodplain, forest with river birch (*Betula nigra*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and sycamore (*Platanus occidentalis*) common. Once out of the immediate floodplain, tulip poplar, red maple, scattered water oak (*Quercus nigra*), and willow oak (*Q. phellos*) occur in the canopy. The understory consists of ironwood (*Carpinus caroliniana*), sourwood, and Carolina silverbell (*Halesia tetraptera*). Common shrubs consist of sparkleberry (*Vaccinium arboreum*), sweet shrub (*Calycanthus floridus*), and strawberry bush (*Euonymus americanus*). Woody vines are a major component, with the dominant vines present being greenbrier (*S. glauca*), Virginia creeper, trumpet creeper (*Campsis radicans*), poison ivy, crossvine, the invasive Japanese honeysuckle (*Lonicera japonica*), muscadine (*Vitis rotundifolia*), wild yam (*Dioscorea villosa*), and climbing buckwheat (*Fallopia scandens*). Herbs present include river oats (*Chasmanthium latifolium*), bottlebrush grass (*Hystrix patula*), violets (*Viola palmata, V. pedata, and V. hastata*), rattlesnake fern (*Botrychium virginianum*), Christmas fern (*Polystichum acrostichoides*), and chickweed (*Stellaria media*).

MANAGEMENT AND PROTECTION: Presently this site has no formal protection. The site was once registered with the North Carolina Natural Heritage Program as a Registered Natural Heritage Area (RNA) for the occurrence of the dwarf-flowered heartleaf, but has since changed ownership discontinues the registry agreement. Due to the high significance of this site and the presence of a large population of dwarf-flowered heartleaf, this site should be of high interest to local, state and federal agencies are concerned with the conservation and protection of this species.

NATURAL COMMUNITIES: Piedmont/Low Mountain Alluvial Forest, Piedmont/Mountain Levee Forest, Dry-Mesic Oak- Hickory Forest, Dry Oak-Hickory Forest, Acidic Cove Forest, and Chestnut Oak Forest.

RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*), thin-pod wild white indigo (*Baptisia albescens*); Watch List – lance-leaf bedstraw (*Galium lanceolatum*) and nestronia (*Nestronia umbellula*).

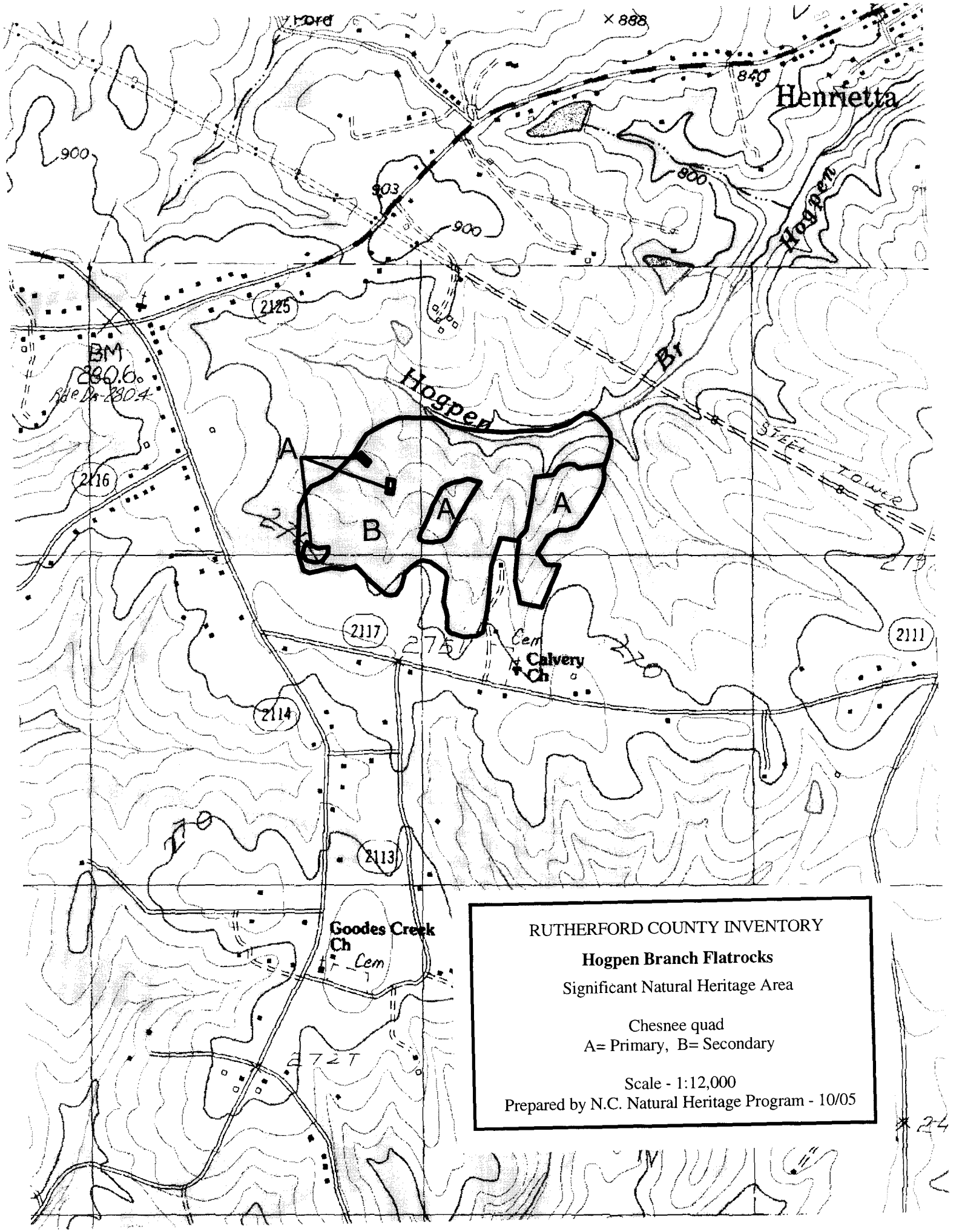
RARE ANIMALS: None known.

REFERENCES:

Gaddy, L. L. 1981. Status of *Hexastylis naniflora* in North Carolina. Report to the North Carolina Plant Conservation Program, North Carolina Department of Agriculture, Raleigh, N.C.

Mansberg L., and C. Roe. 1985. Hensons Creek Ravine *Hexastylis naniflora* Endangered Species Habitat. N.C. Natural Heritage Program, DENR, Raleigh, N.C.

Padgett, J. E 2004. Site Survey Report: Hensons Creek Natural Area. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


Henrietta
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RUTHERFORD COUNTY INVENTORY
Hogpen Branch Flatrocks
Significant Natural Heritage Area
Chesnee quad
A= Primary, B= Secondary
Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 10/05

Rutherford County Natural Area Inventory

HOGPEN BRANCH FLATROCKS
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Chesnee
Size: 95 Acres (19 primary; 76 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains examples of the uncommon Granitic Flatrock natural community. It includes several rare plant species including single-flowered sandwort (*Minuartia uniflora*) and false pimpernel (*Lindernia monticola*). Also present is a moderately-sized population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*).

LANDSCAPE RELATIONSHIPS: This site is located within the Broad River Valley Macrosite in southeastern Rutherford County in a Granitic Flatrock region. The well-known Sandy Mush Outcrop lies about three miles to the northwest, and a series of smaller flatrocks known as Island Ford Flatrocks are about two miles to the southeast.

SITE DESCRIPTION: This site is located within the Broad River Valley Macrosite just south of Hogpen Branch. Granitic flatrocks are located in the western portion of this site in recently cut-over areas. The eastern 1/4 of the site has a fair quality Dry-Mesic Oak-Hickory Forest with a population of dwarf-flowered heartleaf occurring along an unnamed tributary of Hogpen Branch.

The Dry-Mesic Oak-Hickory Forest located in the eastern 1/4 section of the site has a canopy dominated by white oak (*Quercus alba*), tulip poplar, (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and scattered Virginia pine (*Pinus virginiana*). The understory is sparse, with sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), and American holly (*Ilex opaca*) present. Shrubs include possum haw (*Viburnum nudum),* strawberry bush (*Euonymus americanus*), and the invasive multiflora rose (R*osa multiflora*). Woody vines include coral honeysuckle (*Lonicera sempervirens*), greenbrier (*Smilax glauca* and *S. taminoides*), the invasive English ivy (*Hedera helix*), and poison ivy (*Toxicodendron radicans*). The herbaceous layer is fairly diverse with dwarf-flowered heartleaf, Christmas fern (*Polystichum acrostichoides*), Virginia snakeroot (*Aristolochia serpentaria*), crane-fly orchid (*Tipularia discolor*), primrose-leaf violet (*Viola primulifolia*), skullcap (*Scutellaria elliptica*), snakeroot (*Sanicula canadensis*), and southern lady's fern (*Athyrium asplenioides*) common.

The Granitic Flatrocks are surrounded by regenerating pines and hardwoods that include Virginia pine (*Pinus virginiana*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), white oak, red maple, tulip poplar (*Liriodendron tulipifera*), and mockernut hickory (*Carya alba*). A few invasive tree species such as tree-of-Heaven (*Ailanthus altissima*) and princess tree (*Paulownia tomentosa*) are scattered along old logging roads between the rock outcrops. Understory species include eastern red cedar (*Juniperus virginiana*) and wild cherry (*Prunus serotina*). Shrubs present include hawthorn (*Crataegus* sp.), fringe-tree (*Chionanthus virginicus*), the invasive Chinese privet (*Ligustrum*

sinense), and Georgia hackberry (*Celtis tenuifolia*). Woody vines are common throughout the area and include crossvine (*Bignonia capreolata*), dewberry (*Rubus* sp.), muscadine (*Vitis rotundifolia*), the invasive Japanese honeysuckle (*Lonicera japonica*). Herbs are diverse and contain a number of weedy species such as horseweed (*Conyza canadensis*) and fireweed (*Erechtites hieracifolia*). Other herbs include sunflowers (*Helianthus* spp.), asters (*Aster* spp.), broomsedge (*Andropogon virginicus*), single-flower sandwort (*Minuartia uniflora*), cactus (*Opuntia compressa*), fameflower (*Talinum teretifolium*), false pimpernel (*Lindernia monticola*), partridge pea (*Cassia fasciculata*), gerardia (*Agalinis tenuifolia*), seedbox (*Ludwigia alternifolia*), panic grasses (*Panicum* spp.), and sedges (*Carex* spp. and *Scirpus* spp.).

MANAGEMENT AND PROTECTION: This site has no formal protection and pending the granting of permits, will become an asphalt plant and rock quarry.

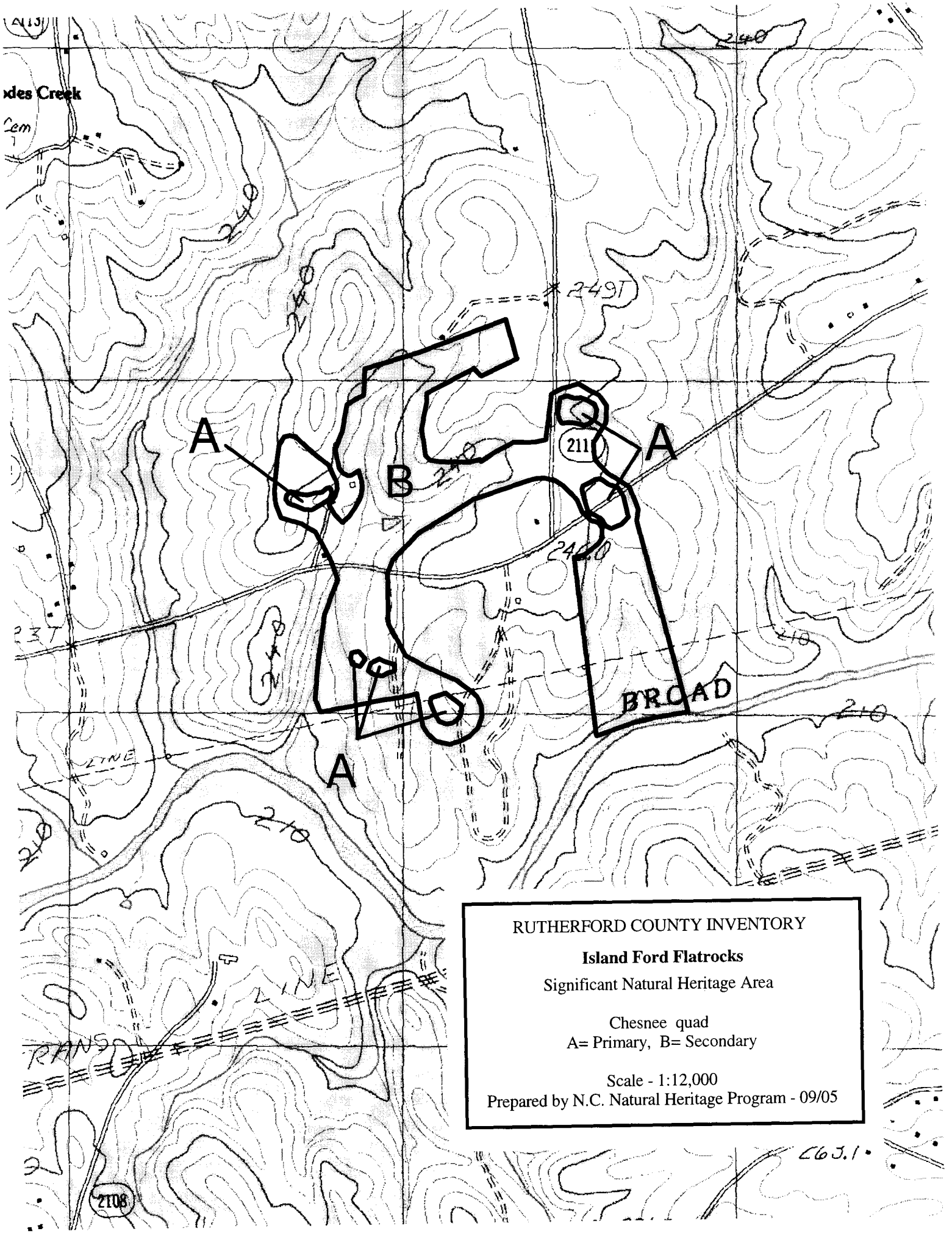
NATURAL COMMUNITIES: Granitic Flatrock and Dry-Mesic Oak-Hickory Forest.

RARE PLANTS: single-flower sandwort (*Minuartia uniflora*) dwarf-flowered heartleaf (*Hexastylis naniflora*); Watch List – false pimpernel (*Lindernia monticola*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2005. Site Survey Report: Hogpen Branch Flatrocks. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Island Ford Flatrocks

Significant Natural Heritage Area

Chesnee quad
A= Primary, B= Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

ISLAND FORD FLATROCKS
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Chesnee
Size: 90 acres (9 primary; 81 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains several small examples of the Granitic Flatrock natural community that are undergoing primary succession. Although the natural communities present at and around the flatrocks are of good quality, more extensive examples have been documented from the nearby Sandy Mush Outcrop.

LANDSCAPE RELATIONSHIP: These flatrocks are clustered in the southeastern section of Rutherford County within the Broad River Valley Macrosite, approximately four air miles south of Forest City. The Island Ford Flatrocks are clustered in an area less than three square miles and vary in size, slope, and shape. This cluster of flatrocks is located four miles southeast of the state significant Sandy Mush Outcrop and three miles northeast of Brice Rare Plant Site.

SITE DESCRIPTION: This site consists of a series of small granitic flatrocks which are either bare rock, soil mats, or depressed areas where water collects and seeps into at various times of the year. Small areas of scrub forest occur around several of these small outcroppings. The most abundant species in the scrub forest are eastern red cedar (*Juniperus virginiana*), southern red oak (*Quercus falcata*), and Virginia pine (*Pinus virginiana*). On the larger soil mats, two invasive shrub species, multiflora rose (*Rosa multiflora*) and Chinese privet (*Ligustrum sinense*) are found. Numerous woody vine species occur on the flatrock and include poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), the invasive Japanese honeysuckle (*Lonicera japonica*), crossvine (*Bignonia capreolata*), greenbrier (*Smilax bona-nox* and *S. glauca*), and dewberry (*Rubus flagellaris*). Growing on the shallow soil mats are smooth sumac (*Rhus glabra*) and Carolina rose (*Rosa carolina*). Herbaceous species cover most the flatrock surface. The species present vary even within short distances. Some herbs grow in wet depressions such as single flower sandwort (*Minuartia uniflora*), elf orpine (*Diamorpha smallii*), bladderwort (*Utricularia cornuta*), and false pimpernel (*Lindernia monticola*), while other herbs can tolerate more harsh and drier conditions including fameflower (*Talinum teretifolium*) and toad flax (*Linaria canadensis*), which are intermixed with mosses, lichens, and ragwort (*Packera anomyna*) along the soil mat edges. Other herbs present on the flatrock include tickseed (*Coreopsis major* and *C. lanceolata*), dog fennel (*Eupatorium capillifolium*), prickly pear (*Opuntia compressa*), meadow beauty (*Rhexia mariana*), yellow-eyed grass (*Xyris torta*), rush-foil (*Crotonopsis elliptica*), ox-eye daisy (*Chrysanthemum leucanthemum*), wild strawberry (*Fragaria virginiana*), and bedstraw (*Galium tinctorum*). Various grasses, sedges, and rushes are common on the flatrocks, especially in the areas where water stands or seepage occurs. The more common species are broomsedge (*Andropogon virginicus*), panic grasses (*Panicum virgatum* and *P. scoparium*), sedges (*Carex lurida,* and *C. communis*), and rushes (*Juncus bufonius, J. effusus,* and *J. tenuis*).

MANAGEMENT AND PROTECTION: This site has no formal protection. These small flatrocks are worthy of attention as the larger granitic flatrocks are converted into quarry sites in this region.

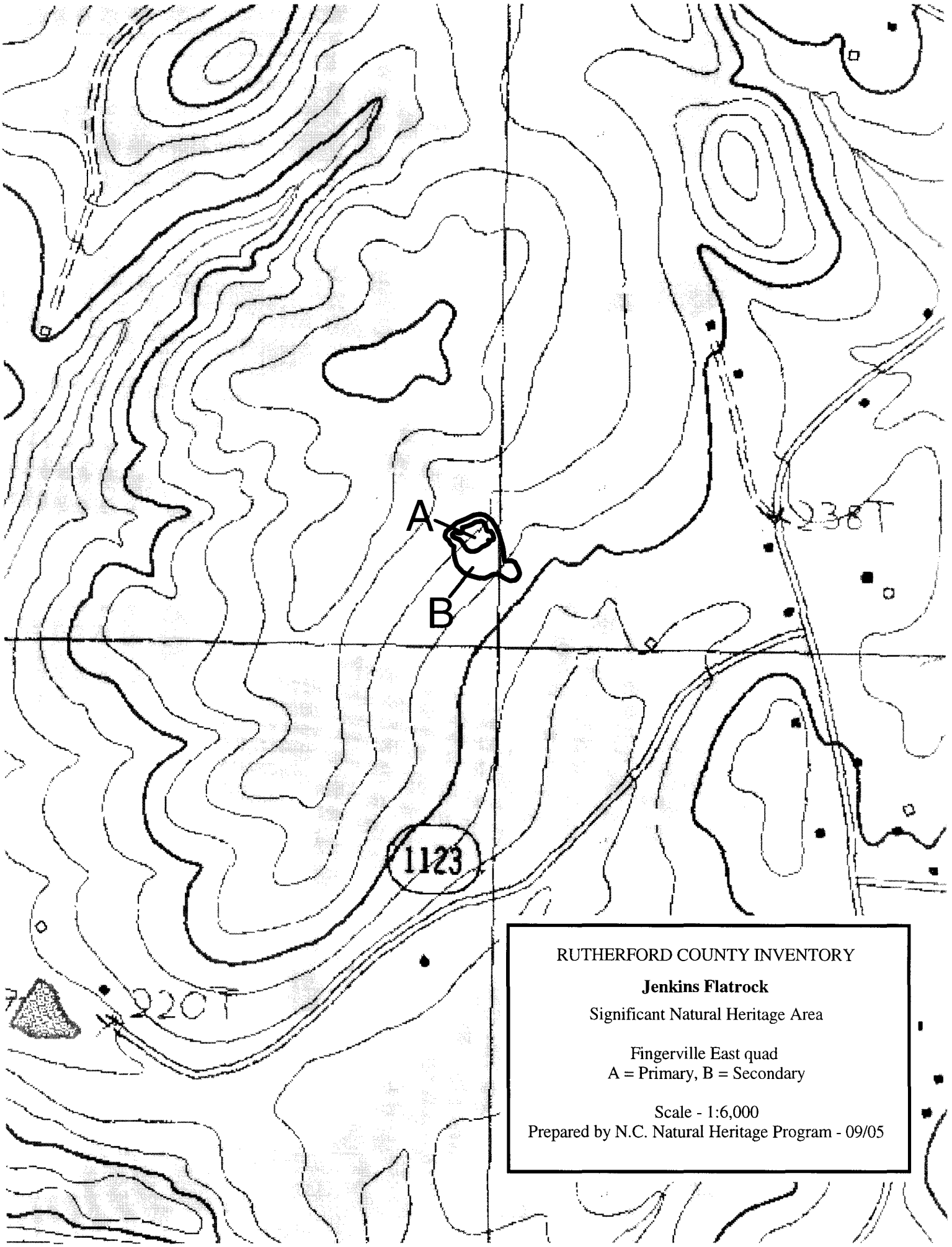
NATURAL COMMUNITIES: Granitic Flatrock.

RARE PLANTS: single-flowered Sandwort (*Arenaria uniflora*) and horned bladderwort (*Utricularia cornuta*); Watch List – false pimpernel (*Lindernia monticola*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: Island Ford Flatrocks. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Jenkins Flatrock

Significant Natural Heritage Area

Fingerville East quad
A = Primary, B = Secondary

Scale - 1:6,000
Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

JENKINS FLATROCK
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Fingerville East
Size: 1.63 acres (0.40 primary; 1.23 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains a small example of the uncommon Granitic Flatrock natural community. It supports several rare plant species including single-flower sandwort (*Minuartia uniflora*), false pimpernel (*Lindernia monticola*), Piedmont quillwort (*Isoetes piedmontana*), and granite-loving sedge (*Cyperus granitophilus*).

LANDSCAPE RELATIONSHIPS: This site is located 1.5 miles southwest of the community of Harris and 0.8 miles north of the Broad River. It is located within the Broad River Macrosite and is within two miles of several other Standard Sites including McKinney Bridge, Kudzu Farm Rare Plant Site, McKinney Creek Low Elevation Seep, New Bethel Rare Plant Site, and Hensons Creek Natural Area. This site is also within four miles of the Sandy Mush Outcrop, and five miles west of the Island Ford Flatrocks.

SITE DESCRIPTION: This site contains a flat, small Granitic Flatrock surrounded by pastureland and a small scrub forest to the south. The rock outcrop contains various sized soil mats that range in thickness from a few millimeters to several centimeters in depth. Water penetrates the thin soils, meets the rock surface, and then seeps downhill along the rock surface from north to south. The Significantly Rare oldfield mouse (*Peromyscus polionotus*) was observed within 0.5 miles of this site, and may frequent this area. Plants found on these mats include the single-flowered sandwort, Piedmont quillwort, granite sedge, bluets (*Houstonia* sp.), fameflower (*Talinum teretifolium*), toad flax (*Linaria canadensis*), false pimpernel, and reed (*Juncus effusus*). Broomsedge (*Andropogon virginicus*), buttercup (*Ranunculus acris* and *R. arbortivus*), wood sorrel (*Oxalis* sp.), and various sedges (*Carex* spp.) are located on and along the rock margins.

MANAGEMENT AND PROTECTION: This site has no formal protection. Exclusion of cattle would be beneficial to the site. This site has the potential to be an excellent protection and conservation and/or restoration project for a local land trust.

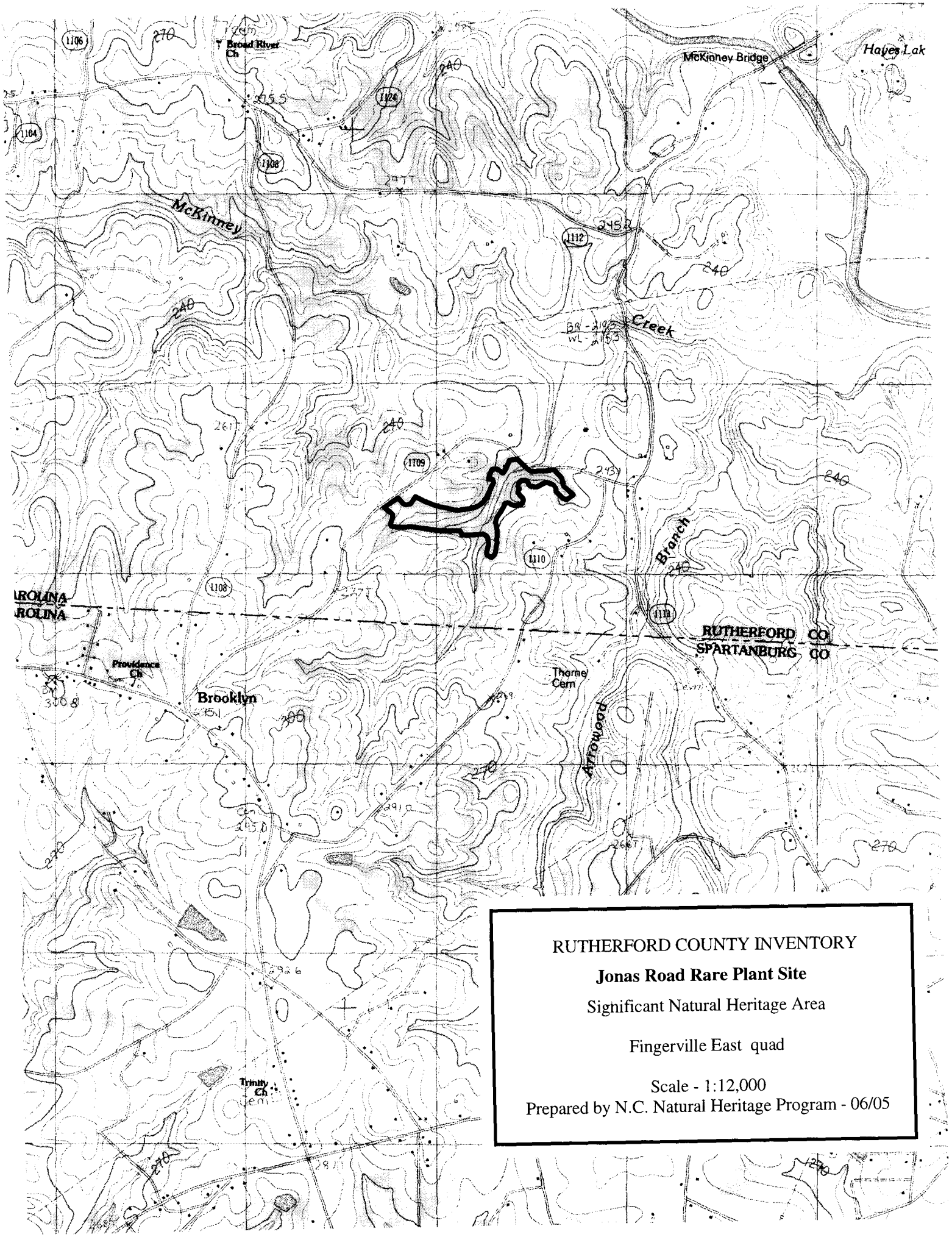
NATURAL COMMUNITIES: Granitic Flatrock.

RARE PLANTS: Single-flowered sandwort (*Minuartia uniflora*), Piedmont quillwort (*Isoetes piedmontana*), and granite-loving sedge (*Cyperus granitophilus*); Watch List - false pimpernel (*Lindernia monticola*).

RARE ANIMALS: oldfield mouse (*Peromyscus polionotus*).

REFERENCES:

Padgett, J.E. 2005. Site Survey Report: Jenkins Road Granitic Flatrock. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Jonas Road Rare Plant Site

Significant Natural Heritage Area

Fingerville East quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 06/05

Rutherford County Natural Area Inventory

JONAS ROAD RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Fingerville East
Size: 30 acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains a population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) growing along a tributary of McKinney Creek, within examples of Mesic Mixed Hardwood Forest and Dry-Mesic Oak-Hickory Forest natural communities.

LANDSCAPE RELATIONSHIPS: This site lies within the Broad River Valley Macrosite. It is isolated from other natural areas by residential development and agricultural lands, however it is one of several sites in a two mile radius with a population of dwarf-flowered heartleaf. This site is 2.0 miles southeast of Hensons Creek Natural Area, 1.5 miles south-southwest of McKinney Bridge Site, and 0.5 miles south McKinney Creek Low Elevation Seep.

SITE DESCRIPTION: Areas within the site closest to the stream have a fair quality Mesic Mixed Hardwood Forest with some occurrences of the dwarf-flowered heartleaf. The canopy here is closed, with open areas occurring along the stream and in places where the canopy has been thinned. Canopy dominant tree species include white oak (*Quercus alba*), southern red oak (*Q. falcata*), scarlet oak (*Q. coccinea*), mockernut hickory (*Carya alba*), bitternut hickory (*C. cordiformis*), tulip poplar (*Liriodendron tulipifera*), Virginia pine (*Pinus virginiana*), and beech (*Fagus grandifolia*). The understory contains red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), silky dogwood (*Cornus amomum*), American holly (*Ilex opaca*), and eastern red cedar (*Juniperus virginiana*). The shrub layer includes mountain laurel (*Kalmia latifolia*), sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), sweet shrub (*Calycanthus floridus*), pinxter-flower (*Rhododendron periclymenoides*), maple-leaf viburnum (*Viburnum acerifolium*), and strawberry bush (*Euonymus americanus*). Woody vines include poison ivy (*Toxicodendron radicans*), muscadine (*Vitis rotundifolia*), crossvine (*Bignonia capreolata*), and the invasive Japanese honeysuckle (*Lonicera japonica*). Dwarf-flowered heartleaf, rattlesnake plantain (*Goodyera pubescens*), rattlesnake root (*Prenanthes serpentaria*), violets (*Viola* spp.), Christmas fern (*Polystichum acrostichoides*), skullcap (*Scutellaria* sp.), Solomon's seal (*Polygonatum biflorum*), pipsissewa (*Chimaphila maculata*), partridgeberry (*Mitchella repens*), and thimbleweed (*Anemone virginiana*) are common in the herbaceous layer.

On the slopes away from the stream is a fair example of a Dry-Mesic Oak–Hickory Forest community with dwarf-flowered heartleaf scattered throughout it. The canopy is closed and it is dominated by white oak, scarlet oak, tulip poplar, with scattered beech (*Fagus grandifolia*). The understory is comprised of sourwood, flowering dogwood, red maple, American holly, downy serviceberry (*Amelanchier arborea*), and witch hazel (*Hamamelis virginiana*). Dominant shrubs common to this community type are mountain laurel, strawberry bush, sparkleberry, and maple-leaf viburnum, and

possum haw (*Viburnum prunifolium*). Woody vines present include poison ivy, coral honeysuckle (*Lonicera sempervirens*), Virginia creeper, crossvine, and greenbrier (*Smilax glauca* and *S. rotundifolia*). Common herb species are Christmas fern, galax (*Galax urceolata*), cranefly orchid (*Tipularia discolor*), pipsissewa, partridgeberry (*Mitchella repens*), rattlesnake root (*Prenanthes serpentaria*), New York fern (*Thelypteris noveboracensis*), false Solomon's seal (*Maianthemum racemosum*), and wood rush (*Luzula acuminata*).

Along the stream at the north end of the site are a series of wetland seeps that drain into the larger tributary. These small wetland areas also support dwarf-flowered heartleaf along the margins on raised soil mats or mounds. These seeps are small in comparison to the overall site.

MANAGEMENT AND PROTECTION: About half of this site is located within a cattle pasture, which gives the cattle access to both the dwarf-flowered heartleaf and portions of the wetlands. This site would make a good conservation and/or restoration project for local a land trust.

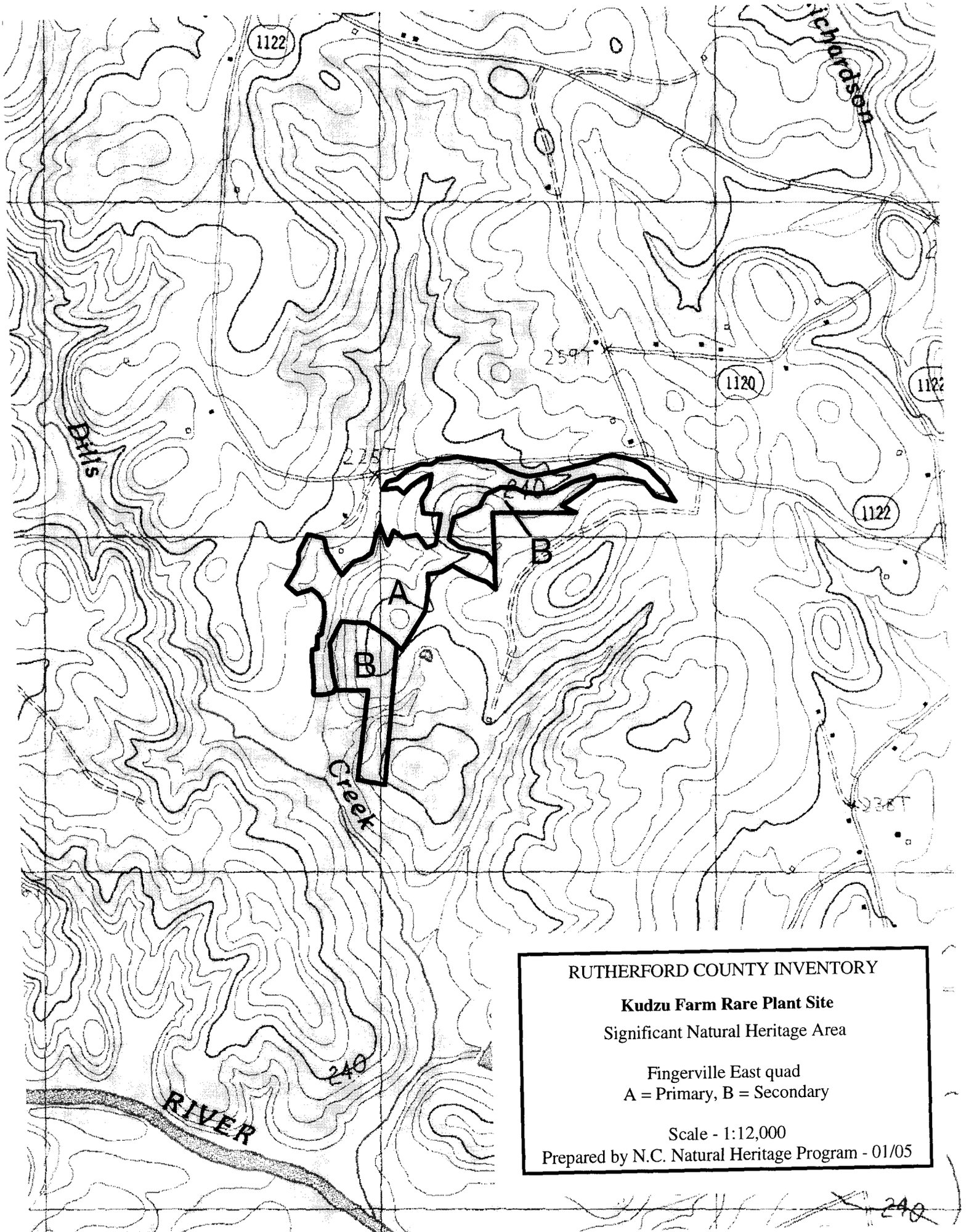
NATURAL COMMUNITIES: Small Seeps, Mesic Mixed Hardwood Forest and Dry-Mesic Oak–Hickory Forest.

RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J .E. 2005. Site Survey Report: Jonas Road Rare Plant Site. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Kudzu Farm Rare Plant Site

Significant Natural Heritage Area

Fingerville East quad
A = Primary, B = Secondary

Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 01/05

Rutherford County Natural Area Inventory

KUDZU FARM RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: Regional
Quadrangle: Fingerville East
Size: 67 acres (45 primary; 22 secondary)
Ownership: Private

SIGNIFICANT FEATURES: This site contains a good quality population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora).*

LANDSCAPE RELATIONSHIPS: This site lies just inside the Broad River Valley Macrosite. It is located in a rural, somewhat fragmented landscape in southern Rutherford County approximately 2.0 miles south of Harris near the Broad River. The surrounding lands are rural residential and agricultural, but not highly developed. Jenkins Flatrock and McKinney Bridge Site are 0.5 miles and 1.0 miles to the south, respectively. Hensons Creek Natural Area, lies one mile to the west.

SITE DESCRIPTION: This site consists of several unnamed tributaries that eventually flow into Dill's Creek. Dwarf-flowered heartleaf occurs along the streams and up the adjacent slopes on sandy-loam soils. The pH of the soils at this location was measured by Chick Gaddy (1981) and James Padgett (2002) and was found to be higher than in surrounding areas. The pH is thought to be more basic due to fertilizer runoff from upland pastures. No rock types lending to richer soils have been documented.

This site is comprised of a Dry-Mesic Oak-Hickory Forest community. The canopy is closed and the dominant canopy species are white oak (*Quercus alba*), southern oak (*Q. falcata*), scarlet oak (*Q. coccinea*), mockernut hickory (*Carya alba*), and pignut hickory (*C. glabra*). Along the streams and lower slopes tulip poplar (*Liriodendron tulipifera*) and red maple (*Acer rubrum*) are common in the canopy. The understory consists of sourwood (*Oxydendrum arboreum*), ironwood (*Carpinus caroliniana*), and flowering dogwood (*Cornus florida*). The shrub layer is diverse and includes possum haw (*Viburnum prunifolium*), sweet shrub (*Calycanthus floridus*), beaked hazelnut (*Corylus cornuta*), witch hazel (*Hamamelis virginicus*), sassafras (*Sassafras albidum*), and strawberry bush (*Euonymus americanus*). Woody vines include Virginia creeper (*Parthenocissus quinquefolia*), muscadine (*Vitis rotundifolia*), poison ivy (*Toxicodendron radicans*), and greenbrier (*Smilax. glauca* and *S. laurifolia*). Common herbs are dwarf-flowered heartleaf, little brown jugs (*Hexastylis arifolia* var. *arifolia*), false Solomon's seal (*Maianthemum racemosum*), bloodroot (*Sanguinaria canadensis*), wild sarsparilla (*Aralia nudicaulis*), partridgeberry (*Mitchella repens*), devil's-bit (*Chamaelirium luteum*), elephant's-foot (*Elephantopus tomentosus*), and American bugleweed (*Lycopus americanus*), Christmas fern (*Polystichum acrostichoides*), royal fern (*Osmunda regalis* var. *regalis*), cinnamon fern (*Osmunda cinnamomea*), New York fern (*Thelypteris noveboracensis*), rattlesnake fern (*Botrychium virginianum*), and southern lady fern (*Athyrium asplenioides*). Beaver frequent the larger streams, and whitetail deer are common. Sightings of eastern cougar (*Puma concolor*) have

been reported in recent years, and an observation of an oldfield mouse (*Peromyscus polionotus*) is recorded within two miles of this site.

MANAGEMENT AND PROTECTION: This site has no formal protection, but the current landowner knows the importance of the site and is very conservation-minded. This site has high potential for being a conservation/restoration project for a local land trust.

NATURAL COMMUNITIES: Dry-Mesic Oak Hickory Forest.

RARE PLANTS: dwarf-flowered heartleaf *(Hexastylis naniflora*); Watch List – ginseng (*Panax quinquefolius*), and little sweet Betsy (*Trillium cuneatum*).

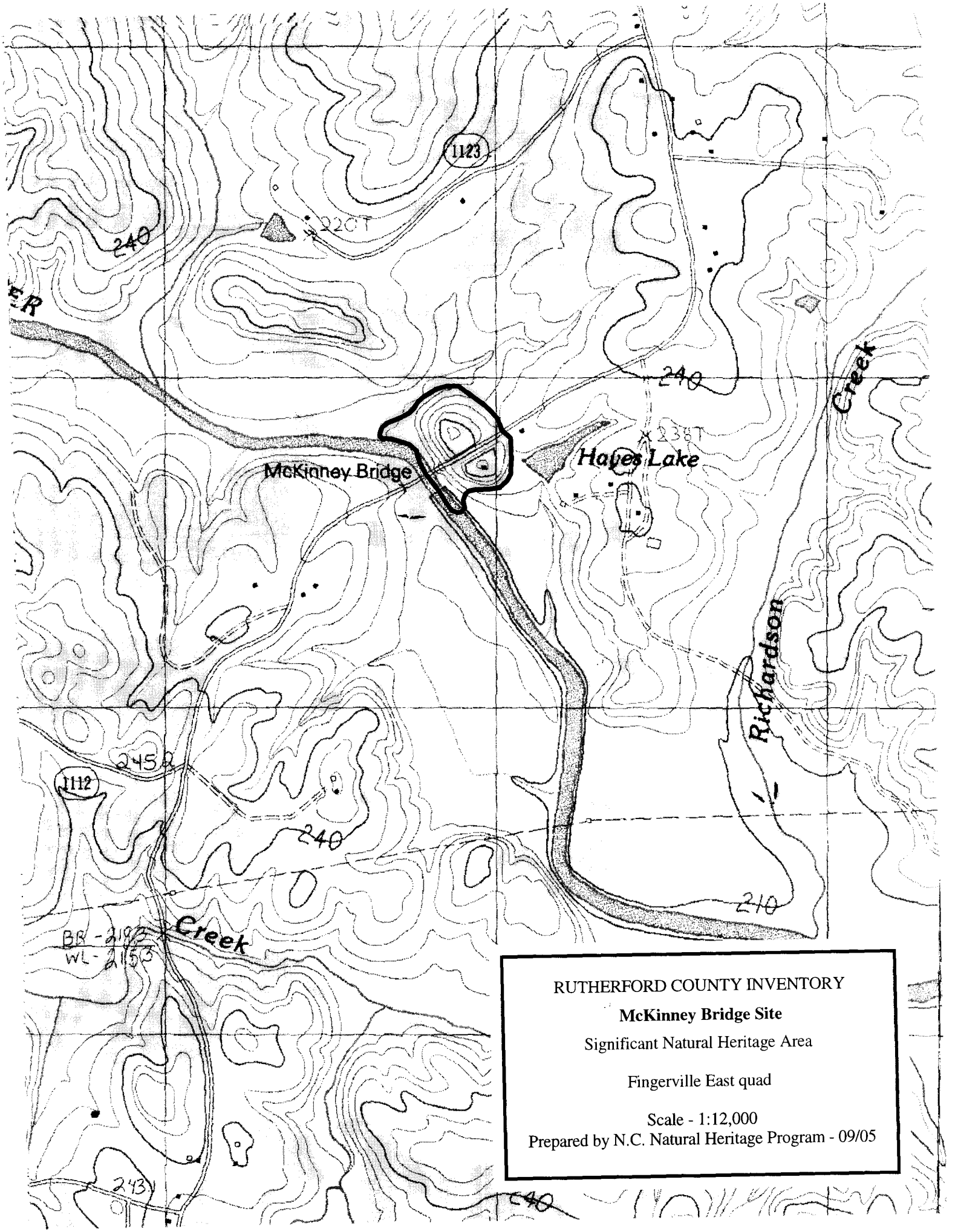
RARE ANIMALS: eastern cougar (*Puma concolor*) [Not Confirmed].

REFERENCES:

Gaddy, L. L. 1981. Status of *Hexastylis naniflora* in North Carolina. Report to the North Carolina Plant Protection Program. Department of Agriculture.

Padgett, J. E. 2004. Site Survey Report: Kudzu Farm Rare Plant Site. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.

Padgett, J. E. 2004. Biogeographical, Ecological, Morphological and Micromorphological Analyses of the Species in the Hexastylis heterophylla Complex. Appalachian State University; M. S. Thesis.



RUTHERFORD COUNTY INVENTORY

McKinney Bridge Site

Significant Natural Heritage Area

Fingerville East quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 09/05

Rutherford County Natural Area Inventory

McKINNEY BRIDGE SITE
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Fingerville East
Size: 29 acres
Ownership: Private

SIGNIFICANT FEATURES: This site is significant for the presence of the Significantly Rare glade milkvine (*Matelea decipiens*), and an historical occurrence of the Watch List species nestronia (*Nestronia umbellula*).

LANDSCAPE RELATIONSHIPS: This site is located in the Broad River Valley Macrosite in southern Rutherford County 2.5 miles southwest of Harris. Hensons Creek Natural Area is one mile to the west. The Brice Rare Plant Site is one mile east along the Broad River, and Jenkins Road Flatrock is about one mile to the northeast. A little farther to the northwest lies the Kudzu Farm Rare Plant Site. The majority of the landscape between these sites consists of rural residential and agriculture lands, with roughly half of the land wooded.

SITE DESCRIPTION: This site is a moderately steep south-facing hill and slope along the Broad River that was bisected by a road in 1966 when the existing bridge was replaced. Natural communities present include a Dry Mesic Oak-Hickory Forest, a small area of Basic Mesic Forest, and Piedmont/Low Mountain Alluvial Forest along the river.

Along the upper slopes and ridgeline is a small example of maturing Dry-Mesic Oak-Hickory Forest. The canopy is dominated with white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), southern red oak (*Q. falcata*), mockernut hickory (*Carya alba*), Virginia pine (*Pinus virginiana*), tulip poplar (*Liriodendron tulipifera*), and sweetgum (*Liquidambar styraciflua*). The understory is sparse with red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), and black gum (*Nyssa sylvatica*). Shrubs include sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), strawberry bush, and possum haw (*Viburnum prunifolium*) present. Common woody vines include muscadine, Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy . The herbs are sparse with goldenrods (*Solidago* spp), poverty grass, pipsissewa, partridgeberry, pine-sap (*Monotropa hypopithys*), and tickseed (*Coreopsis major*) are common. A search was conducted for an historical occurrence of nestronia (*Nestronia umbellula*), but it was not found.

A small section of the westernmost slope is a small Basic Mesic Forest community. It has similar canopy species and a high concentration of Carolina silverbell (*Halesia tetraptera*), and basswood (*Tilia heterophylla).* The shrub layer consist of sweet shrub (*Calycanthus floridus*), sparkleberry, strawberry bush (*Euonymus americanus*), bladdernut (*Staphylea trifolia*), and hawthorn (*Crataegus* sp.). Woody vines include muscadine (*Vitis rotundifolia*), poison ivy (*Toxicodendron radicans*), crossvine (*Bignonia capreolata*), and greenbrier (Smilax *bona-nox, S. glauca,* and *S. rotundifolia*). Common herb species include pipsissewa (*Chimaphila maculata),* bloodroot (*Sanguinaria*

canadensis), liverleaf (*Hepatica americana*), partridgeberry (*Mitchella repens*), wild oregano (*Cunila origanoides*), tickseed, Christmas fern (*Polystichum acrostichoides*), Virginia snakeroot (*Aristolochia serpentaria*), wild sarsaparilla (*Aralia nudicaulis*), wild ginger (*Asarum canadense*), and starry campion (*Silene stellata*).

A narrow strip of Piedmont/Low Mountain Alluvial Forest is located along the river with a small area of Basic Mesic Forest occurring along the western slope of the site. The canopy is dominated by tulip poplar, sycamore (*Platanus occidentalis*), river birch (*Betula nigra*), mockernut hickory (*Carya alba*), bitternut hickory (*C. cordiformis*), and shortleaf pine (*Pinus echinata*) along upper edges of the community. The understory consists of red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), black gum (*Nyssa sylvatica*), and flowering dogwood (*Cornus florida*). Woody Vine species include Japanese honeysuckle (*Lonicera japonica*), poison ivy, muscadine, greenbrier, and trumpet vine (*Campsis radicans*). Common herbs are river oats (*Chasmanthium latifolium*), green dragon (*Arisaema dracontium*), little sweet Betsy (*Trillium cuneatum*),cardinal flower (*Lobelia cardinalis*), and smartweed (*Persicaria* sp.)

MANAGEMENT AND PROTECTION: This site has no formal protection and has been disturbed over time by various human activities. Efforts to manage and improve this site so it recovers as much of its natural qualities as possible would be beneficial.

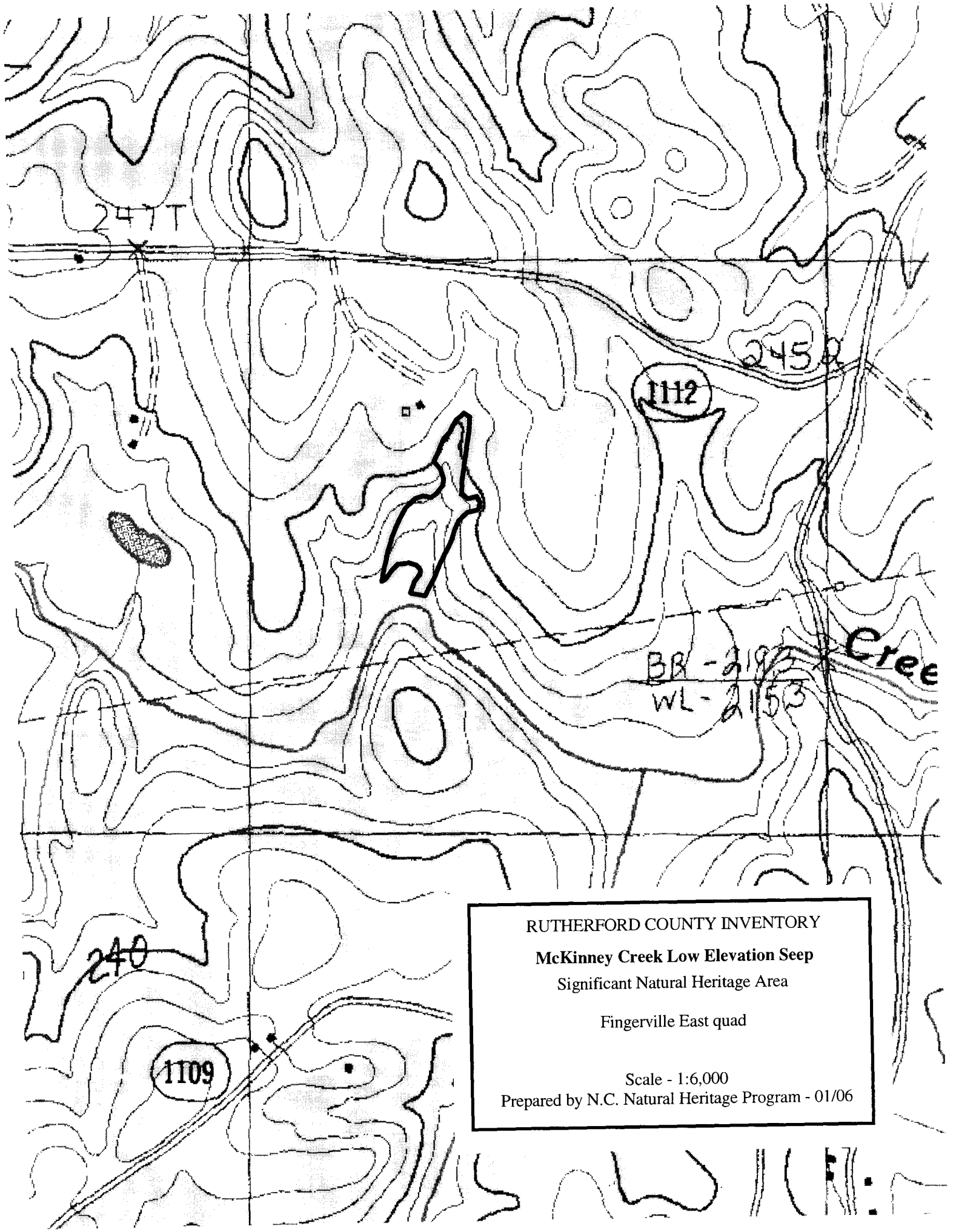
NATURAL COMMUNITIES: Basic Mesic Forest, Piedmont/Low Mountain Alluvial Forest, and Dry-Mesic Oak-Hickory Forest.

RARE PLANTS: glade milkvine (*Matelea decipiens*); Watch List - little sweet Betsy (*Trillium cuneatum*); Historical - nestronia (*Nestronia umbellula*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J. E. 2004. Site Survey Report: McKinney Bridge Site. N. C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

McKinney Creek Low Elevation Seep

Significant Natural Heritage Area

Fingerville East quad

Scale - 1:6,000

Prepared by N.C. Natural Heritage Program - 01/06

Rutherford County Natural Area Inventory

MCKINNEY CREEK LOW ELEVATION SEEP
Significant Natural Heritage Area

Site Significance: County
Quadrangle: Fingerville East
Size: 3.42 Acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains an example of the uncommon Low Elevation Seep natural community.

LANDSCAPE RELATIONSHIPS: This site is located in within the Broad River Valley Macrosite in southern Rutherford County near the South Carolina state line. It lies along McKinney Creek one mile south of Hensons Creek Natural Area, and one mile southwest of McKinney Bridge site.

SITE DESCRIPTION: This site is located at the base of a hillside where two springs surface near a small bottomland along McKinney Creek. The seep occurs in a slight depression a short distance away from the creek, which has a slight rise in elevation as it drains into the creek.

A closed canopy covers a large portion of this site, and water generally stands for long periods of time even in slight drought conditions. The canopy is dominated by river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), tulip poplar (*Liriodendron tulipifera*), green ash (*Fraxinus pennsylvanica*), and red maple (*Acer rubrum*). On the lower slopes surrounding the seep, white oak (*Quercus alba*), scarlet oak (*Q. coccinea*), and water oak (*Q. nigra*) are present. The understory is sparse in the seep portion with American holly (*Ilex opaca*) present. Around the seep, sourwood (*Oxydendrum arboreum*) and flowering dogwood (*Cornus florida*) occur. Shrubs include mountain laurel (*Kalmia latifolia*), arrow-wood (*Viburnum dentatum*), southern wild raisin (*Viburnum nudum*), possum haw (*Viburnum prunifolium*), Virginia willow (*Itea virginica*), chokeberry (*Aronia arbutifolia*), elderberry (*Sambucus canadensis*), silky dogwood (*Cornus amomum*), yellowroot (*Xanthorhiza simpliccissima*), sassafras (*Sassafras albidum*) and the invasive Chinese privet (*Ligustrum sinense*). Woody vines present included hog-peanut (*Amphicarpa bracteata*), crossvine (*Bignonia capreolata*), virgin's bower (*Clematis virginiana*), wild yam (*Dioscorea villosa*), and milkweed vine (*Matelea carolinensis*). Common herbaceous species include rattlesnake fern (*Botrychium virginianum*), pussy-toes (*Antennaria plantaginifolia*), triple awn grass (*Aristida* sp.), sedges (*Carex intumescens, C. lurida,* and *C. pensylvanica*), rush (*Juncus effusus*), Cardinal flower (*Lobelia cardinalis*), Virginia bugleweed (*Lycopus virginicus*), Indian cucumber-root (*Medeola virginiana*), cinnamon fern (*Osmunda cinnamomea*), New York fern (*Thelypteris noveboracensis*), and netted chain fern (*Woodwardia areolata*).

A Dry-Mesic Oak-Hickory Forest surrounds the seep. Canopy species include white oak, scarlet oak, northern red oak (*Quercus rubra*), mockernut hickory (*Carya alba*), pignut hickory (*C. glabra*), tulip poplar, and sweetgum (*Liquidambar styraciflua*). The forest is mid-successional with several areas of dominant pine, especially along dry ridges with Virginia pine (*Pinus virginiana*) and shortleaf pine (*P. echinata*), present in high numbers in the canopy. The understory contains sourwood and downy

serviceberry (*Amelanchier arborea*). Shrubs include mountain laurel, beaked hazelnut (*Corylus cornuta*), haw, multiflora rose (*Rosa multiflora*), and hawthorn (*Crataegus* sp.). Herbs are sparse, with poverty grass (*Danthonia spicata*), broomsedge (*Andropogon virginicus*), ebony spleenwort (*Asplenium platyneuron*), naked trefoil (*Desmodium nudiflorum*), rattlesnake weed (*Hieracium venosum*), and pipsissewa (*Chimaphila maculata*) present.

MANAGEMENT AND PROTECTION: This site has no formal protection. With the ever increasing loss of bottomland sites to clearing and logging, is becomes more important to consider conservation for these disappearing community types.

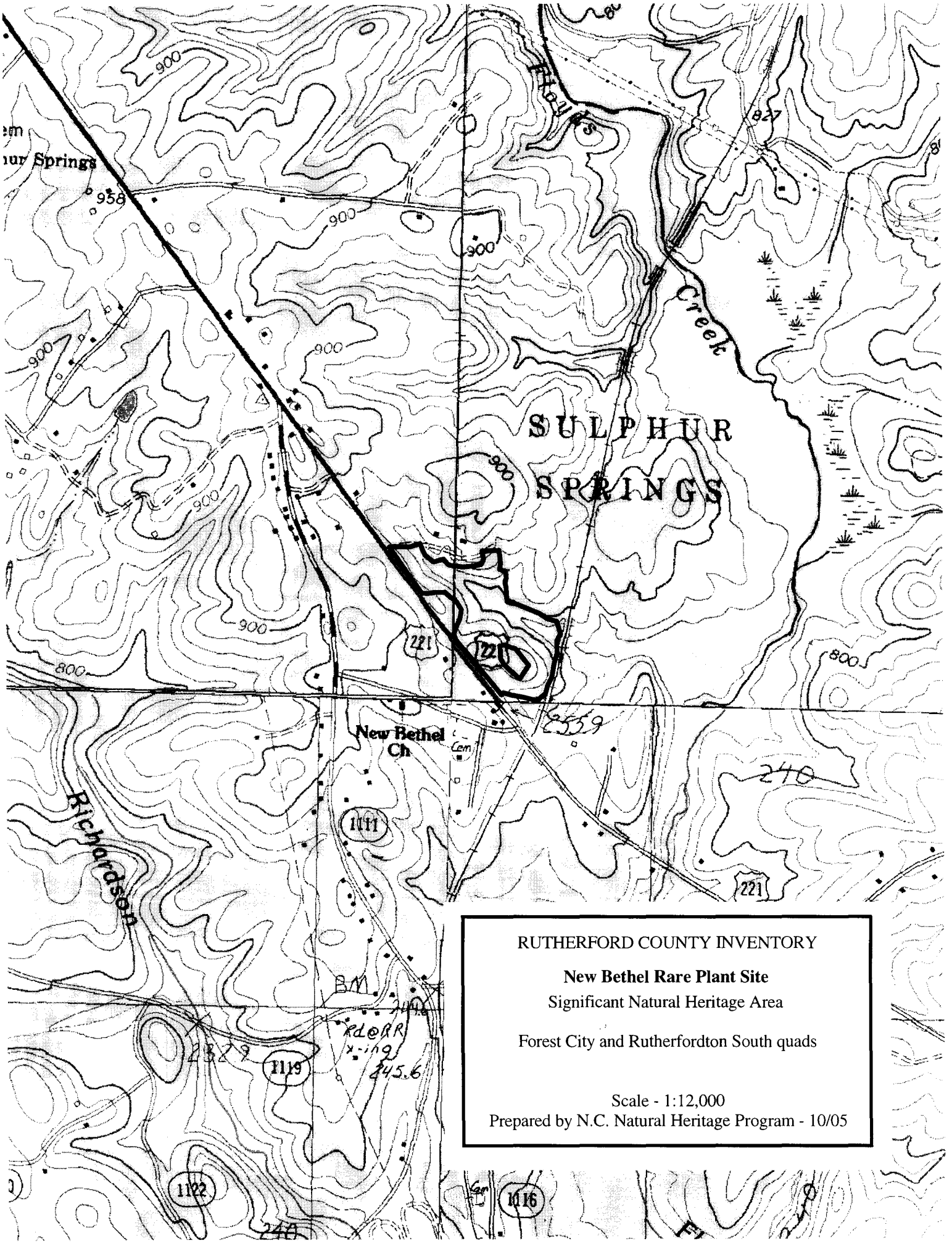
NATURAL COMMUNITIES: Low Elevation Seep and Dry-Mesic Oak-Hickory Forest.

RARE PLANTS: Watch List – Carolina hemlock (*Tsuga caroliniana*).

RARE ANIMALS: None known.

REFERENCES:

Padgett, J.E. 2005. Site Survey Report: McKinney Creek Low Elevation Seep. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.


SULPHUR
SPRINGS
Creek
New Bethel
Ch
Cem
Richardson
958
900
800
827
221
1111
1119
1122
1116
245.6
RUTHERFORD COUNTY INVENTORY
New Bethel Rare Plant Site
Significant Natural Heritage Area
Forest City and Rutherfordton South quads
Scale - 1:12,000
Prepared by N.C. Natural Heritage Program - 10/05

Rutherford County Natural Area Inventory

NEW BETHEL RARE PLANT SITE
Significant Natural Heritage Area

Site Significance: Regional **Size:** 25 acres
Quadrangles: Forest City and Rutherfordton South **Ownership:** Private

SIGNIFICANT FEATURES: This site contains a good population of the Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) located within a small example of a Dry-Mesic Oak-Hickory Forest.

LANDSCAPE RELATIONSHIPS: This site is located within the Broad River Valley Macrosite in southern Rutherford County, less than one mile north of Harris. Adjacent lands are fragmented by rural residential development and county roads including US Highway 221, which is scheduled to be widened and threatens a number of dwarf-flowered heartleaf populations along it. New Bethel Rare Plant Site is 1.25 miles southwest of the Sandy Mush Outcrop and 1.5 miles northeast of the Kudzu Farm Rare Plant Site.

SITE DESCRIPTION: This site is a moderately sloping, northeast facing, wooded slope along an unnamed tributary of Floyd's Creek, that is comprised of a small example of a Dry-Mesic Oak-Hickory Forest natural community. Dominant canopy trees include white oak (*Quercus alba*), post oak (*Q. stellata*), northern red oak (*Q. rubra*), scarlet oak Q. *coccinea*), mockernut hickory (*Carya alba*), sand hickory (*C. pallida*), and tulip poplar (*Liriodendron tulipifera*). The understory consists of red maple (*Acer rubrum*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), and downy serviceberry (*Amelanchier arborea*). The shrub layer includes mountain laurel (*Kalmia latifolia*), sparkleberry (*Vaccinium arboreum*), lowbush blueberry (*V. pallidum*), deerberry (*V. stamineum*) , and strawberry bush (*Euonymus americanus*). Common woody vine species include muscadine (*Vitis rotundifolia*) and poison ivy (*Toxicodendron radicans*). The herb layer includes dwarf-flowered heartleaf, galax (*Galax urceolata*), devil's-bit *(Chamaelirium luteum*), rattlesnake plantain (*Goodyera pubescens*), pussy-toes (*Antennaria plantaginifolia*), pipsissewa (*Chimaphila maculata*), goldenrods (*Solidago* spp.), and naked trefoil (*Desmodium nudiflorum*).

MANAGEMENT AND PROTECTIONS: This site as no formal protection. It has the potential as a mitigation site or as a conservation project for a local land trust.

NATURAL COMMUNITIES: Dry-Mesic Oak–Hickory Forest.

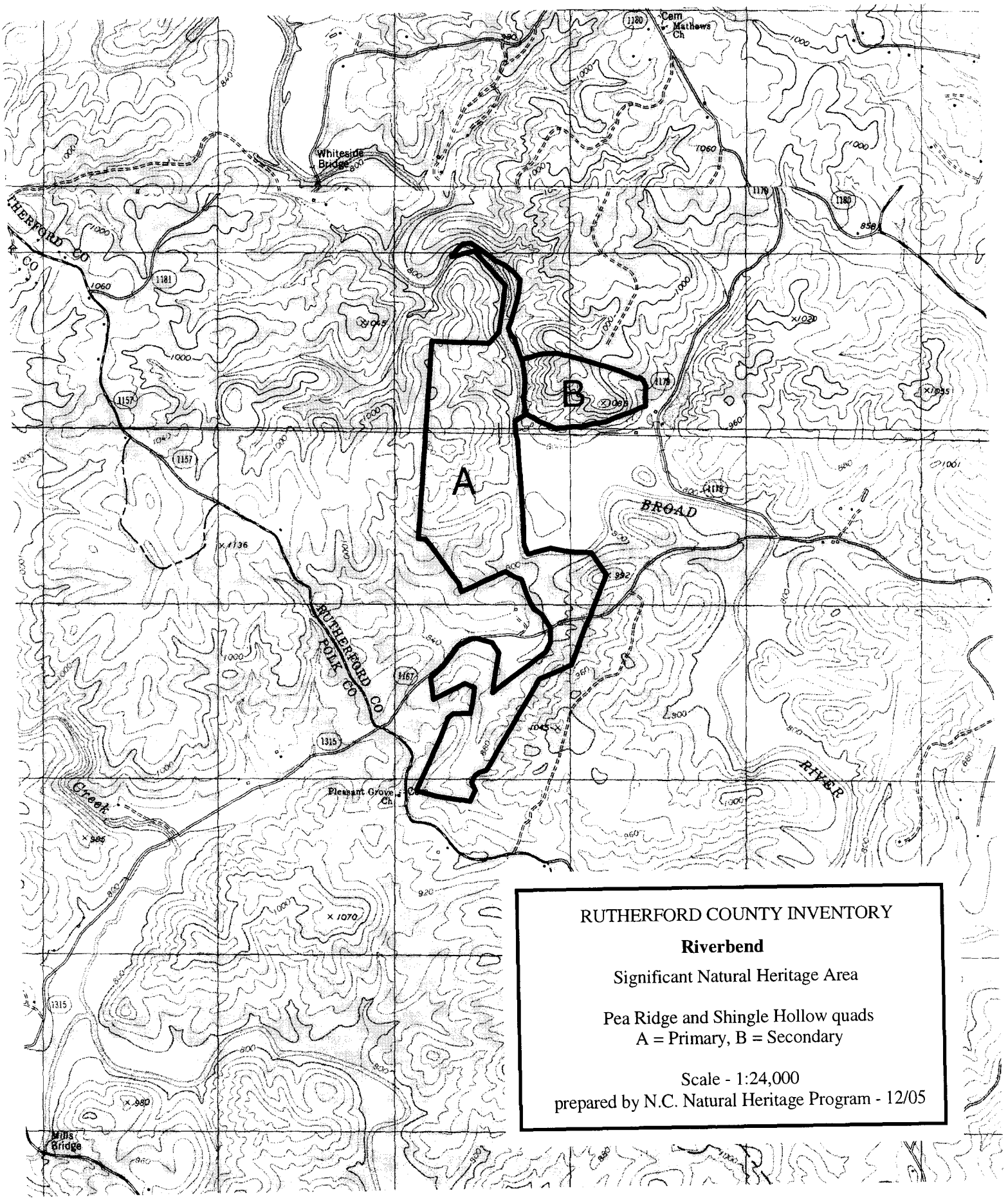
RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*).

RARE ANIMALS: None Known.

REFERENCES:

H.W. Lochner. 2005. Letter regarding *Hexastylis naniflora* survey data, Rutherfordton Bypass (T.I.P. R-2233A&B), 3pp.

Padgett, J.E. 2005. Site Survey Report: New Bethel Rare Plant Site. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.



RUTHERFORD COUNTY INVENTORY

Riverbend

Significant Natural Heritage Area

Pea Ridge and Shingle Hollow quads
A = Primary, B = Secondary

Scale - 1:24,000
prepared by N.C. Natural Heritage Program - 12/05

Rutherford County Natural Area Inventory

RIVERBEND
Significant Natural Heritage Area

Site Significance: Regional
Quadrangles: Pea Ridge, Shingle Hollow
Size: 377 acres (321 primary; 56 secondary)
Ownership: Foothills Land Conservancy, Private

SIGNIFICANT FEATURES: This site is significant for a suite of Watch List species that includes nestronia (*Nestronia umbellula*) and southern nodding trillium (*Trillium rugelii*).

LANDSCAPE RELATIONSHIPS: This site lies along the Broad River near the Polk County line in western Rutherford County about seven miles west of the town of Rutherfordton. Big Level Natural Area lies 3.5 miles to the west, Mills Bridge Natural Area is 1.3 miles to the southwest, and Green River Rich Slope is 2.3 miles to the south.

SITE DESCRIPTION: This site contains moderate slopes along the river and several small tributaries that flow into the river. A small area across the river includes a steep point with a small Low Elevation Rocky Summit encompassed within a pine plantation.

A fair example of a Piedmont/Low Mountain Alluvial Forest occurs in a narrow strip along the Broad River and along an unnamed tributary southwards past SR 1167 upstream towards a high tension power line. Canopy species include typical floodplain trees such as river birch (*Betula nigra),* box elder (*Acer negundo*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), tulip poplar (*Liriodendron tulipifera*), green ash (*Fraxinus pennsylvanica*), beech (*Fagus grandifolia*), and scattered oak species (*Quercus* spp.). The understory is much the same as the canopy with red maple (*Acer rubrum*) and silky dogwood (*Cornus amomum*) common. Shrubs in this forest community are sparse with only a few sparkleberry (*Vaccinium arboreum*) and mountain laurel (*Kalmia latifolia*) present along the upper slopes of the flood plain. The invasive Chinese privet (*Ligustrum sinense)* is present near the river. Woody vines are common throughout the floodplain with poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolius*), the invasive Japanese honeysuckle (*Lonicera japonica*), and various grape species (*Vitis* spp.) common. The herb layer contains grasses and sedges (*Poa* spp., *Panicum* spp., and *Carex* spp.), nut sedge (*Scleria* sp.), rushes (*Juncus effusus* and *J. tenuis*). Partridgeberry (*Mitchella repens)* is common along the upper portions of the floodplain.

Examples of Acidic Cove Forest occurs along several tributaries that eventually flow into the Broad River. These coves contain many of the same canopy species found throughout the alluvial forest community, along with species that are sometimes associated with rich coves such as buckeye (*Aesculus flava*) and basswood (*Tilia heterophylla*). These coves contain higher percentages of canopy species such as tulip poplar, cucumber magnolia (*Magnolia acuminata*), and ash. The understory has a high percentage of black gum (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), and red maple. Shrubs include mountain laurel (*Kalmia latifolia*), maple-leaf viburnum (*Viburnum*

acerifolium), great laurel (*Rhododendron maximum*), sparkleberry, and dog hobble (*Leucothoe fontanesiana*). Woody vines include Virginia creeper, muscadine, and poison ivy. The herb layer varies from dense and diverse in the moist areas to scattered. Some of the most common herb species found in these coves are little brown jugs (*Hexastylis arifolia* var. *arifolia),* variable-leaf heartleaf *(Hexastylis heterophylla),* southern nodding trillium *(Trillium rugelii),* creeping phlox (*Phlox stolonifera*), spiderwort (*Tradescantia* sp.), touch-me-not (*Impatiens* sp.), Canadian horse balm (*Collinsonia canadensis*), sedges (*Carex* spp.), panic grasses (*Panicum* spp.), Christmas fern (*Polystichum acrostichoides*), New York fern (*Thelypteris noveboracensis*), broad beech fern (*Phegopteris hexagonoptera*), and Indian pipe (*Monotropa uniflora*).

Along the middle and upper slopes to the ridge tops is a fair quality Chestnut Oak Forest. This is probably the most mature and best intact forest community in the site. It extends beyond the site onto adjacent properties to the west and north where it adjoins a pine plantation. This forest community is along the northwestern-most portions of the site along the highest and driest ridges. It contains over 60% chestnut oak (*Quercus montana*) along with white oak, (*Q. alba*), northern red oak (*Q. rubra*), tulip poplar, hickories (*Carya* spp.), and pines (*Pinus* spp.). Red maple, sourwood, flowering dogwood, and a few black gums are common in the understory. Shrubs frequently include mountain laurel and lowbush blueberry (*Vaccinium pallidum*). Muscadine and Virginia creeper are common woody vines present. The herbaceous layer is sparse with partridgeberry, pipsissewa (*Chimaphila maculata*), and poverty grass (*Danthonia* spp.) common.

MANAGEMENT AND PROTECTION: The majority of this site is protected by the Foothills Land Conservancy as a natural area. Little active management is needed as long as the site is allowed to mature naturally.

NATURAL COMMUNITIES: Chestnut Oak Forest, Acidic Cove Forest and Piedmont/Low Mountain Alluvial Forest.

RARE PLANTS: Watch List **–** nestronia (*Nestronia umbellula*), little sweet Betsy (*Trillium cuneatum*), spotted joe-pye-weed (*Eupatoriadelphus maculatus*), roundleaf ragwort (*Packera obovata*), ginseng (*Panax quinquefolius*), and southern nodding trillium (*Trillium rugelii*).

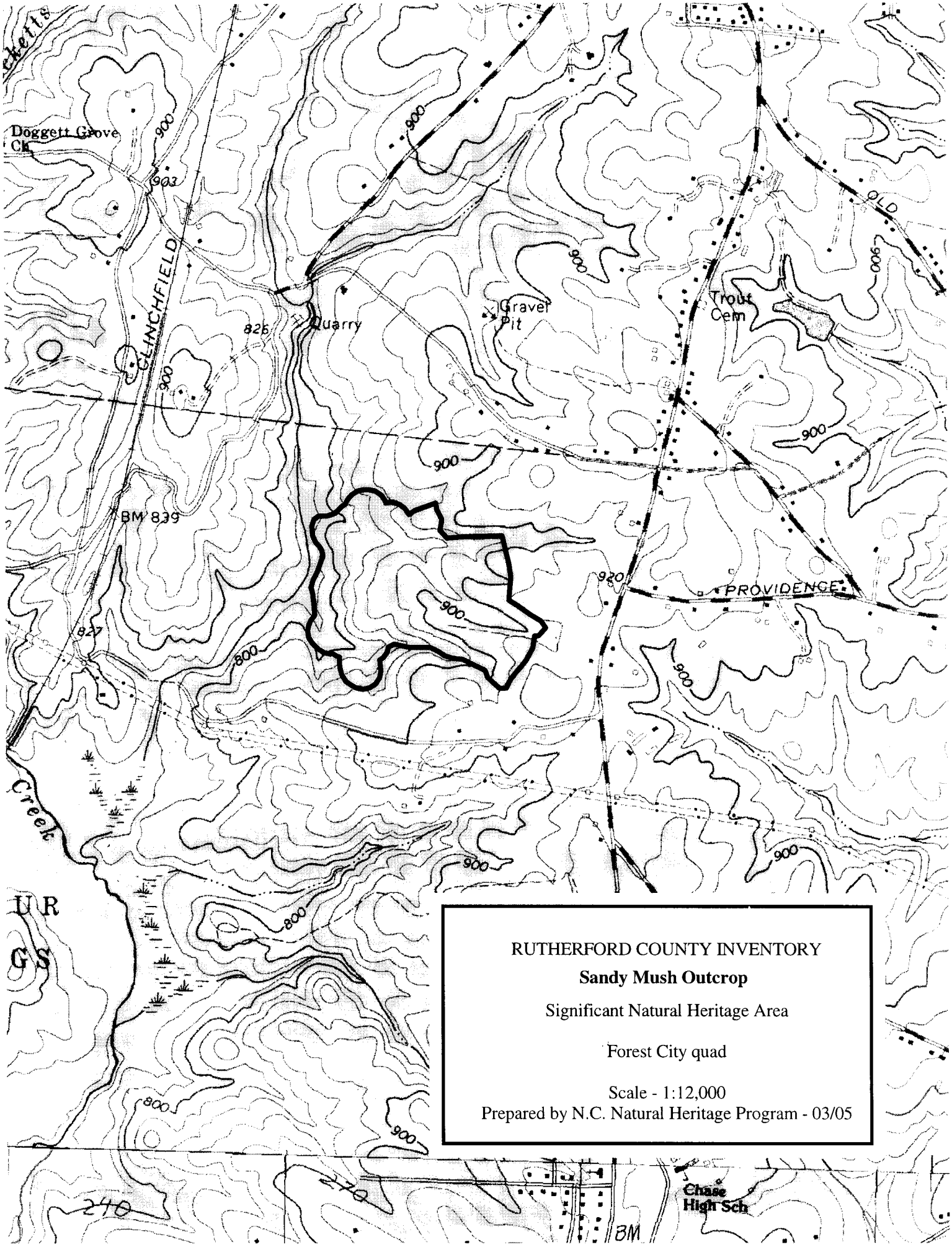
RARE ANIMALS: Watch List – common raven (*Corvus corax*), hermit thrush (*Catharus guttatus*), and Swainson's warbler (*Limnothlypis swainsonii*).

REFERENCES:

Moye, W. S. 2003. Assessment of the Stensland/Alline Property on the Broad River in Rutherford County, North Carolina. Unpublished Report to Foothills Conservancy of North Carolina

Padgett, J. E. 2005. Site Survey Report: Riverbend. N.C. Natural Heritage Program, OCCA, DENR, Raleigh, N.C.

Stensland, J. 2003. Bird List of the Stensland/Alline Property.



RUTHERFORD COUNTY INVENTORY

Sandy Mush Outcrop

Significant Natural Heritage Area

Forest City quad

Scale - 1:12,000

Prepared by N.C. Natural Heritage Program - 03/05

Rutherford County Natural Area Inventory

SANDY MUSH OUTCROP
Significant Natural Heritage Area

Site Significance: State
Quadrangle: Forest City
Size: 181 acres
Ownership: Private

SIGNIFICANT FEATURES: This site contains a large example of the rare Granitic Flatrock natural community. This site is reported to be the largest granitic flatrock in the state of North Carolina. It is also significant for supporting a number of rare plant species found only in association with granitic flatrocks. These include single-flower sandwort (*Minuartia uniflora*), Piedmont quillwort (*Isoetes piedmontana*), and elf orpine (*Diamorpha smallii*). Georgia oak (*Quercus georgiana*), a species not documented from North Carolina, was reported from this site in the mid 1980s, but several attempts to relocate it have failed.

LANDSCAPE RELATIONSHIPS: This site is located within the northern portion of the Broad River Valley Macrosite on a predominantly west-facing slope in south central Rutherford County. The surrounding landscape is highly fragmented rural residential development with some agriculture lands present as well. The landscape area surrounding this site is roughly 30-40% forested. Standard Sites located near this site include New Bethel Rare Plant Site located 1.3 miles to the southwest, and Hogpen Branch Flatrock 2.3 miles to the southeast..

SITE DESCRIPTION: This site consists of a granitic flatrock surrounded by maturing forest, and a narrow alluvial zone along a fork of Floyds Creek. The Granitic Flatrock is a mosaic of vegetation and bare rock covered with crustose lichens, moss and lichen mats, small herb mats on shallow soils, seeps, and shrub and tree islands on deeper soils. Herb mats are dominated by Willdenow's croton (*Croton wildenowii*), pineweed (*Hypericum gentianoides*), and broomsedge (*Andropogon virginicus*). In the herb mats are also fameflower (*Talinum teretifolium*), cactus (*Opuntia humifusa*), buttonweed (*Diodia teres*), broomsedge (*Andropogon ternarius*), poverty grass (*Danthonia spicata*), and little bluestem (*Schizachyrium scoparium*). Weedy species present includes triple awn grass (*Aristida dichotoma*), dog fennel (*Eupatorium capillifolium*), horseweed (*Conyza canadense*), and pilewort (*Erechtites hieracifolia*).

Extending eastward from the flatrock is a fair quality maturing Dry Mesic Oak-Hickory Forest running for some distance towards the main road by Chase Middle School. The Federal and State Threatened dwarf-flowered heartleaf (*Hexastylis naniflora*) is present in this community type in two scattered locations along small tributaries. The canopy is dominated by white oak, mockernut hickory, scarlet oak (*Quercus coccinea*), southern red oak (*Quercus falcata*), and Virginia pine. The understory is dominated by flowering dogwood (*Cornus florida*), and sourwood (*Oxydendrum arboreum*). Common herbs include partridgeberry (*Mitchella repens*), poverty grass, pipsissewa, ebony spleenwort (*Asplenium platyneuron*), and tickseed (*Coreopsis major*).

Along the western edge of the site is a small area of Piedmont/Low Mountain Alluvial Forest that leads down along Floyd's Creek. The canopy here is dominated by tulip poplar (*Liriodendron tulipifera*), white oak, and Virginia pine. The understory and shrub layer contains tag alder (*Alnus serrulata*), yellowroot (*Xanthorhiza simplicissima*), pinxter-flower (*Rhododendron periclymenoides),* and cane *(Arundinaria gigantea).* Woody vines such as greenbrier *(Smilax rotundifolia)* and poison ivy *(Toxicodendron radicans)* are abundant. The invasive Japanese bamboo grass (*Microsteigum vimineum*) is present and locally abundant.

MANAGEMENT AND PROTECTION: This site has no formal protection. It has been an area of interest for both conservation and development. This site been threatened by the construction of an onsite quarry which would destroy the flatrock. Local area citizens have protested a quarry being built on the site and the final outcome is yet unknown.

NATURAL COMMUNITIES: Granitic Flatrock, Dry-mesic Oak-Hickory Forest, and Piedmont/Low Mountain Alluvial Forest.

RARE PLANTS: dwarf-flowered heartleaf (*Hexastylis naniflora*), Piedmont quillwort (*Isoetes piedmontana*), and single-flowered sandwort (*Minuartia uniflora*). Watch List – elf orpine (*Diamorpha smallii*).

RARE ANIMALS: None known.

REFERENCES:

Hutchings, W. 1971. Flora List of Sandy Mush Rock Outcrop. Isothermal Community College; Spindale, NC.

Kologiski, R. L. and D. Hill. 1972. North Carolina Natural Areas Survey Report. DSP, DENR, Raleigh, NC.

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Appendix I. Butterfly Species Observed in the Broad River Valley.

Common Name	Latin Name
American Copper	*Lycaena phlaeas*
American Lady	*Vanessa virginiensis*
American Snout	*Libytheana carinenta*
Appalachian Brown	*Satyrodes appalachia*
Banded Hairstreak	*Satyrium calanus*
Black Swallowtail	*Papilio polyxenes*
Cabbage White	*Pieris rapae*
Carolina Satyr	*Hermeuptychia sosybius*
Checkered White	*Pontia protodice*
Clouded Skipper	*Lerema accius*
Clouded Sulphur	*Colias philodice*
Cloudless Sulphur	*Phoebis sennae*
Common Buckeye	*Junonia coenia*
Common Checkered Skipper	*Pyrgus communis*
Common Roadside Skipper	*Amblyscrites vialis*
Common Sootywing	*Pholisora catullus*
Common Wood-Nymph	*Cercyonis pegala*
Confused Cloudywing	*Thorybes confusis*
Delaware Skipper	*Anatrytone logan*
Dun Skipper	*Euphyes vestris*
Eastern Comma	*Polygonia comma*
Eastern Tiger Swallowtail	*Papilio glaucus*
Eastern-tailed Blue	*Everes comyntas*
Eufala Skipper	*Lerodea eufala*
Falcate Orangetip	*Anthocharis midea*
Fiery Skipper	*Hylephila phyleus*
Gemmed Satyr	*Cyllopsis gemma*
Great Spangled Fritillary	*Speyeria cybele*
Gulf Fritillary	*Agraulis vanillae*
Hackberry Emperor	*Asterocampa celtis*
Horace's Duskywing	*Erynnis horatius*
Least Skipper	*Ancyloxypha numitor*
Little Wood Satyr	*Megisto cymela*
Little Yellow	*Eurema lisa*
Monarch	*Danaus plexippus*
Mourning Cloak	*Nymphalis antiopa*
Northern Cloudywing	*Thorybes pylades*
Orange Sulphur	*Colias eurytheme*
Painted Lady	*Vanessa cardui*
Pearl Crescent	*Phyciodes tharos*
Pipevine Swallowtail	*Battus philenor*

Question Mark	*Polygonia interrogationis*
Red Admiral	*Vanessa atalanta*
Red-banded Hairstreak	*Calycopis cecrops*
Red-spotted Purple	*Limenitis artemis astyanax*
Sachem Skipper	*Atalopedes campestris*
Silver-spotted Skipper	*Epargyreus clarus*
Silvery Checkerspot	*Chlosyne nycteis*
Sleepy Orange	*Eurema nicippe*
Southern Cloudywing	*Thorybes bathyllus*
Southern Dogface	*Colias cesonia*
Southern Pearly-eye	*Enodia portlandia*
Spicebush Swallowtail	*Papilio troilus*
Spring Azure	*Celastrina ladon*
Summer Azure	*Celastrina ladon neglecta*
Swarthy Skipper	*Nastra lherminier*
Tawny-edged Skipper	*Polites themistocles*
Tawny Emperor	*Asterocampa clyton*
Variegated Fritillary	*Euptoieta claudia*
Viceroy	*Limenitis archippus*
Whirlabout	*Polites vibex*
Zebra Swallowtail	*Eurytides marcellus*


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