

Important Bird Areas

OF NORTH CAROLINA



 Audubon NORTH CAROLINA

Compiled by Walker Golder and Curtis Smalling

Audubon North Carolina is the state office of the National Audubon Society representing 14,000 grassroots members and ten local chapters across the state. With a century of conservation history in North Carolina, Audubon strives to conserve and restore the habitats we share with all wildlife, focusing on the needs of birds. Audubon North Carolina achieves its mission through a blend of science-based research and conservation, education and outreach, and advocacy.

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Audubon North Carolina

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Foldout Map of North Carolina Important Bird Areas

During a meeting of Audubon North Carolina members in 1998, before I even knew I was going to work for the state office, I was introduced to the Important Bird Areas (IBA) concept. It was compelling. This systematic approach to identifying, monitoring, and conserving the most important remaining habitats for birds was just the organizing principle I envisioned the new state program building from.

Twelve years later, Audubon North Carolina has made tremendous progress in building an exemplary IBA program. Almost 100 sites across North Carolina have been evaluated and identified as IBAs. More than 150,000 acres of those same IBAs have benefited from direct conservation action. Virtually every conservation planning entity in the state has access to sophisticated computer mapping data on IBAs and most now recognize IBAs as priority sites for long-term protection. The IBA program has become a dynamic “blueprint for conservation” in North Carolina.


Although IBA conservation in North Carolina will always owe greatly to the leadership of Audubon staffers Walker Golder and Curtis Smalling, numerous partners are critical to the program’s success. Each and every partner plays a vital role in researching and protecting IBAs, whether it is a chapter conducting a Christmas Bird Count, a land trust conserving a plot of crucial bird habitat, a state agency prioritizing expansions of parks and wild lands that support bird species, or a policy maker guiding communities toward sustainable use of lands.

The Important Bird Areas program has sparked new partnerships, like the one Audubon now enjoys with the North Carolina Division of Parks and Recreation. Together the two organizations identified shared interests in conserving land for birds and sharing these lands with a growing population of citizens and visitors who value the state’s parks and the birds they support. In fact, North Carolina State Parks declared 2010 “Year of the Birds” and organized more than 600 bird-themed field trips and programs to introduce the public to the joys of birds and birding.

The IBA program also nicely parallels other significant developments in promoting the values of conservation, not just for biological purposes but also for economic ones. During this same period, Audubon North Carolina worked with other partners—the North Carolina Wildlife Resources Commission, U.S. Fish and Wildlife Service, Sea Grant, N.C. Cooperative Extension, and N.C. State Parks—to launch the North Carolina Birding Trail. The trail is an innovative ecotourism project that links the state’s best birding spots (most of which are IBAs) to communities. Check out www.ncbirdingtrail.org to see why enthusiastic wildlife watchers around the world come to North Carolina to enjoy all the state has to offer.

Beyond the state’s borders, Audubon North Carolina has used the IBA program as a linking point for partnerships with other eastern states as part of the growing Atlantic Flyway Initiative. Discreet IBA sites, when strung together with similar habitats up and down the seaboard, become pearls on a necklace of habitats where larger scale conservation can secure the full migratory path birds need. Audubon North Carolina has stretched beyond country borders as well, pioneering conservation efforts for migratory birds in places like Nicaragua and the Bahamas.

This latest iteration of the *Important Bird Areas of North Carolina* arrives at a time when people face a challenging new context in which to evaluate conservation plans. Climate change is a force that will alter landscapes like no other in memory. The time scales, while unfortunately long in political terms, are extremely short in biological terms. How will birds and their habitats respond to accelerated changes in temperatures, rainfall, sea levels, and storm events? That remains a largely unanswered question, but early indications are that birds may not be waiting for all the data to be in. A study by the National Audubon Society in 2009 found compelling trends of bird species claiming winter habitats that were on average 35 miles further north than four decades ago. Sixty of the more than 300 species studied have spread over 100 miles further north. Other migration timing is shifting, too, with some plants and other food sources seeming to peak earlier than when birds normally arrive.



So now more than ever, Audubon's effort to understand the behaviors and needs of birds through the Important Bird Areas program is vital. It is vital for conservation planning in North Carolina. It is vital for linking to hemispheric efforts at bird and habitat protections. And it is vital for understanding how human communities can adapt to coming changes. If there was ever doubt before, it seems undeniable now that the resilience of our human communities is intimately tied to the resilience of our natural communities.

As you read this report, I hope you will be inspired to take a bird's eye view of the world around us, and to continue engaging as a partner with Audubon for birds, for all wildlife, and for the health of our own communities.

Chris Canfield

*Vice President for Gulf of Mexico Conservation and Restoration,
National Audubon Society
(Former Executive Director/Vice President,
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s an Audubon North Carolina member, I remember having a lot of questions when the Important Bird Areas program was announced for North Carolina. What is an Important Bird Area? How would chapters work with the state office and other IBA partners? How would all the information from the program be used?

As my role with Audubon has increased from general member to a member of the state board of trustees to chairman of the board of trustees, I am happy to report that the Important Bird Areas program and the associated hard work, meetings, and collaborative efforts have become a unique conservation resource. The IBA program provides information that local planners and conservation agencies can utilize when making decisions, insuring that their planning includes the preservation of critical habitat and bird life in their respective political arenas.

As a birder, I view this information as a celebration and blessing of the natural bird habitats in North Carolina, my adopted home state. It helps me answer the question of how I can help protect our invaluable bird habitats for future generations. I believe you can take an additional step and look at IBAs as Important Human Areas (IHAs). This program provides habitats that allow humans to rejuvenate, study, and relax. Not to mention that protecting forests, streams, and other habitats enhances our quality of life in many ways.

I urge all agencies, individuals, and groups to learn more about our Important Bird Areas and become involved in this celebration of the natural world for current and future generations. Feel free to contact Audubon North Carolina with any comments and suggestions. You can find contact information at www.ncaudubon.org.

Warm Regards

Joe Bearden

Chairman, Audubon NC Board of Trustees

Acknowledgments

It is difficult to overstate the tremendous effort that it takes from Audubon staff, volunteers, partners, funders, board members, and many others to make the Important Bird Area program work in North Carolina. Literally hundreds of people contribute to bird conservation—from Adopt an IBA volunteers to Christmas Bird counters, agency staff on the front lines of management and policy issues, Audubon staff patrolling sanctuaries, and countless others performing scores of duties and activities. To these current volunteers and professionals we add all of those mentioned in the first publication of this work in 2004. We are building on a firm foundation provided by that first group of tireless conservationists.

Audubon North Carolina successfully identified the first round of IBAs in 2004 and our IBA Technical Committee is still working to make sure that the established criteria remain relevant and valid as we look at other potential IBAs across the state; in fact, five new IBAs have been included this edition. Thank you to David Allen, Rob Bierregaard, Dave Lee, Mark Johns, Harry LeGrand, and Ted Simons for their invaluable input and assistance.

The Audubon staff is fortunate to have the opportunity to work with ten local Audubon chapters across the state through our Adopt an IBA program. Each chapter is engaged in conservation, monitoring, education, and other projects benefiting birds and the human communities in which they live. The chapter members are tireless in their efforts to conserve and appreciate birds and the environment and to reach out to a wider audience with that passion. There are too many of these folks to name them all here, but we appreciate each and every one of them for their work in their adopted IBAs.

As we move from identifying IBAs to conserving and defending them, we sometimes face daunting challenges. One such challenge was an outlying landing field that the U.S. Navy proposed to build in northeastern North Carolina, which would have imperiled thousands of waterfowl, other wildlife, and people at Pocosin Lakes National Wildlife Refuge. A coalition of determined partners and private citizens halted this ill-advised project. Challenges to the health and viability of many IBAs continue—particularly in the form of development, lack of plans and policies in place to enact protections, and human behaviors that imperil birds. We thank all of those courageous people within partner agencies, citizen groups, and chapters, who step up to help defend these habitats that support and protect birds and other wildlife. We especially thank the Southern Environmental Law Center and Defenders of Wildlife for their critical partnership in protecting Important Bird Areas.

Audubon North Carolina is fortunate to work with a strong core of state and federal agencies, land trusts, and other nongovernmental organizations that work to protect birds, other natural resources, and their habitats throughout the state. These partners include the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service, N.C. Wildlife Resources Commission, N.C. State Parks, N.C. Natural Heritage Program, N.C. Museum of Natural Sciences, The Nature Conservancy, and numerous land trusts across the state. The work of these partners is vital to the protection of birds and their habitats, and monitoring bird populations in North Carolina.



Thirty-two IBAs include state park units. At these sites we work with State Parks staff on monitoring projects, educational programs, and advocacy efforts for land conservation. State Parks designated 2010 as the Year of the Birds, focusing on the birdlife that exists throughout the parks system and inviting new audiences to appreciate this aspect of North Carolina wildlife.

The NC IBA program has also benefited from the work of students from the Nicholas School for the Environment, the UNC–Chapel Hill Institute for the Environment, UNC–Wilmington, and N.C. State University.

The National Audubon Society administers the United States Important Bird Areas program, and we would like to thank key staff there: Greg Butcher, John Cecil, and Connie Sanchez, and former employees Iain Stenhouse, Ian Hartzler, and Tom Bancroft.

Funding for the IBA program is critical to making our efforts for bird conservation effective. Many funding sources have contributed to this effort over the past decade; they include the Park Foundation, Z. Smith Reynolds Foundation, Grace Jones Richardson Trust, Progress Energy, the Toyota TogetherGreen Initiative, Cape Fear Garden Club, The Cornell Laboratory of Ornithology, and many individual gifts both large and small. Especially critical for this edition of the IBA document and the work on IBAs over the past six years has been continued support from The Educational Foundation of America. By funding our “Blueprint for Conservation” they have ensured that we approach our IBA work in a defensible, rigorous way that yields results. Federal funding has also been critical to our work, including National Fish and Wildlife Foundation funding of our Golden-winged Warbler, American Oystercatcher, and Piping Plover projects, and the U.S. Fish and Wildlife Service’s support of our work in the Waccamaw and Lumber River drainages.

Introduction

The North Carolina landscape is unique and diverse. There is no other place where one can travel west from the Atlantic Ocean and experience eastern North America's tallest sand dunes, oldest trees, highest eastern mountain, and most ancient river. If you follow a transect stretching the 540-mile length of the Tar Heel state, you will cross three distinct physiographic provinces—coastal plain, Piedmont, and mountains—rise from sea level to nearly 6,700 feet, and encounter any number of the state's 100 natural community types, 3,300 species of vascular plants, and 700 species of vertebrate animals.

The natural diversity of the North Carolina landscape supports an equally diverse assemblage of birds. From the spruce-fir forest of the mountains to the barrier islands and ocean waters along the coast, more than 450 bird species have been recorded, nearly 200 of which are known to breed in the state.

Conserving birds and the habitats they depend on has been on the minds of North Carolinians for more than a century. By the end of the 19th century, people had become outraged at the business of shooting birds for their feathers, skins, and meat. Species such as Least Tern, Great Egret, and Snowy Egret were hanging on by a thread and populations of other species were perilously low. The plight of North Carolina's birds led to the formation of the Audubon Society of North Carolina in 1902. Along with the Audubon Society came the state's first system of game wardens, sanctuaries for the protection of coastal waterbirds, laws specifically for the protection of nongame birds, and education programs focused on the protection of birds and their habitats. The North Carolina Audubon Society was the predecessor of the North Carolina Game Commission, formed in 1927 and known today as the North Carolina Wildlife Resources Commission.

Times have changed. Factors affecting bird populations are more complex than a century ago. There is broad consensus among scientists that habitat loss and degradation at breeding grounds, migratory stopovers, and wintering areas are major factors that contribute to population declines. Clear-cutting and fragmentation of forests, loss and degradation of nonforested habitats, residential and commercial

development, recreation activity, and other human-induced changes to the landscape reduce the amount of habitat available for nesting, migration, wintering, and foraging. Reducing or preventing the destruction of habitats, as well as enhancing and restoring high-quality habitats, must be a primary component of bird conservation.

A key step for conserving bird habitats is to identify those places that provide the greatest habitat value for birds and support the most significant populations of birds. These areas may hold either large concentrations or an exceptional diversity of birds, harbor rare and endangered species, or harbor an assemblage of birds associated with a rare or threatened habitat. The protection and appropriate management of these sites is a high priority for maintaining bird populations and species diversity.

As part of a nationwide initiative and a global partnership to identify and conserve habitats critical to birds, the North Carolina State Office of the National Audubon Society (Audubon North Carolina) launched the North Carolina Important Bird Areas program.

The North Carolina Important Bird Areas program has two primary objectives. The first is to identify those places that are essential to sustaining the diversity and abundance of naturally occurring populations of birds in North Carolina. The second is to protect or ensure the appropriate management of these sites for the long-term conservation of birds and their habitats.





The Important Bird Areas Program

The Important Bird Areas program was born in Europe in 1981 as a program of Birdlife International. In 1989, *Important Bird Areas in Europe* was published and included 2,444 sites in 39 countries. It met with great success in Europe and led to the development of partnerships around the globe. The Important Bird Areas program has now expanded to more than 178 countries on nearly every continent and more than 8,000 sites have been identified. Important Bird Area status has resulted in hundreds of sites and millions of acres being protected for the benefit of birds and bird populations.

In the Western Hemisphere, Important Bird Areas programs have been initiated throughout the Americas and the Caribbean. Most South American, Central American, and Caribbean countries have initiated Important Bird Area programs, as well as Mexico, the United States and Canada. Summary documents have now been prepared for the Caribbean and the Americas. (See www.birdlife.org for more on these recent publications.)

The National Audubon Society, as the United States Partner Designate of Birdlife International, launched the United States Important Bird Areas program in 1995. Audubon pioneered state-based Important Bird Areas programs through its network of state field offices. The first state

Important Bird Areas program began in Pennsylvania, which was soon followed by New York.

State Important Bird Areas programs are under way in approximately 47 states, with programs in all 50 states expected in the next few years. Already, more than 2,500 global, continental, and state-significant Important Bird Areas covering more than 380 million acres have been identified across the United States. To learn more about the United States Important Bird Areas programs across the United States, please visit www.audubon.org.

In 1998, Audubon launched the North Carolina Important Bird Areas program at the annual Audubon Council of North Carolina conference in Asheboro. More than 150 participants gathered for the day-long conference to learn about North Carolina's birds, their habitats, and the Important Bird Areas program. The conference featured three regional charettes, where participants identified Important Bird Area candidate sites in the mountains, Piedmont, and coastal plain. Building upon this exciting kick-off event, Audubon set out across the state to identify those special places that are essential to North Carolina's birds. The Important Bird Area Technical Committee then set about vetting those nominations and originally accepted 94 sites for inclusion in the first Important Bird Areas of North Carolina report, published in 2004. Since that time five additional sites have been approved for inclusion, and three have been dropped as birds have declined

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below criteria population levels at those sites. Ninety-six current sites are included in this document.

Site Identification and Selection Process

An Important Bird Area is a site that provides essential habitat for one or more species of breeding or nonbreeding birds. These are places important for birds at some time in their annual cycle, including breeding, migration, and wintering. It was our goal to look across all birds and all habitats to identify those places that are essential to sustaining the diversity and abundance of birds within the boundaries of North Carolina.

Sites are identified according to standardized, scientifically defensible criteria that refer to numbers of birds or assemblages regularly occurring at a particular location. They include sites that support endangered, threatened, or vulnerable species; sites with exceptional or rare habitat and the associated assemblage of birds; sites supporting high concentrations of birds; and sites used for long-term monitoring and research contributing to bird conservation. Sites for nonnative species and those with unnatural, highly altered substrates, such as garbage dumps, sewage treatment plants, or buildings, are excluded from consideration.

Within this basic structure, numeric thresholds have been established for bird species and suites of bird species, which

allows sites to be classified according to their overall significance. A site can be significant at the global, continental, or state level. This classification system helps to establish priorities for conservation planning and actions.

Conservation of habitats essential to birds is, of course, at the core of the Important Bird Areas program. For conservation planning to be most effective, actions must be directed toward a distinct unit with defined boundaries. The most important factor in determining boundaries for North Carolina's Important Bird Areas was habitat. Wherever possible, boundaries have been established based on the tract of contiguous habitat necessary to support the species, population, or assemblage of birds for which the site was nominated. The boundaries were mapped using ArcView 9.2 Geographic Information System software.

Important Bird Areas have no minimum or maximum size limit. Sites can be as small as a few acres, as in the case of islands along the coast that support significant numbers of nesting waterbirds, or they can be vast areas of forest, as in the North Carolina mountains. All are important, and all are essential to North Carolina's birds.

To engage a broad audience in the identification process, nominations of potential Important Bird Areas were solicited from many groups and individuals with a general interest in





or knowledge of North Carolina's birds and their habitats. Nominations were solicited from Audubon members, Audubon Chapters, bird clubs, birders, land managers, biologists, nature preserve and sanctuary managers, land trusts, conservation organizations, bird banders, ornithologists, Christmas Bird Count compilers, Breeding Bird Survey coordinators, and others.

All nominations were forwarded to the state Important Bird Areas coordinator where they were initially reviewed. Additional information was gathered as needed and the nominations were presented to the Technical Committee for critical review. Sites were also identified by reviewing the Breeding Bird Survey, Christmas Bird Count, Waterfowl Survey, Colonial Waterbird Survey, and shorebird survey databases; along with data from published literature, unpublished reports, ongoing monitoring efforts, and from individuals. Committee members reviewed all sites proposed as Important Bird Areas for accuracy, provided additional information if needed, and determined if the site met one or more of the four criteria.

In most cases, it was clear whether a site met or exceeded the numeric thresholds. But for some birds and suites of species, such as landbirds, state population estimates and population estimates at a particular site did not exist. In cases where a basic level of knowledge of the birds at a site in question was available, but accurate or recent population estimates were not available, the Technical Committee used its professional

judgment to determine if the site was among the state's important sites for a species or suite of species. While this deviates slightly from a purely scientific approach, it proved to be the only way to recognize some key sites for land birds. In most cases, at least one or more of the Technical Committee members had extensive knowledge about each site under consideration. Approval was based on majority consensus among Technical Committee members.

Important Bird Area boundaries were determined based on habitat type and the extent of habitat necessary to support the birds or assemblage of birds for which the site was nominated. This sometimes resulted in several smaller nominated sites being combined into one large designated Important Bird Area.

Technical Committee

The first step in launching the North Carolina Important Bird Area program was to assemble a Technical Committee composed of the state's leading experts on birds, their distribution, habitats, and conservation. This committee continues to function as a review committee for newly nominated sites or to review existing sites whose numbers have changed, and to assist Audubon staff with questions about data availability, changes to state criteria, or other questions. Our current committee of biologists and ornithologists, covering the mountains to the coast, is composed of the following:

Introduction

David Allen
N.C. Wildlife Resources Commission
Nongame Coastal Project Leader Biologist

Rob Bierregaard, Ph.D.
Professor of Biology
UNC-Charlotte

John Gerwin
Curator of Birds
N.C. Museum of Natural Sciences

David Lee
Curator of Birds (retired)
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Harry LeGrand, Ph.D.
Zoologist
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Mark Johns
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Ted Simons, Ph.D.
Professor of Zoology
N.C. State University

Walker Golder
Deputy Director
Audubon North Carolina

Curtis Smalling
Important Bird Areas Coordinator and Mountain Program
Manager
Audubon North Carolina

The Important Bird Area Technical Committee established the scientifically based criteria detailed below and set state-specific numeric thresholds for these criteria, following the model of the United States Important Bird Area criteria developed by the National Audubon Society, the United States partner designate of BirdLife International.

Criteria Used to Identify Sites

As a general rule, a site qualified as an Important Bird Area in North Carolina if it met the following conditions:

- > The site provides essential habitat for a naturally occurring population of one or more species of birds in the state (excluding introduced species, feral populations, and areas that are predominantly human in origin, such as landfills); and
- > The site met one or more of the criteria below.

In establishing thresholds for the criteria NC 1 and NC 2 (see below), the normal dispersion pattern of each species was taken into consideration because of the relative likelihood of finding sites that meet the established thresholds. This follows procedures used in the European and United States Important Bird Areas programs. Because the dispersion pattern of species often differs by season, these thresholds must be season-dependent.

Defining a species as dispersed or aggregated is somewhat subjective. At a landscape scale, populations may appear aggregated as a consequence of habitat limitation, but the population density may nonetheless be limited due to territorial behavior within the suitable habitat. In the





Important Bird Area program we are concerned with local population densities that will determine if a site meets a particular population threshold. Therefore, for the purposes of the Important Bird Area program, a species is classified as having a dispersed dispersion pattern if its behavior characteristics, that is, territoriality, limit its population density in an area such that large concentrations rarely occur. The dispersion pattern for North Carolina birds was adapted from those established by the United States Important Bird Areas Program.

Criteria

NC 1: A site that regularly holds significant numbers of one or more species listed as Endangered or Threatened in North Carolina.

This criterion applies to sites that sustain a local population, breeding or nonbreeding, of a species, subspecies, or readily identifiable population listed as Endangered or Threatened by the North Carolina Wildlife Resources Commission; species listed as Critical, Endangered, or Vulnerable by BirdLife International.

Threshold: The site is known or thought to support one percent of the state population in a given season if the state population is known; or is known to support the following:

- > Dispersed nonpasserine species: 2 breeding pairs / 6 individuals

- > Dispersed passerine species: 4 breeding pairs / 10 individuals
- > Aggregated species: 6 breeding pairs / 18 individuals
- > This category excludes incidences of vagrancy, marginal occurrence, and historical records (unless a reintroduction program is under way or imminent).

NC 2: A site that regularly holds a significant population, or exceptional diversity, of one or more species that is declining or vulnerable in North Carolina.

This criterion applies to sites that sustain a significant population, breeding or nonbreeding, of one or more species listed as Species of Special Concern, Significantly Rare, Watch List, or Near Threatened (BirdLife International).

NC 2a: Sites that sustain species listed as North Carolina Species of Special Concern, North Carolina Significantly Rare, Audubon WatchList–Red, Partners in Flight Watch List–Extremely High Priority, and Near Threatened (BirdLife International).

Threshold: The site is known or thought to support one percent or more of the state population, or is known to support the following:

- > Dispersed nonpasserine species: 5 breeding pairs / 15 individuals

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- > Dispersed passerine species: 10 breeding pairs / 30 individuals
- > Aggregated species: 15 breeding pairs / 45 individuals

NC 2b: Sites that sustain species listed as: Audubon WatchList–Yellow, Partners in Flight Watch List–High Priority.

Threshold: The site is known or thought to support one percent or more of the state population or is known to support the following:

- > Dispersed nonpasserine: 10 breeding pairs / 30 individuals
- > Dispersed passerine: 20 breeding pairs / 60 individuals
- > Aggregated: 40 breeding pairs / 120 individuals

NC 3: A site that regularly holds significant concentrations of one or more species.

This criterion applies to sites that regularly sustain significant concentrations of individuals of one or more species during breeding, nonbreeding, winter, or migration seasons. Numerical thresholds apply to total counts of birds made at one time (i.e., a single day) rather than on cumulative totals, except for migrating raptors where seasonal totals may be applied.

NC 3a: Concentrations of a single species. The site is known or thought to sustain one percent or more of the

state population of a species in a given season. If state populations are unknown, up to five sites known or thought to sustain the highest proportion of a species' population were identified based on the professional judgment of the state Important Bird Area Technical Committee.

NC3b: Waterfowl (Anseriformes). The site is regularly important for single- or mixed-species congregations of 1,000 or more waterfowl, including ducks, geese, or swans.

NC3c: Pelagic seabirds (Procellariiformes). The site is regularly important for single- or mixed-species congregations of 2,000 or more pelagic seabirds, in both inshore and offshore waters.

NC3d: Shorebirds (Charadriiformes [excluding Laridae and Alcidae]). The site is regularly important for single- or mixed-species congregations of 1,000 or more shorebirds.

NC3e: Waterbirds and Marsh Birds (Ciconiiformes, Charadriiformes [Laridae], Gaviiformes, Gruiformes, Pelecaniformes, Podicipediformes). The site is regularly important for single- or mixed-species congregations.

NC3ei: Pelicans, herons, egrets, ibises, terns, skimmers, bitterns, grebes, coots, loons, and rails

Threshold: 250 breeding pairs / 500 individuals

NC3eii: Gulls

Threshold: 750 breeding pairs / 4,000 individuals (nonbreeding)

NC3eiii: Gannets

Threshold: 2,000 individuals

NC3eiv: Double-crested Cormorants

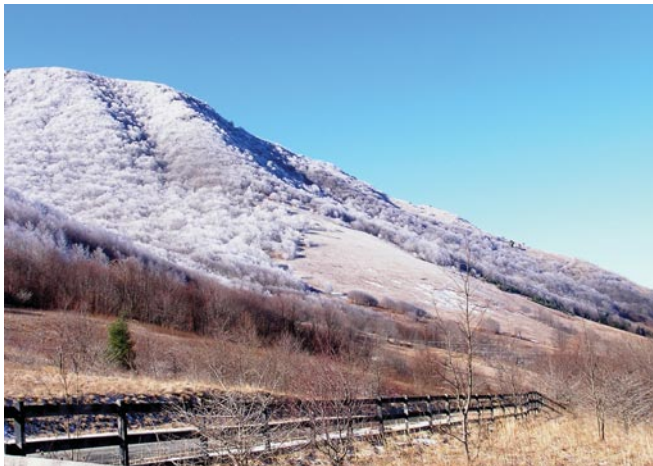
Threshold: 10,000 individuals

NC3f: Raptors. The site is regularly an important migratory stopover site, “bottleneck,” or migratory corridor where 2,500 or more raptors pass through in a season.

NC3g: Migratory landbirds. The site is regularly an important migratory stopover or seasonal concentration site for an exceptional number or diversity of migratory landbirds. No thresholds have been set due to the scarcity of quantitative data.

NC 4: A site that regularly holds a significant suite of species associated with a habitat type that is representative, rare, or threatened in North Carolina.

This criterion applies to sites that sustain a group of species whose presence in significant numbers indicates that the area is an outstanding natural habitat. This category is somewhat more subjective than others and was reserved for sites that are distinct habitat types, exceptional in size and/or intactness, rare or threatened in the state, or the best representative



habitats within a physiographic region. Such sites were judged by the completeness and abundance of the birds.

Features of the Important Bird Area Sites

The identification of sites that are critical to sustaining North Carolina's bird diversity and populations is the first and most important step toward the long-term conservation of North Carolina's birds. This inventory of North Carolina's Important Bird Areas includes sites owned by federal agencies, state agencies, nongovernmental organizations, municipalities, corporations, and individuals. It includes sites that are protected and sites in need of protection. It includes sites where management of habitats for birds is the top priority and sites where the development and implementation of bird habitat management plans is critically important. Last, and of great importance to North Carolina's birds, the inventory identifies threats and gaps in site protection or management that can be addressed through conservation planning at all levels.

This document details 96 sites that have been approved by the North Carolina Important Bird Areas Technical Committee as being significant at the state level. The coastal plain and Sandhills have the greatest number of sites, with 69; 19 are in the mountains, and 8 are in the Piedmont and foothills. These Important Bird Areas comprise nearly 4.9 million acres across North Carolina.

The large number of sites in the coastal plain can be attributed to several factors. The North Carolina coast is a stronghold for nesting waterbirds, shorebirds, and waterfowl. Local populations of these birds are more easily quantified and these species are generally targeted for surveys more frequently than other species. Nesting waterbirds have probably received as much or more attention than any other group of birds in the state. Statewide surveys for these species have been conducted regularly for more than 25 years. The distribution of waterbird nesting sites, the abundance of waterbirds nesting on these sites, and the state population of these species are well known. Thirty-three of the Important Bird Areas in the coastal plain are significant waterbird nesting sites. In addition, the coastal plain has a great diversity of habitat types that support significant assemblages of birds, such as barrier island beach, tidal marsh, Carolina bay or

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pocosin, bottomland hardwood forest, cypress-tupelo-gum swamp forest, and others. Important Bird Areas in the coastal plain amount to nearly 3.2 million acres, of which about 880,000 acres are open ocean.

The Piedmont, on the other hand, is a region where much of the natural landscape has been converted to agriculture, residential and commercial development, and industrial uses, or has been impacted by other human-induced changes to the landscape. This is the population and business center of the state. Habitats important for North Carolina's birds are generally less diverse and receive less attention from research and monitoring efforts. Additionally, very few nominations were received for sites in the Piedmont. These factors resulted in the Piedmont having the least number of sites and the smallest total acreage (233,593 acres) identified as Important Bird Areas.

The North Carolina mountains have long been popular among birders and scientists studying birds. Today, there are probably more active studies of birds in the mountains than at any time in the past. The knowledge gained from these studies, surveys, and monitoring efforts have helped tremendously in Audubon's efforts to identify Important Bird Areas in the North Carolina mountains. But even with this increased attention, significant gaps exist in the current knowledge of western North Carolina birds. The 19 sites identified so far in the mountains total over 1.4 million acres.

As new information becomes available, additional sites will be considered and likely approved as Important Bird Areas.

North Carolina's Important Bird Areas vary in size from just a few acres, as in the case of several small waterbird nesting sites along the coast, to sites in the coastal plain covering more than 300,000 acres. The average size of Important Bird Areas was greatest in the mountains (74,441 acres), followed by the coastal plain (46,932 acres) and the Piedmont (29,199 acres).

Nearly all of North Carolina's Important Bird Areas include a state, federal, or nongovernmental conservation land component, with such designations as National Wildlife Refuge, National Park, National Forest, State Park, State Game Land, Nature Preserve, or Audubon Sanctuary. These lands were likely acquired and protected because they have rare, threatened, or exceptional habitats or because they are sites known to support significant populations of birds or other wildlife. In addition, many have ongoing bird monitoring programs. State, federal, or nongovernmental conservation lands were quick to be nominated and often approved on a basic level of understanding about birds utilizing the site. It was the Technical Committee's goal to recognize all sites that qualify as Important Bird Areas, regardless of their protection status.

Private or corporate lands, on the other hand, were typically poorly understood and less likely to be nominated. Inclusion of private lands was typically based on habitat type





determined by aerial photography and/or analysis of Geographic Information System landcover data and existing knowledge of birds on an adjacent, contiguous tract. It should be pointed out that private property identified as an Important Bird Area places no restrictions and implies no regulatory authority whatsoever on any land.

Threats to sites were identified by nominators and reviewed by the Technical Committee. By far the most significant threat to North Carolina's Important Bird Areas is human-induced changes to habitats. These changes can take the form of direct loss or degradation of habitats or the displacement of birds from good habitats due to disturbances. Activities that result in the loss or fragmentation of forests were found to be the most significant threats to many forested sites. These activities include logging, air pollution, residential and commercial development, and conversion of forest to agriculture or silviculture. On the coast, human disturbance is the most significant threat to waterbird and shorebird nesting sites. Human disturbance, typically from recreation activity, uncontrolled pets, or feral animals, often results in nest loss, nest abandonment, chick mortality, and, in some cases, abandonment of entire nesting sites. This is most prevalent on barrier islands where recreation use is high. Chronic disturbances and loss of habitat have resulted in declining populations for many species that nest on North Carolina's barrier islands, and most of these species are already state or federally listed because populations have reached critical lows.

Sites with assemblages of birds that are easily quantifiable and actively surveyed, such as colonial waterbirds, waterfowl, and

shorebirds, were readily nominated. The number of these birds utilizing a given area is fairly easy to determine, and populations of these birds are often known with reasonable certainty. As a result, sites with these assemblages of birds are likely well represented among the Important Bird Areas. Conversely, population estimates for landbirds are poorly understood for most species. The Important Bird Area status of sites for landbirds is more subjective and based on the existing knowledge of species' distribution and general abundance, habitat requirements, and the professional judgment of the Technical Committee. In recent years, we have gained a better understanding of the populations of criteria species within these inland Important Bird Areas. Staff surveys, Adopt an Important Bird Area counts, and other data sources are helping fill in these gaps. Large challenges remain, however, in consistently providing defensible population estimates within individual Important Bird Areas, especially for rare and uncommon species. Specific survey efforts are, however, helping for these species.

An important outcome of this initial identification phase of the program is a general assessment of the existing knowledge of birds and their habitats across North Carolina. It became clear early in the selection process that knowledge beyond a simple checklist was not readily available for many sites that were nominated or suggested for consideration. This was true across the state and regardless of ownership, including those sites owned and managed by state resource agencies, some nongovernmental organizations, and land trusts. Because satisfying the minimal criteria of a checklist was insufficient for a site to be considered as an Important Bird Area, these sites were removed from consideration.

It also became evident that there are many sites of local importance and sites that are popular birding destinations. Recognition of such sites was beyond the scope of this initiative if the site failed to meet at least one of the established rigorous criteria. However, locally significant sites that fail to qualify as state significant Important Bird Areas are important nonetheless, and efforts to conserve, monitor, and manage these areas for birds are warranted. Many of these sites are part of the North Carolina Birding Trail, completed in 2009. For more information on these sites, visit www.ncbirdingtrail.org.

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Changing Priorities

The previous edition of this report, *Important Bird Areas of North Carolina: 2004*, presented 94 Important Bird Areas from the mountains to the coast. Since that time, five new Important Bird Areas have been identified. Three of the new sites are in the mountains and two are on the coast. The new mountain Important Bird Areas are the Yellow Creek and Cheoah Mountains near Robbinsville, the Northern Escarpment on the edge of the mountains in Wilkes and Caldwell Counties, and Wilson Creek and Linville Gorges adjacent to the Grandfather Mountain Important Bird Area. The new coastal sites are Cora June Island and Parnell Island, both of which are colonial waterbird nesting sites.

Three sites have been removed from the listing of Important Bird Areas. These are Big Swan Island, Sheep Island, and Whitehurst Island. All three no longer support nesting waterbirds at a level that meets a minimum threshold to qualify.

North Carolina's 96 Important Bird Areas, their nearly 4.9 million acres of habitat, and the populations of birds that depend on these sites face many threats. The threats vary in severity, immediacy, and impact on birds or habitats. Conservation action at all sites where such action is needed would be difficult given constraints on capacity and resources. A prioritization assessment was conducted to identify those sites and bird populations that are at the greatest risk and should be priorities for conservation action.

The assessment consisted of three primary components: the status of bird species at the site (defined as the number of global and continental priority species known or thought to occur there in sufficient numbers to trigger global or continental status), the threats to the Important Bird Area (using a standardized numerical ranking system), and the status of ownership, protection and management of the site (often referred to as a conservation opportunity score). The sites with the highest ranking included Cape Hatteras National Seashore, Cape Lookout National Seashore, Lea-Hutaff Island, the Amphibolites, New River Corridor, and Highlands Plateau. These identified Important Bird Areas are listed in Appendix 2.

Continental and Global Status of North Carolina Important Bird Areas

The National Audubon Society, as the United States partner for Birdlife International, has the responsibility to identify Important Bird Areas that are continentally and globally significant. Continental and Global criteria focus on the vulnerability of a species and the responsibility of the United States in sustaining populations of that species (see www.audubon.org/bird/iba/criteria). The criteria are divided into four categories:

1. Species of conservation concern (e.g., threatened and endangered species)
2. Range-restricted species (species vulnerable because they are not widely distributed)
3. Species that are vulnerable because their populations are concentrated in one general habitat type or biome
4. Species, or groups of similar species (such as waterfowl or shorebirds), that are vulnerable because they occur at high densities due to their congregatory behavior

This process of identifying continental and global sites begins at the state level. State-significant sites that appear to meet the thresholds to be considered for continental or global status are forwarded to the United States Important Bird Area Technical Committee for review. If approved, the designation of the site is upgraded.





To date, 21 North Carolina Important Bird Areas have been approved for global designation. These include mountain Important Bird Areas for Golden-winged or Cerulean Warblers, inland sites for Red-cockaded Woodpecker, and coastal sites for Piping Plover. More Important Bird Areas will be nominated for global status as additional data is collected for species such as the Red-headed Woodpecker and Bachman's Sparrow, and other high-priority species. The United States Important Bird Area Technical Committee will be reviewing sites proposed for continental status in the coming year.

Presentation and Sources of Data in This Report

The Important Bird Area site accounts are organized by physiographic province—coastal plain, Piedmont, and mountains. Each section includes an overview of the region followed by individual site accounts for each Important Bird Area approved by the North Carolina Important Bird Area Technical Committee. Global designation is noted in the text if applicable.

Maps are included for many site accounts at the end of each regional section. In most cases, boundaries were determined based on the habitat necessary to support the species or population of birds for which the site was approved, regardless of ownership. The boundaries presented on these maps are approximate and could change in the future as new information becomes available. Maps and exact locations are not included for waterbird nesting sites, because the birds at

these sites are extremely sensitive to human disturbances (waterbird nesting sites in North Carolina are protected, posted, patrolled, and off-limits to all visitors). Inclusion of an area within the boundaries of an Important Bird Area implies only that the area is important for birds. In no way whatsoever does it imply that the site is accessible to the public.

The distribution of most of North Carolina's birds is well known, but statewide populations of most species are not known. This is especially true for landbirds, marsh birds, and most raptor species, shorebirds, and waterfowl. Where known, the number of individuals or breeding pairs at a particular site is presented. In cases where the number of individuals or breeding pairs is not presented, it means the data are not available. If a species is listed in the table included with each site account and no number of individuals or breeding pairs is presented, the site has been judged by the Technical Committee to be significant for that particular species based on the current level of knowledge of that species' distribution and relative abundance in the state. In most cases, this applies to listed and high-priority species (Appendix 1). There are efforts currently under way to estimate the statewide populations of North Carolina's birds and the populations at specific sites. These data will be included in future editions of this document.

Many data sources were analyzed in the preparation of this report. The primary data sources are listed below. In addition

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to the sources listed below, data was gleaned from published scientific literature and unpublished reports with permission from the author(s) or the supporting agency or organization.

Colonial Waterbird Data

Coastwide surveys for nesting colonial waterbirds in North Carolina began in 1976. These surveys have been repeated every 3–5 years. Periodic surveys of inland wading bird colonies have also been conducted with less frequency. These surveys provide the best data in existence for state and site-specific population estimates. Data from the three most recent statewide waterbird surveys (2001, 2004, and 2007) are presented along with the percentage of the state population that exists at a given site.

Mid-winter Waterfowl Surveys

Regular winter waterfowl surveys are conducted by the United States Fish and Wildlife Service and cover selected areas of the state. These surveys include ground and aerial surveys.

Christmas Bird Count Data

Christmas Bird Counts began on December 25, 1900. This is the longest running survey of birds in existence and provides very useful data on the distribution and abundance of birds during winter. The Christmas Bird Count data presented in this document are raw counts and have not been adjusted to take account of numbers of observers or other measures of effort.

Breeding Bird Survey Data

Breeding Bird Surveys began in 1966. The primary objective of these surveys is to assess population changes of songbirds. Raw count data are presented for recent years. If raw data are not available, as is often the case if a route was only run for a few years or intermittently, the average number of birds per route is presented. (J. R. Sauer, J. E. Hines, and J. Fallon, *The North American Breeding Bird Survey, Results and Analysis 1966–2007*, Version 5.15.2008 [Laurel, MD: USGS Patuxent Wildlife Research Center, 2008].)

Point Count Data

Audubon North Carolina and Adopt an Important Bird Area volunteers regularly conduct point counts as a part of ongoing monitoring efforts within inland Important Bird Areas. The counts are conducted in variable circular plots of three distance bands (<25m, 25–50m, and >50m). First detection times are broken into three time intervals of 0–3:00 minutes, 3:01–5:00 minutes, and 5:01–10:00 minutes.

eBird Data

In general, eBird data are used sparingly and only where more quantitative data are not available. That said, it is a useful resource for areas visited frequently by birders. Efforts are under way to make better use of its features, including measures of effort and geo-positioning of observations.

Species-specific Data

For many species, especially those of high conservation concern, species-specific surveys exist and are incorporated into this document. Examples include Red-cockaded Woodpecker cluster numbers from the U.S. Fish and Wildlife Service, Golden-winged Warbler survey data from Cornell's Golden-winged Warbler Atlas Project, data on Cerulean Warblers from the Cerulean Warbler Atlas Project, and surveys for Nightjars, Piping Plovers, American Oystercatchers, other shorebirds, Painted Buntings, and others. These data are generally the best estimates of populations for these species within North Carolina.

Data from State, Federal, and Nongovernmental Organization Lands

Ongoing bird monitoring and research projects on state, federal, and nongovernmental organization lands have provided data that is essential to understanding bird populations, distribution, and abundance across North Carolina. These data have been considered for all sites where such data exist. For many sites, data from state, federal, and nongovernmental organizations are the only data available.

Pelagic Seabird Data

The most recent data for pelagic species come from pelagic birding trips provided by Brian Patteson. Frequently, his commercial pelagic birding trips visit the Outer Continental Shelf Important Bird Area. Additional data come from past studies by David Lee. Most of the existing knowledge of seabirds off the North Carolina Coast is derived from the work of David Lee and Brian Patteson.

Conserving North Carolina's Important Bird Areas

The Important Bird Areas program is not a regulatory initiative. The program places no restrictions on land use or activities, regardless of the impact on birds or their habitats. While the Important Bird Areas program carries no regulatory authority, it is directly and indirectly a tool for conservation. The program provides a basis for setting priorities for public and private conservation initiatives. Important Bird Area status gives focus to activities such as bird and habitat monitoring, habitat management, exotic species removal, education, and advocacy. Data generated through the Important Bird Areas process can influence

natural resource planning, land use, habitat protection, and habitat management.

The North Carolina Important Bird Areas program has helped to establish bird monitoring projects and surveys for high-priority species at key sites across the state. It has connected researchers, skilled birders, and other volunteers with land managers to implement projects that benefit birds, bird habitats, bird conservation, and the knowledge of birds in North Carolina. The program has also helped to raise awareness of the importance of sites to sustaining bird populations locally, regionally, and nationally, and it has been incorporated into nearly every major conservation initiative in North Carolina.

Conserving North Carolina's Important Bird Areas will not be accomplished by a single state or federal agency, land trust or conservation organization. It can be accomplished only through partnerships with agencies, organizations, and individuals working together toward a common goal. It is Audubon's hope that the Important Bird Areas program will facilitate a positive and constructive dialogue between private landowners, public and private land managers, policy makers, birders, and citizens that will result in the long-term conservation of habitats for birds.

Audubon will update the list of sites and data for sites, and refine boundaries as new information becomes available. This information will be readily accessible on Audubon North Carolina's web sites at www.ncaudubon.org and www.ncaudubonblog.org and on the United States Important Bird Area web site at www.audubon.org/bird/iba/.



North Carolina's Coastal Plain



The coastal plain is North Carolina's largest physiographic province, covering 45 percent of the state. The province can be subdivided into two regions. The outer coastal plain (sometimes called the "tidewater" region) consists of the immediate coast, including barrier islands, sounds, marshes, lower river systems, and associated mainland generally less than 20 feet in elevation. The inner coastal plain includes the region from the outer coastal plain to the Fall Line. This province supports the state's most diverse natural habitats and the state's richest assemblage of birds with more than 400 species recorded.

As recently as 60 million years ago, the sea covered much of eastern North Carolina, reaching as far inland as the Fall Line, where the rolling hills of the Piedmont begin. Sediments carried by streams and rivers were deposited at the edge of the ancient sea forming a wide, gently sloping region known as the coastal plain. During the ice ages of the Pleistocene Epoch, which began 2 million years ago, sea levels fell dramatically as glaciers locked up more of the planet's

water. At the Pleistocene's lowest sea levels, the coastline was 20 to 50 miles east of today's beaches. When the last ice age ended, about 17,000 years ago, the ocean started to rise again, and today's coast began to form.

The Environment of the Coastal Plain and Its Birds

Today, the climate of North Carolina's coastal plain province is temperate. Average high temperature during summer months is in the mid- to upper 80s, while average lows are near 70 degrees. During winter, average highs are in the mid-50s, while average lows are in the mid-30s. Temperatures tend to be more moderate in the outer coastal plain. Average rainfall is about 51 inches. Snowfall is infrequent and generally averages less than 5 inches per year in the inner coastal plain and less than 2 inches per year in the outer coastal plain.

The ocean waters off the North Carolina coast harbor birds rarely seen elsewhere in the state. Seabirds thrive in the offshore waters of the outer continental shelf and Gulf Stream. An area off Cape Hatteras, where the cool waters from the Labrador Current and the warm waters of the Gulf

North Carolina's Coastal Plain

Stream meet, forms one of the richest and most important areas for pelagic birds in the western Atlantic. Productive inshore ocean waters provide important foraging areas for a great variety of birds during all months of the year, including pelicans, loons, terns, and gulls. In winter, Northern Gannets are common, and one can often observe their spectacular plunges into the sea close to shore. Cape Point in Cape Hatteras National Seashore is an excellent location where one can observe both pelagic birds and other species typical of inshore ocean waters.

One of the most prominent features of the North Carolina coast is the long, thin chain of barrier islands that occur from the Virginia border to South Carolina. Because the islands in the northern part of this ribbon of sand lie far out to sea, 40 miles or so from the mainland, they are called the Outer Banks. Between them and the mainland are great estuaries—the Currituck, Albemarle, and Pamlico Sounds—where freshwater rivers meet salty sea. Smaller barrier islands hug the southern coast, where saltmarshes, tidal creeks, and shallow sounds separate the islands from the mainland. Most barrier islands have been altered by development, recreation activity, and stabilization projects. While these activities have resulted in a loss of habitats for birds, barrier islands continue to be critical to birds during all seasons. Least, Common and Gull-billed Terns, along with Black Skimmers, Wilson's Plovers, American Oystercatchers, and Piping Plovers nest on North Carolina beaches. Thousands of shorebirds stop during their long migrations to rest, forage, or spend the winter. Shrub thickets and forest abound with birds during migration and, in the southern coastal region, provide nesting habitat for species such as Painted Buntings.

Just inside North Carolina's chain of barrier islands are scattered smaller, natural estuarine islands and artificial islands built of dredged sand. These islands support the majority of the state's nesting colonial waterbirds, including herons, egrets, ibises, pelicans, and several species of terns. Among the best known are the Battery Island Audubon Sanctuary, which supports the state's largest colony of nesting wading birds, and Beacon Island, which is one of the state's most important nesting sites for Brown Pelicans.

The North Carolina coast has vast expanses of tidal marsh associated with barrier islands, sounds, and lower river systems. On the northern coast in Currituck Sound, the marsh is brackish and is a haven for typical marsh birds such as rails and Marsh Wrens, but it is best known for wintering waterfowl that once numbered in the hundreds of thousands.



Far fewer waterfowl winter on Currituck Sound today, but the sound and its marshes remain important for ducks, geese, and swans. The marshes of the Cedar Island peninsula, separating Pamlico Sound and Core Sound, support North Carolina's largest population of elusive Black Rails and nesting Seaside Sparrows, among others. On the southern coast, extensive saltmarshes and tidal creeks, flushed twice daily by tides, are important for birds such as rails, wading birds, shorebirds, waterfowl, and marsh sparrows.

When one encounters a pocosin for the first time, the word that will likely come to mind is "scraggly." Scraggly loblolly bay, sweet bay, wax myrtle, and titi with green-briar and cane cover the black soil, a uniformity interrupted only by a scattering of undersized scraggly pond pines. So thick is the brush that pocosins appear impassable on foot, but a few explorers have tried. The 19th-century surveyor Ebenezer Emmons said one could traverse a pocosin only "at the expense of a man's coat, pantaloons and shirt." Pocosins are unique to the Southeast and are especially common in North Carolina. They provide important habitats for neotropical migrant songbirds. Places like Alligator River National

Wildlife Refuge, Holly Shelter-Angola Bay, Croatan National Forest, and Green Swamp are good examples.

Swamp forests of North Carolina are home to the oldest trees in the East, with some bald cypress along the Black River estimated to be 1,600 years old. These trees escaped the saws that ravaged most of North Carolina's swamp forests during the past 150 years. Vast areas of swamp forests still exist along major river systems such as the Chowan, Roanoke, Pasquotank, Neuse, Cape Fear, Waccamaw and Lumber. The Roanoke is one of the state's best examples of bottomland hardwood forest and supports coastal plain rarities such as Mississippi Kite and Cerulean Warbler, along with other swamp forest birds such as Prothonotary Warbler, Northern Parula, and Wood Duck. The still, black waters of Merchants Millpond State Park studded with bald cypress trees is a prime example of this habitat where Prothonotary, Hooded, and Yellow-throated Warblers are abundant in season.

Imagine a savanna, a broad plain carpeted with yellow grass, flecked with colorful wildflowers, and intermittently shaded by towering, widely spaced pines. Small woodpeckers with black-and-white ladder-backs and white cheek pouches flit from tree to tree, pecking at the bark of the pines for insects. In the grass beneath the trees is a shy, nondescript sparrow that is visible only when it flutters into a bush to sing its song, an unusual clear whistle followed by a trill.

The setting is a pine savanna. The understory is wiregrass, the trees are longleaf pines, and the birds are the federally endangered Red-cockaded Woodpecker and the rare Bachman's Sparrow. Two hundred years ago this scene was common on the southeastern coastal plain. William Bartram wrote about one in 1791: "We next entered a vast forest of the most stately Pine trees that can be imagined, planted by nature at a moderate distance, on a level grassy plain, enameled with a variety of flowering shrubs."

Today, over 98 percent of the great swaths of longleaf pines that once covered the coastal plain from Virginia to Texas are gone. The pines were bled for their resin, which was used to make turpentine or tar, then logged. Among the state's best examples of longleaf pine forests are those in the Sandhills (in places like Fort Bragg, Camp MacKall, and Weymouth Woods State Park) and in the Croatan National Forest.

Conservation Concerns

One hundred years ago, the greatest conservation concern for birds in the coastal plain was that birds were shot in huge numbers for their meat, feathers, and body parts. By the turn

of the century, egrets and terns were rare along the coast, shot out by plume hunters, and many other species had been greatly reduced. The Least Tern, for example, had been "nearly extirpated," according to T. Gilbert Pearson, who counted water birds there in the early part of the 20th century.

Today, habitat loss, fragmentation, degradation, and human disturbances top the list of threats to coastal birds. More than a million acres of forested wetlands have been lost in the past few decades; cleared, cut, drained, mined, and converted to agriculture, silviculture, or other uses. In the last decade of the twentieth century, the coastal counties grew at twice the rate of the state as a whole. Consequently, undisturbed beaches are rare, which presents a problem for birds that rely on that habitat. And some species, such as the American Oystercatcher and other beach-nesting shorebirds, terns, and skimmers, are declining. These birds now depend almost entirely on federal and state governments and Audubon for the protection and management of the remaining beach habitats. The long-term impact of other activities, such as beach renourishment, inlet channelization, shoal removal, non-point source pollution, and chronic human disturbances are largely unknown.

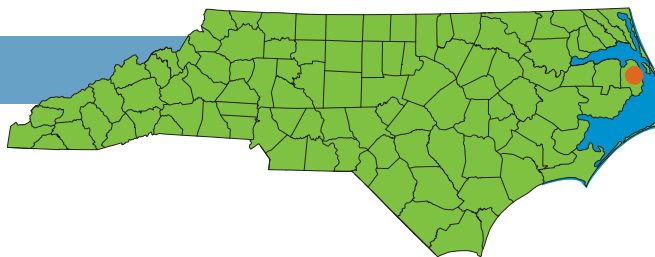
On a brighter note, state and federal government agencies along with The Nature Conservancy, Audubon, and land trusts have dedicated much time, money, and resources to protecting habitats that are important for birds in the coastal plain. Hundreds of thousands of acres have been protected so far and will be protected forever. This is a trend that we hope and believe will continue.



Alligator River Lowlands

Location: Dare County

Total Size: 103,893.0 ha (256,725.1 acres)



Site Description: This site includes the Alligator River National Wildlife Refuge and the Dare County Bombing Ranges. The refuge, established in 1984, includes a vast area of dense pocosin and nonriverine swamp forest with small blackwater streams. Although the majority of the refuge is wild and inaccessible, the United States Fish and Wildlife Service has established several access areas where one can explore the refuge by canoe or on foot. The refuge is one of a few places in the United States where red wolves (*Canis rufus*) have been reintroduced successfully.

Habitats: Deciduous forest, coniferous forest, mixed forest, shrubland, pocosin, brackish marsh, lake or pond, and agricultural. Forest includes stands of Atlantic white cedar (*Chamaecyparis thyoides*), pond pine (*Pinus serotina*), loblolly pine (*Pinus taeda*), and cypress-gum swamp.

Land Use: Wildlife conservation, other conservation, recreation and tourism, hunting, agriculture and cultivation.

Primary Threats: Introduced plants and animals, natural pests and disease, sea level rise due to global climate change.

Protection Status: Most of the site is in federal ownership, protected and managed by the United States Fish and Wildlife Service and United States Department of Defense.

Conservation Issues: The peat soils and low elevation of the site make it especially vulnerable to the effects of sea level rise. Fire suppression has also had a detrimental impact on Red-cockaded Woodpecker populations here as well as on other fire-dependent species. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place.

Birds: The site holds a significant suite of species associated with pocosin, Atlantic white cedar, and hardwood swamp

forests (Criterion NC4), including several WatchList species. Anhingas and Red-cockaded Woodpeckers are found on the refuge, but no current population estimates are available. The Alligator River lowlands are one of North Carolina's most important sites for the coastal plain population of Black-throated Green Warblers. The creation and management of impoundments has increased waterfowl numbers dramatically in recent years and the refuge now attracts more than 6,000 Tundra Swans and almost 50,000 other waterfowl (winter 2008–9). Studies of bird migration using radar suggest the site is likely an important stopover for migrating landbirds. In 2002, an estimated 180 Northern Harriers and more than 24,000 birds utilized the agricultural plots in the refuge during winter, including several thousand wintering sparrows, Eastern Meadowlarks, and Sedge Wrens. The site was recently named a globally significant site for Northern Bobwhite, and it is one of our most significant sites for Prairie and Prothonotary Warblers.

Monitoring and Research: United States Fish and Wildlife Service midwinter waterfowl surveys are conducted, and the annual Christmas Bird Count (Alligator River circle) and Breeding Bird Survey route (Milltail Creek) both lie completely within this Important Bird Area. In 2002, the Center for Conservation Biology conducted a study of wintering use of agricultural lands by landbirds within the refuge (Watts 2002). Red-cockaded Woodpecker and Northern Bobwhite surveys are needed.

Watts, B. D. 2002. Winter use of early successional habitats by birds within the Alligator River NWR and Pocosin Lakes NWR: Evaluating the benefit of management scenarios. Center for Conservation Biology Technical Report Series CCBTR-02-07.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004–9
2b	Tundra Swan	W	3,468	2009	2,907
2b	Wood Duck	W	429	2009	324*
3b	Northern Pintail	W	32,215	2009	13,675
3b	Green-winged Teal	W	12,660	2009	4,042
2b	American Black Duck	W	240	2009	201
3b	Waterfowl totals	W	53,255	2009	24,235
1	Bald Eagle	W	18	2008	17
3a	Northern Harrier	W	181	2002	—
2a	Northern Bobwhite	all	75	2008	—
3a	Short-eared Owl	W	11	2002	—
1	Red-cockaded Woodpecker	all	5	2006	—
2b	Sedge Wren	W	770	2002	—
2a	Black-throated Green Warbler	B	102	2001	—
2b	Prairie Warbler	B	32	2007	76
2b	Prothonotary Warbler	B	46	2007	73
3a	Common Yellowthroat	all	43	2007	80
3a	Savannah Sparrow	W	14,410	2002	—
3a	Eastern Meadowlark	W	2,920	2002	—
3g	migratory landbirds	FM, SM	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

*Wood Ducks were recorded only during 2008 and 2009 waterfowl surveys.

Bald Head–Smith Island

Location: Brunswick County

Total Size: 5,021.9 ha (12,409.5 acres)

Site Description: The site is located on the eastern bank of the lower Cape Fear River, south of Wilmington and east of Southport. It includes an area from Fort Fisher State Recreation Area south to Cape Fear and west to the intertidal sand flats near Battery Island, including open water, sandflats, mudflats, marshes east of the main river channel, and adjacent waters of the Cape Fear River. Bald Head and Middle Islands have well-developed maritime forest and are among the best examples of this habitat type in North Carolina. The site also has a spectacular tidal creek and marsh system. The diversity of habitats found at this site supports a great diversity of bird life throughout the year. This site is part of the Southport Christmas Bird Count, which consistently logs one of the highest numbers of species for North Carolina counts.

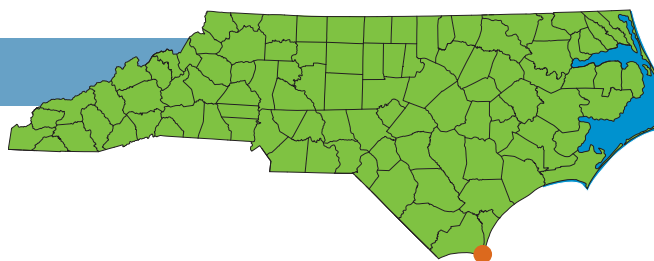
Habitats: Maritime forest, saltmarsh, barrier beach and dune, river, sandflat and mudflat.

Land Use: Wildlife conservation, other conservation, recreation and tourism, residential development.

Primary Threats: Residential and commercial development, recreational development and overuse, disturbance to birds, predation.

Protection Status: 4,047 ha (10,000 acres) are protected by the North Carolina State Parks system and the North Carolina Coastal Reserve program. Additional land is protected by the Bald Head Island Conservancy. This includes all marshes, Zeke's Island, Bluff Island, and portions of Bald Head Island and Middle Island. Most of the land on Bald Head Island and Middle Island is in private ownership.

Conservation Issues: Bald Head and Middle Islands are being developed, although tracts within both areas have been set aside for conservation. Most of the development will impact the maritime forest community. However, strict regulations on building sites have resulted in minimal impacts to the forest, which has helped to preserve habitat for species such as Painted Bunting. Raccoon and fox populations are unusually high, however, and are likely have a significant impact on ground-nesting birds. Also, the southern end of the Fort Fisher spit is open to vehicles, which increases recreational



disturbance to nesting birds and impacts migrating and wintering shorebirds. This activity, along with increased recreational use and mammalian predation, has contributed to the decline in beach-nesting birds in recent years. The possible construction of a new port facility near Southport could have profound effects on this Important Bird Area, depending on the final outcome of this project.

Birds: The site includes one of the state's largest and best examples of maritime forest and significant saltmarsh (Criterion NC4). On Bald Head Island, 210 species of birds have been documented. The forest supports the state's largest population of breeding Painted Buntings and provides excellent stopover habitat for migrant songbirds. Shorebirds abound on the extensive tidal flats, marshes, and beach. Wading birds from the nearby Battery Island colony forage in the marshes, freshwater ponds, and along tidal creeks. Waterfowl numbers have declined over the past decade, but at least 12 species of ducks are common in the river, tidal creeks, bays, and ponds. A few Least Terns, Black Skimmers, Willets, Wilson's Plovers, and American Oystercatchers nest on area beaches during most seasons, but total numbers are not known. The site supports North Carolina's largest wintering population of American Oystercatchers. Saltmarsh Sparrows, Nelson's Sparrows, Seaside Sparrows, and Clapper Rails are abundant in area marshes. Raptors, especially Peregrine Falcons, Merlins, American Kestrels, and Sharp-shinned Hawks, are regular visitors during migration. The Bald Head–Smith Island area has also recently been designated a globally significant site for Painted Bunting.

Monitoring and Research: The site is monitored by North Carolina State Parks, Audubon North Carolina, Bald Head Island Conservancy, and the North Carolina Coastal Reserve program. Anecdotal bird records for Fort Fisher and Bald Head–Smith Island are entered into the State Parks Natural Resource Inventory Database. Bald Head Island is a primary research area for the Painted Bunting Observer Team Project, and large numbers of birds have been color-banded and monitored there.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2005–9
1	Saltmarsh Sparrow	FM	14	2009	—
2a	American Oystercatcher	B	27 prs.	2009	—
2a	American Oystercatcher	W	207	2009	200
2a	Wilson's Plover	B	21	2007	—
2a	Red Knot	SM	102	2009	—
2a	Painted Bunting	B	40 prs.	2009	—
2a	Seaside Sparrow	FM	105	2009	—
3a	Common Goldeneye	W	19	2009	10
2b	Clapper Rail	FM	65	2009	—
3b	waterfowl	W	3,008	2009	2,167
3ei	waterbirds	W	12,144	2009	15,575
3d	shorebirds	W	4,575	2009	4,432
3g	migratory landbirds	FM, SM	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

Battery Island

Location: Brunswick County (no detailed map shown)

Total Size: 93.6 ha (231.2 acres)

Site Description: Battery Island is a natural island guarding the mouth of the Cape Fear River. Many years ago, Battery Island received deposits of dredged sand, which formed the southern upland area of the island, commonly referred to as the “South Colony.” This is where the majority of wading birds gather to nest in the red cedars (*Juniperus virginiana*), yaupon (*Ilex vomitoria*), and other shrubs. During late spring and summer, visitors to the nearby Southport waterfront can witness the early-morning departure of thousands of White Ibises as they leave for inland foraging grounds. The sky over Southport is again filled with ibises during the last two hours of daylight as flocks from 20 to 200 ibises return to Battery Island for the evening. Battery Island supports North Carolina’s largest colony of wading birds, which include approximately 10 percent of North America’s White Ibises. The riverside beachfront is prime nesting habitat for American Oystercatchers, and the grassy uplands support nesting Willets.

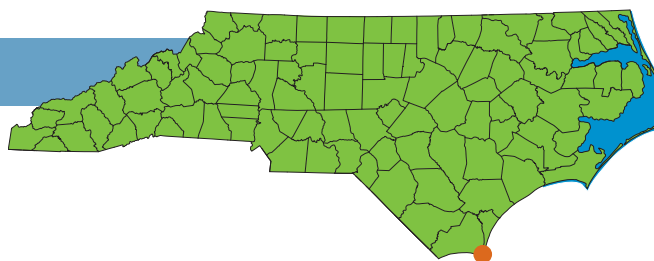
Habitats: Coastal shrub thicket dominated by red cedar and yaupon, saltmarsh, upland sand beach.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion, invasive plants.

Protection Status: The site is protected and managed by Audubon North Carolina.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors. Disturbance to nesting birds is a



primary concern. Audubon wardens patrol the island throughout the nesting season and regularly during other times of the year. The island is also patrolled by North Carolina Wildlife enforcement officers. American Oystercatchers are susceptible to nest loss from erosion, high tides, and boat and ship wakes. In addition, the possible construction of a new port facility in Southport could have profound effects on this Important Bird Area, depending on the final outcome of this project.

Birds: Battery Island is the site of North Carolina’s largest colony of nesting wading birds, supporting 10–15,000 or more nesting pairs of nine wading bird species annually. The site is globally significant for White Ibis, which is the most abundant wading bird nesting on the island. The number of nesting ibises varies between 9–15,000 breeding pairs annually. In 2008 and 2009, most of the island’s White Ibises moved to North Pelican Island. The White Ibis have done this at least one time in the past two decades. At least 10 pairs of American Oystercatchers nest on the island annually, along with Willets, Clapper Rails, Seaside Sparrows, and Marsh Wrens. Research and monitoring projects have been undertaken since 1982 and have contributed significantly to the knowledge of wading birds and their habitats.

Monitoring and Research: This site is monitored by Audubon North Carolina. Waterbird or shorebird research has been conducted here for more than 30 years.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007*	Average Number 2001–7	Avg % of NC Population 2001–7*
2b	White Ibis	B	13,749 prs.	2007	81.1	13,582 prs.	84.2
3a	Great Egret	B	107 prs.	2007	6.3	116 prs.	7.9
2a	Snowy Egret	B	0 prs.	2007	0.0	6 prs.	1.7
2a	Tricolored Heron	B	295 prs.	2007	30.1	183 prs.	21.5
2a	Little Blue Heron	B	75 prs.	2007	6.7	97 prs.	10.0
3a	Black-crowned Night Heron	B	12 prs.	2007	8.3%	27 prs.	11.2
2a	American Oystercatcher	B	10 prs.	2009	—	10 prs.**	3.0 **
3ei	waterbirds	B	14,238 prs.	2007	—	14,011 prs.	—

B = breeding

*Percentages are based on the coastal population of water birds. There is no recent estimate of the inland population for these species.

**Coastwide censuses of American Oystercatchers were conducted in 2004 and 2007.

Beacon Island

Location: Carteret County (no detailed map shown)

Total Size: 55.7 ha (137.7 acres)

Site Description: Beacon Island is a natural estuarine island located in southeastern Pamlico Sound, near Ocracoke Island. The island is small, low in elevation, and dominated by grassy vegetation. Extensive shallow water, sand, and seagrass flats surround the island. Beacon Island has a long history of use by nesting colonial waterbirds. The site is posted and patrolled by Audubon North Carolina staff, and is off limits to all visitors during the breeding season.

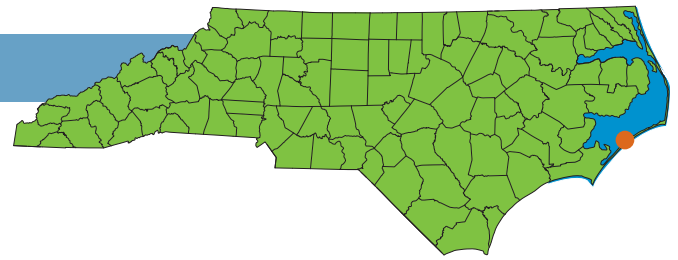
Habitats: High saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, erosion.

Protection Status: The site is protected and managed by Audubon North Carolina.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from March 1 until the last pelican chicks fledge in September or October. Human disturbance is a threat and can result in egg or chick loss, nest abandonment, and colony abandonment. Erosion of the island also is a concern.



Birds: Beacon Island has long been a nesting site for Brown Pelicans. It was here, in 1928, that the species was first recorded nesting in North Carolina. The island also supports a colony of Laughing Gulls that now ranges between 200 and 400 pairs. Formerly, more than 5,000 pairs nested here. One to three pairs of American Oystercatchers nest on the island every year, along with Clapper Rails, Herring Gulls, Great Black-backed Gulls, and Forster's Terns in most years. The shallow water surrounding the island supports Brant during winter, along with several hundred diving and puddle ducks of various species.

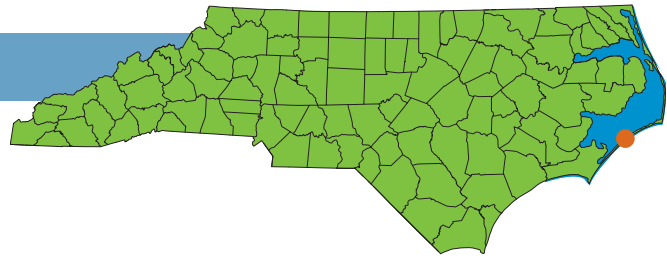
Monitoring and Research: This site is monitored by Audubon North Carolina. Shorebird and waterbird research is ongoing.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Brown Pelican	B	283 prs.	2007	8.2	441 prs.	8.9
2a	Brown Pelican	B	395 prs.	2009	—	—	—
2b	Brant	W	650	2001	—	—	—
3a	Laughing Gulls	B	400 prs.	2009	—	—	—

B = breeding; W = winter

Big Foot Island



Location: Hyde County (no detailed map shown)

Total Size: 5.0 ha (12.4 acres)

Site Description: Big Foot Island is an artificial island located in Pamlico Sound, near Ocracoke Island. The island was constructed of dredged sand from a nearby navigation channel. The highest point on the island is approximately 5 m (16 feet) in elevation, but most of the site is 3 m (10 feet) or lower. Periodic renourishment with “beach-quality” sand maintains the open, bare substrate, which provides good nesting habitat for several species of terns and sometimes Black Skimmers. This island is surrounded by shallow water and seagrass flats.

Habitats: Open, bare sand habitat created with dredged sand, sparse grasses.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Big Foot Island needs periodic beach renourishment to maintain its size, shape, and habitats. This has been accomplished by the United States Army Corps of Engineers in cooperation with the North Carolina Wildlife Resources Commission and the North Carolina Colonial Waterbird Management Committee. Human disturbance is a significant threat and can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Big Foot Island is an important nesting site for Royal and Sandwich Terns. Herring and Great Black-backed Gulls also nest on the site. In some years, Common and Gull-billed Terns, Black Skimmers, and American Oystercatchers nest on the island. During winter, the island serves as a resting area and roost for Double-crested Cormorants. The island supported the state’s largest colony of Royal Terns in 2007.

Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission. Royal and Sandwich Terns have been banded annually for many years.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2b	Royal Tern	B	3,680 prs.	2007	34.4	3,964 prs.	33.9
2b	Sandwich Tern	B	457 prs.	2007	16.4	572 prs.	21.7
3a	Herring Gull	B	77 prs.	2007	12.2	54 prs.	7.5
3a	Great Black-backed Gull	B	10 prs.	2007	6.1	7 prs.	3.7
3eiv	Double-crested Cormorant	W	15,000	2007	—	—	—
3ei	waterbirds	B	4,137 prs.	2007	—	4,536 prs.	—

B = breeding; W = winter

Bird Island – Twin Lakes

Location: Brunswick County

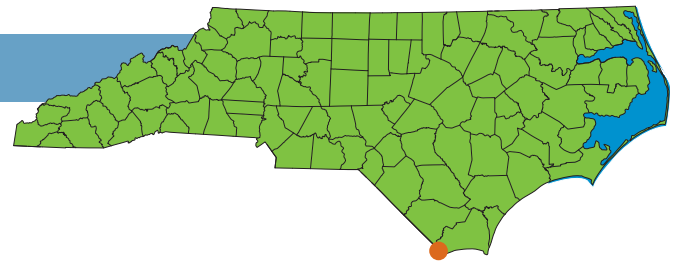
Total Size: 821.0 ha (2,028.6 acres)

Site Description: Bird Island is located on the North Carolina–South Carolina border (the southwestern end of Bird Island is in South Carolina). It is one of the few undeveloped barrier islands remaining in southern North Carolina. Luckily, Bird Island will remain undeveloped and will be protected forever as part of the North Carolina Coastal Reserve Program system, thanks to the determination and commitment of the Bird Island Preservation Society. The society worked hard for more than a decade to acquire and protect the island. In addition to barrier island beach and dunes, the Bird Island site includes extensive saltmarsh that supports a variety of bird species throughout the year. The Twin Lakes portion of this site consists of two freshwater ponds bounded by residential development and a golf course, and adjacent saltmarsh on the mainland. The lakes provide a resting area and roost for Wood Storks and other species of waterbirds.

Habitats: Freshwater pond, saltmarsh, barrier island beach and dunes, intertidal sandflat and mudflat.

Land Use: Residential development, recreation, and hunting.

Primary Threats: Human disturbance, residential and commercial development, introduced predators, and recreational development and overuse.



Protection Status: The barrier island and saltmarsh are part of the Bird Island Coastal Reserve protected and managed by the North Carolina Coastal Reserve Program. The lakes are in private ownership and are not afforded protection.

Conservation Issues: The ponds, surrounding trees, water quality, hydrology, and a sufficient buffer zone to roosts should be maintained. Nesting sites for beach-nesting birds such as Wilson’s Plovers, American Oystercatchers, Willets, terns, and skimmers should be located, posted, patrolled, and monitored during the nesting season. Surveys of landbirds and waterfowl during breeding and migration, and over winter, are lacking and needed. Current surveys of shorebirds and wading birds need to continue.

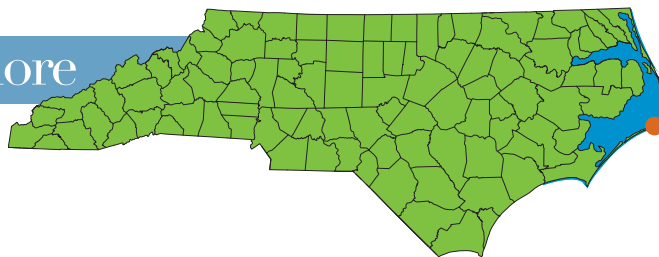
Birds: This site has one of North Carolina’s few regularly occurring flocks of Wood Storks. No evidence of nesting has been found, but the Wood Storks have used the area regularly for more than a decade. The storks rest and roost in the trees bordering the freshwater ponds and then travel to the nearby saltmarsh to forage. This is one of the northernmost sites for Wood Storks in North America.

Monitoring and Research: Adopt an Important Bird Area volunteers, with the Cape Fear Audubon Society and the Bird Island Preservation Society, conduct surveys of this Important Bird Area. This site is monitored by the North Carolina Coastal Reserve Program and the Bird Island Preservation Society.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Wood Stork	all	46	2008

Cape Hatteras National Seashore



Location: Hyde and Dare Counties

Total Size: 25,139.5 ha (62,121.1 acres)

Site Description: Cape Hatteras National Seashore encompasses about 110 km (68 miles) of barrier islands, including much of the area known as the Outer Banks. The National Seashore represents approximately 20 percent of the coastline of North Carolina. It is a diverse landscape and a good example of a mid-Atlantic barrier island system. The area known as Buxton Woods is one of North Carolina's best examples of maritime forest and includes an extensive freshwater marsh system. The National Seashore is popular with tourists and attracts over 2 million visitors annually. It is vital to nesting, migrating, and wintering waterbirds and shorebirds on Atlantic Coast beaches.

Habitats: Maritime forest, shrubland, barrier beach and dune, sandflat and mudflat, saltmarsh, brackish marsh.

Land Use: Wildlife conservation, other conservation, recreation and tourism, water supply, hunting, fishing.

Primary Threats: Disturbance to birds, off-road vehicle use, predation, inadequate protection and management, recreational development and overuse, invasive plants and animals, artificial stabilization of the beach, other development.

Protection Status: The site is managed by the National Park Service. Current conservation and management efforts include monitoring and protection of colonial nesting birds and shorebirds. The development of a regulation for off-road vehicles within the Seashore is underway.

Conservation Issues: Significant off-road vehicle use and other recreational pursuits occur at this site. Presently, there is no year-round protection for migrating and wintering shorebirds that depend on ocean beaches. Predation from feral cats, foxes, and raccoons places significant stress on nesting shorebirds and colonial waterbirds. Areas of beach nesting bird habitat have been degraded by the construction and maintenance of an artificial dune that protects Highway 12. Migrating and wintering shorebirds face chronic threats from unregulated vehicle use and human disturbance. Sea level rise has resulted in erosion and loss of habitat, and how the National Park Service responds to this threat will influence the quantity and quality of remaining habitat.

Birds: Barrier beach and dune habitat and maritime forest are extensive and significant (Criterion NC4). This is one of the state's most important sites for coastal birds throughout the year; it is an important nesting, migratory, and wintering location for Piping Plovers, colonial waterbirds, migrating and wintering shorebirds of many species, and landbirds. The lack of science-based protection for birds contributed to significant declines in the populations of nesting shorebirds and waterbirds by 2007. Science-based protection for nesting, migrating, and wintering waterbirds and shorebirds is needed.

Monitoring and Research: This site is monitored by the National Park Service. Research is ongoing.

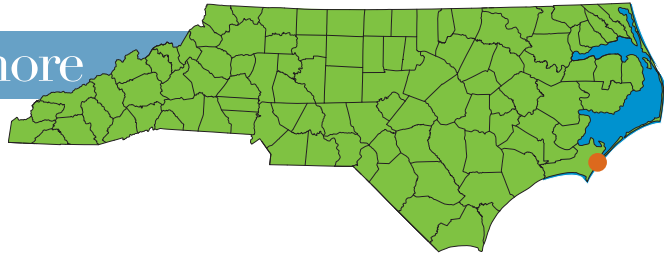
Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2001–9	Average Percentage of NC Population 2001–7*
1	Piping Plover	B	9 prs.	2009	6 prs.	15.4
1	Piping Plover	FM	104	2007	—	—
2a	Least Tern	B	464 prs.	2009	303 prs.	13.0
2a	Common Tern	B	31 prs.	2009	132 prs.	18.0
2a	Black Skimmer	B	40 prs.	2009	99 prs.	16.8
1	Gull-billed Tern	B	0 prs.	2009	31 prs.	20.8
2b	American Oystercatcher	B	23 prs.	2009	27 prs.	—
2a	Red Knot	SM	83	2009	—	—
3d	shorebirds	SM, W, FM	19,886	2006	—	—
3ei	waterbirds	B	544 prs.	2009	—	—
3g	migratory landbirds	FM, SM	—	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

*The last statewide population estimates for colonial waterbirds, American Oystercatchers, and Wilson's Plovers was 2007; percentage NC population data is available only for 2001–7.

Cape Lookout National Seashore



Location: Carteret County

Total Size: 17,445.4 ha (43,108.6 acres)

Site Description: Cape Lookout National Seashore is located in the central coastal area of North Carolina between Beaufort and Ocracoke Inlets. Barden Inlet and New Drum Inlet divide the park into three barrier islands. The northernmost island, North Core Banks, is approximately 39 km (24 miles) long, extending from Ocracoke Inlet to New Drum Inlet. South Core Banks extends southward from New Drum Inlet 40 km (25 miles) to the Cape Lookout Bight area. Both islands have a northeast-to-southwest orientation, exhibit a low-profile landscape and are made up of low dunes, shrub zone, and saltmarsh. The third island, Shackleford Banks, is 14 km (9 miles) long and has an east-west orientation with a higher dune system, isolated freshwater marshes, and approximately 36 ha (89 acres) of maritime forest.

Habitats: Barrier beach and dune, saltmarsh, sandflat and mudflat, maritime forest.

Land Use: Conservation, recreation and tourism, fishing, hunting.

Primary Threats: Off-road vehicle use, recreational overuse, disturbance to birds, introduced animals, predators.

Conservation Issues: The number of people using the Cape Lookout National Seashore is a key concern. Off-road vehicle traffic, unleashed pets, and human disturbance of nesting, foraging, and resting birds are primary issues. These disturbances can have a significant impact on populations of waterbirds and shorebirds. Further strict measures to protect nesting waterbirds and shorebirds from human disturbances are needed. Migrating and wintering shorebirds face chronic threats from unregulated vehicle use and human disturbance. Sea level rise has resulted in erosion and loss of habitat and how the National Park Service responds to this threat in the future will influence the quantity and quality of remaining habitat.

Protection Status: The site is managed and protected by the National Park Service.

Birds: Cape Lookout National Seashore supports most of the nesting pairs of Piping Plovers in North Carolina; it is also an important wintering and migratory site for this species. The site is an excellent example of a barrier island with the associated bird species (Criterion NC4). The whole National Seashore is vital to migrating and wintering shorebirds of many species, and the beaches have a long history of use by nesting colonial waterbirds and shorebirds.

Monitoring and Research: This site is monitored by the National Park Service. Long-term research on shorebirds and waterbirds continues and has contributed significantly to the knowledge of these species.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7*
1	Piping Plover	B	37 prs.	2009	69.8	27 prs.	69.2
1	Piping Plover	FM	86	2008	—	—	—
1	Piping Plover	W	13	2008	—	—	—
1	Piping Plover	SM	22	2008	—	—	—
2a	Least Tern	B	285 prs.	2007	9.7	305 prs.	13.1
2a	Black Skimmer	B	169 prs.	2007	25.2	139 prs.	23.5
1	Common Tern	B	78 prs.	2007	15.6	40 prs.	5.6
1	Gull-billed Tern	B	59 prs.	2007	64.8	30 prs.	20.1
2a	American Oystercatcher	B	61 prs.	2007	18.1	—	—
2a	American Oystercatcher	B	60 prs.	2009	—	56 prs.	—
2a	American Oystercatcher	W	168	2006	—	—	—
2a	Wilson's Plover	FM	72 prs.	2009	—	70 prs.	—
2a	Red Knot	SM	1,224	2009	—	—	—
2a	Red Knot	W	358	2009	—	—	—
2a	Red Knot	FM	288	2009	—	—	—
3a	Sanderling	FM, W, SM	16,955	2006	—	—	—
3d	shorebirds	FM	26,750	2006	—	—	—
3ei	waterbirds	FM,SM	23,810	2006	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

*Period covered for Piping Plover and American Oystercatcher is 2001–9.

Carrot Island–Bird Shoal

Location: Carteret County

Total Size: 601.9 ha (1487.2 acres)

Site Description: Carrot Island and Bird Shoal are part of the Rachel Carson National Estuarine Research Reserve. The site sits immediately east of the town of Beaufort, between Beaufort and Shackleford Banks. The entire reserve consists of several contiguous islands and marsh areas—Carrot Island, Town Marsh, Bird Shoal, and Horse Island.

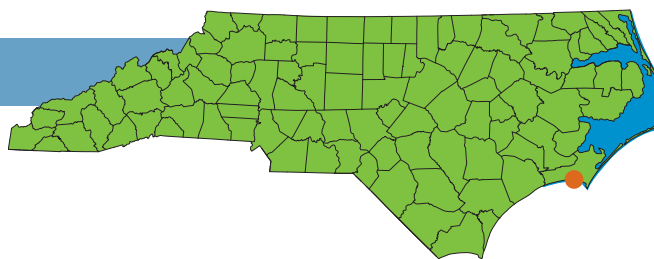
Habitats: Subtidal bottoms, eelgrass beds, tidal creeks, intertidal mudflats and sandflats, salt marshes, maritime shrub thickets, maritime forest, dredged-material areas, dunes, ocean beaches.

Land Use: Wildlife conservation, other conservation, dredged-material deposition.

Primary Threats: Feral horses, recreational development and overuse, human disturbance.

Protection Status: The Rachel Carson Estuarine Reserve is a component of the North Carolina National Estuarine Research Reserve.

Conservation Issues: Feral horses roam the uplands and marsh areas within the portion of the reserve that encompasses Carrot Island, Town Marsh, Bird Shoal, and Horse Island. Feral horses have been detrimental to nesting efforts by some species (e.g., Least Terns, Black Skimmers) because of nest trampling. Visitor use is increasing, and human disturbance of nesting birds is a concern.



Birds: The site has extensive intertidal mud- and sandflats, ideal foraging areas for waterbirds. In 1983 Fussell and Wilson wrote an account of this area that still holds true: “The Carrot Island–Bird Shoal complex is notable as a major roosting area for waterbirds, and having a rich diversity of shorebirds. It has probably the richest diversity of intertidal shorebirds of any area in North Carolina. Although there is relatively little waterbird nesting on the complex, it is an important feeding area for young birds from nesting sites near Cape Lookout, near Fort Macon, and in the lower Newport River. At certain times of the year, Carrot Island–Bird Shoal serves as a roosting area for thousands of birds. Particularly large concentrations exist in the fall. The narrow inlet beach is the main roosting area. Carrot Island–Bird Shoal may be extremely valuable to migrating species.” (Fussell and Wilson 1983.) The area is an important wintering location for Piping Plovers.

Monitoring and Research: This site is monitored by the North Carolina National Estuarine Research Reserve.

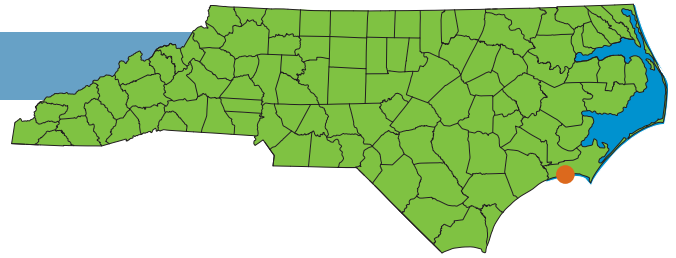
Fussell III, J. O., and J. Wilson. 1983. Natural areas inventory of Carteret County, North Carolina. North Carolina Coastal Energy Impact Program, Report No. 9.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2001-8
1	Piping Plover	FM	19	2005	15
1	Piping Plover	SM	2	2008	7
1	Piping Plover	W	11	2008	16
2a	Wilson’s Plover	B	13 prs.	2007	—
2a	American Oystercatcher	B	7 prs.	2007	—
2a	American Oystercatcher	W	183	2008	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

Cat (Wood) Island



Location: Carteret County (no detailed map shown)

Total Size: 4.9 ha (12.1 acres)

Site Description: Cat Island is a forested, natural island located in Bogue Sound. The site is primarily shrub thicket and forest with a marsh fringe. It was once used as a target for aircraft from the nearby Cherry Point Naval Air Station. Signs warning of unexploded ordinance surround the island. For over a decade, the island has supported a significant colony of nesting wading birds. The site has sometimes been called Wood Island.

Habitats: Saltmarsh, maritime shrub thicket and forest.

Land Use: Other conservation, wildlife conservation.

Primary Threats: Disturbance to birds.

Protection Status: The site is under the jurisdiction of the United States Department of Defense and is posted by the North Carolina Wildlife Resources Commission.

Conservation Issues: Although the island is posted with “entry prohibited” and “unexploded ordinance” signs, trespassers have been encountered on the island. Human disturbance during the nesting season is a primary concern and can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Cat Island has been a wading bird nesting site since the early 1990s. The island currently supports six species and several hundred nesting pairs of wading birds. It hosts the second largest colony of Great Egrets along the coast of North Carolina.

Monitoring and Research: This site is monitored by the United States Department of Defense and the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Great Egret	B	277 prs.	2007	16.3	316 prs.	17.3
2a	Snowy Egret	B	6 prs.	2007	1.6	17 prs.	4.2
3a	Cattle Egret	B	56 prs.	2007	11.7	83 prs.	18.2
2a	Little Blue Heron	B	65 prs.	2007	6.0	90 prs.	7.1
2a	Tricolored Heron	B	101 prs.	2007	10.3	186 prs.	14.3
3a	Black-crowned Night Heron	B	1 pr.	2007	0.6	12 prs.	4.9
3e	waterbirds	B	565 prs.	2007	—	772 prs.	—

B = breeding

Cedar Island Marsh

Location: Carteret County

Total Size: 11,220.5 ha (27,726.6 acres)

Site Description: Cedar Island is located on the northeastern tip of the Carteret County peninsula. This site includes all of the Cedar Island National Wildlife Refuge, along with adjacent marsh and uplands. The Cedar Island marsh consists of thousands of hectares of regularly and irregularly flooded saltmarsh dominated by black needlerush (*Juncus roemerianus*), saltmeadow hay (*Spartina patens*), and big cordgrass (*Spartina cynosuroides*). The adjacent woodlands are primarily pocosin and pine forest. This Important Bird Area also includes the adjacent portions of Core and Pamlico Sounds.

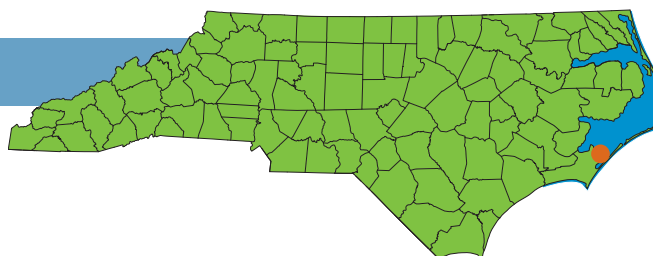
Habitats: Saltmarsh, shrubland, coniferous forest.

Land Use: Wildlife conservation, fishing, hunting, residential development.

Primary Threats: Sea level rise, global climate change, eutrophication from adjacent farmlands, low-elevation overflights by military aircraft.

Protection Status: Much of this site is part of the Cedar Island National Wildlife Refuge, protected and managed by the United States Fish and Wildlife Service.

Conservation Issues: Few studies of landbirds during breeding season, migration periods, or winter have been conducted. The impact of regular low-altitude flights by military aircraft is poorly understood. Overall numbers of waterfowl appear to be declining in recent years. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive



conservation plan in place.

Birds: The Cedar Island Marsh is one of the state's best examples of irregularly flooded saltmarsh (Criterion NC4). It is probably best known for Black Rails, which can be heard calling from the marsh during late spring and early summer months. The site is widely thought to support the state's largest population of Black Rail, but there is no population estimate for this species. The marsh also supports Seaside Sparrows, Marsh Wrens, Clapper Rails, Virginia Rails, Common Yellowthroats, Northern Harriers, and waterfowl, among other species. Seaside Sparrows are abundant breeders throughout the marsh, and this site may support the state's largest breeding population of this species. This is one of the few areas in North Carolina where Northern Harriers have been found nesting. Songbirds are abundant in shrub thickets and forest on the refuge. Black Ducks and Gadwall breed on the refuge and on nearby marsh islands. Diving ducks and puddle ducks are often abundant during late fall and winter months. A total of 270 species of birds have been recorded on the refuge.

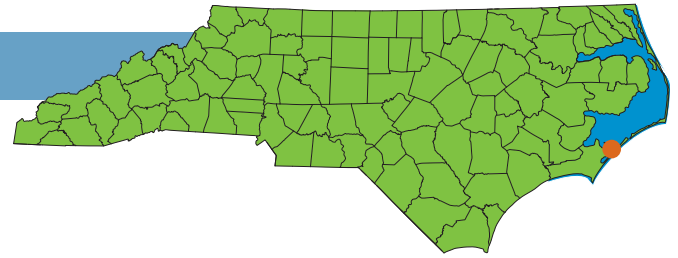
Monitoring and Research: More monitoring of wintering waterfowl and migrant and wintering shorebirds is needed. Data is gathered irregularly as part of United States Fish and Wildlife Service programs. Species-specific efforts should be implemented to assess populations of marsh birds.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-9
2b	American Black Duck	W	292	2009	188
3a	Gadwall	W	108	2009	42
3a	Bufflehead	W	76	2009	120
2a	Black Rail	all	—	—	—
2a	Seaside Sparrow	B	—	—	—
3a	Northern Harrier	B	1 pr.	2001	—
3b	waterfowl	W	814	2009	1,402

B = breeding; W = winter

Chainshot Island



Location: Carteret County (no detailed map shown)

Total Size: 2.0 ha (4.9 acres)

Site Description: Chainshot Island is a natural estuarine island located in Core Sound near Cedar Island. It is one of four islands in northern Core Sound protected and managed by Audubon North Carolina. The island is primarily marsh and small shrub thickets surrounded by shallow water and seagrass.

Habitats: Saltmarsh, shrub thicket.

Land Use: Wildlife conservation.

Primary Threats: Erosion, disturbance to nesting birds.

Protection Status: The site is managed and protected by Audubon North Carolina.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a concern and can result in egg or chick loss, nest abandonment, and colony abandonment. The island is also eroding, which jeopardizes its future.

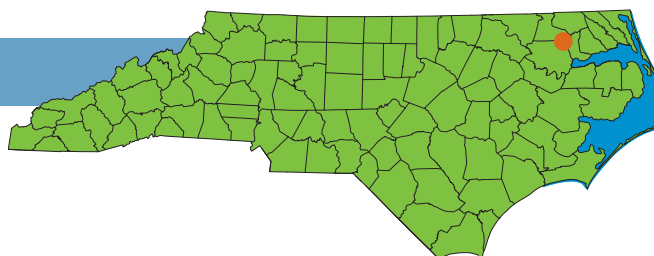
Birds: The site supports a small mixed-species heron colony during most years. In some years the site may have 75 or more pairs of wading birds; in other years it may have very few. Black-crowned Night Herons are the most abundant species in most years. Forster's and Common Terns nest on the island in some years. One pair of nesting Black Ducks can be found during most years. The site usually supports at least one pair of breeding American Oystercatchers.

Monitoring and Research: This site is monitored by Audubon North Carolina.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Black-crowned Night Heron	B	7 prs.	2007	4.0	28 prs.	11.4
B = breeding							

Chowan River Bottomlands



Location: Bertie, Chowan, Hertford, and Gates Counties

Total Size: 22,851.8 ha (56,466.1 acres)

Site Description: This site is located in northeastern North Carolina, near the town of Ahoskie. The Chowan River is a blackwater river that empties into Albemarle Sound near Edenton. Most of the Important Bird Area is in the riverine swamp forest along the Chowan River from Colerain to Parkers Ferry. The site also includes Merchants Millpond State Park, the Chowan Swamp Game Lands, and the Chowan River.

Habitats: Swamp forests with bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), tupelo (*Nyssa aquatica*), and loblolly pine (*Pinus taeda*); mixed forests with beech (*Fagus grandifolia*) and mesophytic oaks; lake with cypress-tupelo swamp and a diversity of floating and submerged aquatics.

Land Use: Wildlife conservation, hunting, recreation and tourism.

Primary Threats: Disturbance to birds, commercial development, logging and tree cutting on private lands.

Conservation Issues: Logging resulting in the fragmentation and loss of privately owned swamp forest is a primary concern. Buffer zones along the river and swamp forest should be established. Audubon North Carolina, The Nature Conservancy, and other organizations have formed the Albemarle-Pamlico Conservation and Communities Cooperative to plan for conservation in the region, including planning for sea level rise. More extensive surveys of landbirds, waterbirds, and waterfowl during breeding, migration, and winter are needed.

Protection Status: Approximately 50 percent of the site is in state ownership and includes Merchants Millpond State Park and Chowan Swamp Game Lands, which are protected and managed by North Carolina State Parks and North Carolina Wildlife Resources Commission respectively. Recent acquisitions from private industrial forestlands owners have added to the protected lands in this Important Bird Area. The remaining acreage is privately owned.

Birds: The site holds a significant diversity and abundance of species associated with cypress-tupelo-gum swamp forest (Criterion NC4). In addition, the site is significant for breeding landbirds, as well as swamp forest species such as Wood Ducks, Prothonotary Warbler, Northern Parulas, and more, and it is thought to be significant for Barred Owls and Pileated Woodpeckers, though more extensive surveys are needed to confirm this. At least two Great Blue Heron colonies are present near Merchant's Millpond.

Monitoring and Research: North Carolina State Parks documents birds at Merchant's Millpond State Park (214 species detected), with data entered into the Natural Resource Inventory Database system. The Lloyd's Crossroads and California Breeding Bird Survey routes are partially contained within this Important Bird Area. Further inventory and monitoring are needed throughout.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-9
2b	Tundra Swan	W	7,316	2009	3,159
3a	Canada Goose	W	2,061	2009	1,604
3a	Scaup species	W	11,704	2009	4,989
2b	Wood Duck	all	50	2009	—
3b	Waterfowl	W	—	—	—
2a	Northern Bobwhite	all	25	2006	—
2b	Acadian Flycatcher	B	20+ prs.	2009	—
2b	Eastern Wood-Pewee	B	20+ prs.	2009	—
2b	Northern Parula	B	50+ prs.	2009	—
2b	Prothonotary Warbler	B	20+ prs.	2009	—
3g	migratory landbirds	all	—	—	—

B = breeding; W = winter

Clam Shoal

Location: Dare County (no detailed map shown)

Total Size: 267.0 ha (659.6 acres)

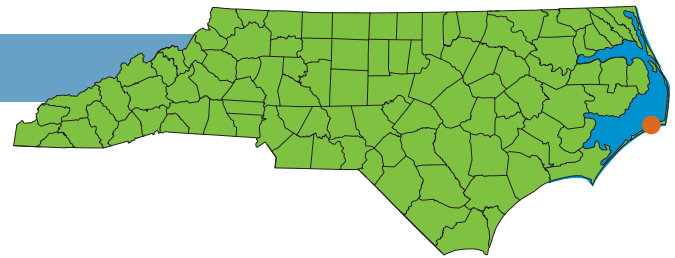
Site Description: Clam Shoal is a long, narrow, natural shoal located in Pamlico Sound, near Hatteras Island. This remote ribbon of sand and shell looks insignificant and is omitted from many maps. There is hardly a place on Clam Shoal above one meter in elevation and greater than 10 m (33 feet) in width, but it is used by large numbers of shorebirds and, in the winter, waterfowl. This shoal has endured many storms and overwash, but remains an important site for a variety of birds during breeding, migration, and winter. Waterbirds breed during the warmer months, shorebirds are present during migration and winter, and waterfowl are abundant during winter months. The site is bounded to the south by shallow seagrass flats and to the north by deeper waters of Pamlico Sound.

Habitats: Bare sand and shell.

Land Use: Wildlife conservation, hunting.

Primary Threats: Flooding during storm tides, disturbance to nesting birds, erosion, possible impacts of nearby wind energy development.

Protection Status: The site is not under the jurisdiction of a management agency or organization. Because of the remote location of this island, formal protection measures are not employed.



Conservation Issues: Clam Shoal is a very low island and is subject to flooding during storm events. Because of its remote location, the island receives few visitors during the breeding season, but disturbance remains a concern. One person walking the length of the shoal could cause significant disturbance to nesting birds that could result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Clam Shoal has long been a nesting site for colonial waterbirds. Royal Terns, Sandwich Terns, and Common Terns have nested throughout, along with Forster's Terns and Black Skimmers. However, terns and Black Skimmers did not nest on the site in 2007. The last known nesting by Royal and Sandwich Terns was 2006. Shallow water and seagrass flats surrounding Clam Shoal support wintering diving and puddle ducks, Brant, and migrant Canada Geese, but no population estimates are available. Few migration and winter surveys of shorebirds have been conducted, but the sparse data that exist suggest that shorebirds can be abundant during migration and winter.

Monitoring and Research: Royal and Sandwich Terns are banded in most years when present.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2004	Average Number 2001–4	Avg % of NC Population 2001–4
2b	Royal Tern	B	338 prs.	2006	—	152 prs.*	2.6 *
2b	Sandwich Tern	B	46 prs.	2006	—	99 prs.*	3.8 *
2a	Common Tern	B	47 prs.	2004	8.3	108 prs.	12.7
1	Gull-billed Tern	B	4 prs.	2004	4.0	14 prs.	7.8
2a	Black Skimmer	B	11 prs.	2004	1.8	10 prs.	1.6
3a	Caspian Tern	B	1 pr.	2004	6.3	3 prs.	15.8
3a	Herring Gull	B	20 prs.	2007	3.2	25 prs.	3.4
3a	Great Black-backed Gull	B	10 prs.	2007	6.1	6 prs.	3.6
1	Piping Plover	W	4	2006	—	—	—
2a	Red Knot	W	350	2007	—	—	—

B = breeding; W = winter

*The last known breeding by Royal and Sandwich Terns was 2006. Calculations were based on 2001–6.

Cora June Island

Location: Dare County (no detailed map shown)

Total Size: 7.3 ha (18.0 acres)

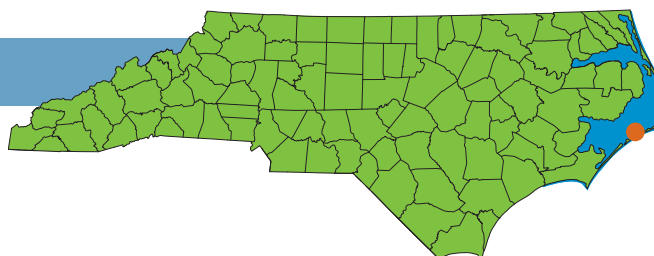
Site Description: Cora June Island is a dredged-sand island located in eastern Pamlico Sound near Hatteras Village. The island was created entirely of sand from the nearby navigation channel and was placed in open water, in the vicinity of a preexisting dredged-material island. When the island was first created, it eroded away after just a couple of years. Dredged sand was again deposited on the site, raising the island above mean high water sufficiently for it to be more stable. It has become a very important nesting site for terns and skimmers.

Habitats: Almost entirely bare sand, with very scattered grasses and herbaceous vegetation.

Land Use: Conservation.

Primary Threats: Disturbance to nesting birds, erosion.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission. Like other state-owned waterbird nesting sites, the island is posted and patrolled, and off limits to all visitors from April 1 to August 31. These measures are essential to the protection of nesting waterbirds.



Conservation Issues: Even though the island is posted, disturbance to nesting birds remains a concern. Maintenance of the island with dredged sand is important to the continued viability of the site as a nesting site for terns and skimmers.

Birds: Cora June Island has become an important nesting site for terns and skimmers in Pamlico Sound. The last census data available for the site was 2007, but the island was known to support nesting terns and skimmers in 2009. It requires periodic deposits of dredged sand to maintain the island and the habitats that support nesting terns and skimmers. The site supports the third largest Common Tern colony and fourth largest Black Skimmer colony in North Carolina.

Monitoring and Research: The site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

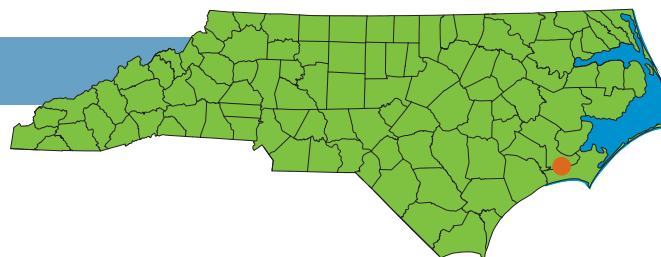
Criterion	Species	Season	Number	Year	% of NC Population 2007
1	Gull-billed Tern	B	3 prs.	2007	3.3
2a	Black Skimmer	B	78 prs.	2007	14.1
2a	Common Tern	B	79 prs.	2007	15.9
2a	Least Tern	B	55 prs.	2006	1.9
2b	Royal Tern	B	413 prs.	2007	3.9
2b	Sandwich Tern	B	334 prs.	2007	12.0
3e	waterbirds	B	962 prs.	2007	—

B = breeding

Croatan Forest

Location: Craven, Jones, and Carteret Counties

Total Size: 92,053.7 ha (227,469.7 acres)



Site Description: The Croatan Forest Important Bird Area is a large and diverse natural area in eastern North Carolina. This site is bounded on three sides by rivers: the White Oak to the south, the Neuse to the north, and the Trent to the west. Highway 24 forms the eastern boundary. The Croatan includes one of North Carolina's largest and best examples of pocosin habitat and a diverse array of habitat types that support a corresponding diversity of bird life. A system of roads, mostly unpaved, and hiking trails allow access to many areas of the Croatan National Forest.

Habitats: Longleaf pine forest, pine savannah, Carolina bays, pocosin, cypress and hardwood swamp forest, Atlantic white cedar stands, upland hardwood forest, natural lakes, blackwater creeks, managed impoundment, freshwater marsh, saltwater marsh.

Land Use: Wildlife conservation, other conservation, hunting, forestry, recreation.

Primary Threats: Introduced species, alteration of hydrology, logging.

Protection Status: Much of this site is in federal ownership, managed by the National Forest Service. Four areas of the Croatan National Forest are designated wilderness areas.

Conservation Issues: Maintaining the integrity of the wetland habitats throughout the National Forest and beyond its boundaries is key to conserving habitats critical to North Carolina's birds. More extensive surveys of landbirds and waterfowl during breeding season, migration periods, and winter are needed.

Birds: The site is one of the state's most important sites for pine savannah and Carolina Bay and pocosin habitats (Criterion NC4). Lake Ellis Simon supports North Carolina's largest nesting colony of nesting Double-crested Cormorants. This and other lakes also support nesting Anhingas, Ospreys, and Great Blue Herons. In addition to the species listed below, the site provides important habitat for Yellow-breasted Chat, wintering Brown Creeper, and several species of owls. The site has been designated as a globally significant Important Bird Area for Red-cockaded Woodpecker.

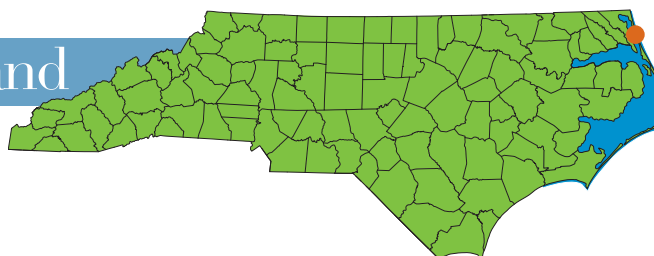
Monitoring and Research: Three Breeding Bird Survey routes lie within or alongside this extensive Important Bird Area. Averages presented in the table are a compilation of the average number of birds detected on the three Breeding Bird Survey routes within or adjacent to this area. Red-cockaded Woodpecker clusters are monitored by the United States Fish and Wildlife Service.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number
2a	Double-crested Cormorant	B	135	2002	—
2a	Northern Bobwhite	all	—	—	39
1	Red-cockaded Woodpecker	B	60	2003	—
2b	Acadian Flycatcher	B	—	—	28
2b	Brown-headed Nuthatch	all	—	—	36
2b	Prairie Warbler	B	—	—	26
2b	Prothonotary Warbler	B	—	—	23
2a	Bachman's Sparrow	B	—	—	3
2a	Bachman's Sparrow	W	24	—	—

B = breeding; W = winter

Currituck Marshes–Pine Island



Location: Currituck County

Total Size: 7,159.7 ha (17,692.1 acres)

Site Description: Currituck Sound is a shallow, brackish water system located between the northern Outer Banks and mainland, in the northeastern region of North Carolina. The Important Bird Area includes the extensive system of brackish marshes, creeks, channels, open water, and the adjacent Donal C. O'Brien, Jr. Audubon Sanctuary and Center at Pine Island. The Currituck Banks region of North Carolina has experienced rapid residential and commercial development in the past decade. In just a few years the 5 km (3 miles) of maritime shrub thicket, forest, and ponds on the Audubon Sanctuary will be one of the few natural areas remaining south of Corolla. The maritime shrub thickets of Pine Island are among the largest areas of this type remaining in the region.

Habitats: Maritime shrub thicket, mixed forest, estuary, brackish marsh, open water, shallow-water impoundments.

Land Use: Wildlife conservation, recreation and tourism, hunting, fisheries.

Primary Threats: Water pollution, disturbance to birds, natural pests, residential and commercial development.

Protection Status: Audubon North Carolina protects approximately 2,023 ha (4,999 acres). A private hunting club holds much of the remaining marsh acreage.

Conservation Issues: Water quality is an issue of concern for all of Currituck Sound. Declines in submerged aquatic vegetation and subsequent declines in waterfowl and fisheries have been attributed to increased salinity, turbidity, and non-point source pollution. With increased development and

increased recreational activity on Currituck Sound, disturbance to birds has become a great concern in recent years. Audubon North Carolina, The Nature Conservancy, and other organizations have formed the Albemarle-Pamlico Conservation and Communities Cooperative to plan for conservation in the region, including planning for sea level rise. Surveys of waterbirds, landbirds, and marsh birds during breeding, migration, and winter are needed.

Birds: Currituck Sound has long been recognized for the great numbers of waterfowl that use the sound during fall and winter. In the 1970s, Currituck Sound supported an estimated 300,000 waterfowl. Today, numbers have declined considerably, but the sound still supports a few thousand ducks, geese, and swans annually. The shrub thicket and forest provide good habitat for migrant songbirds, and marshes support rails, bitterns, and wading birds. 170 bird species have been recorded on the Pine Island Audubon Sanctuary. The site has significant maritime shrub thicket and forest habitat, and brackish marsh (Criterion NC4).

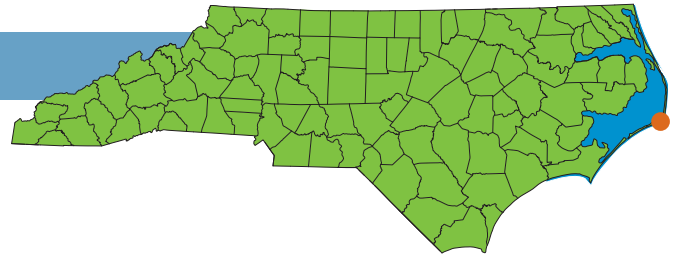
Monitoring and Research: The United States Fish and Wildlife Service conducts annual midwinter waterfowl surveys in Currituck Sound. The Pine Island Audubon Sanctuary, the associated marsh, and the marsh associated with Narrows Island are monitored by Audubon North Carolina. More study is needed for migrant landbirds, especially priority sparrow species.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-9
3a	Canada Goose	W	1,595	2009	1,536
3a	Snow Goose	W	1,800	2009	1,898
2b	Tundra Swan	W	2,715	2009	2,004
3a	Mallard	W	449	2009	420
2b	Black Duck	W	770	2009	480
3a	American Green-winged Teal	W	534	2009	1,100
3b	waterfowl	FM, W	9,126	2009	9,545

FM = fall migration; W = winter

DOT Island



Location: Dare County (no detailed map shown)

Total Size: 59.4 ha (146.7 acres)

Site Description: DOT (Department of Transportation) Island is a dredged-sand island located near Hatteras Inlet. The island serves as a disposal site for sand taken from the ferry channel that runs from Hatteras Island to Ocracoke Island. Some areas of the island have not received deposits of dredged sand in more than a decade, which has resulted in the formation of shrub thickets along the western fringe. The shrub thickets support nesting wading birds. The marsh on the western edge of the island has nesting Forster's Terns in some years. American Oystercatchers also nest on the island. Grassy areas on the upper slope of the island provide nesting habitat for Laughing Gulls.

Habitats: Shrubland, bare sand, grass.

Land Use: Wildlife conservation, dredged-sand disposal site.

Primary Threats: Erosion, disturbance to birds.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted and is entirely off limits to visitors during the nesting season, from April 1 through August 31. Human disturbance is a significant concern and can result in egg or chick loss, nest abandonment, and colony abandonment. The site has eroded significantly over the past decade.

Birds: DOT Island supports a significant colony of nesting colonial waterbirds each season. The site has supported one of the state's largest colonies of Great Black-backed Gulls, but recently numbers have been declining. Many of the wading bird species (Great Egret, Snowy Egret, Little Blue Heron, and Tricolored Heron) and Forster's Tern that were once common here have declined in recent years. Forster's Terns were last known to nest on the site in 2004.

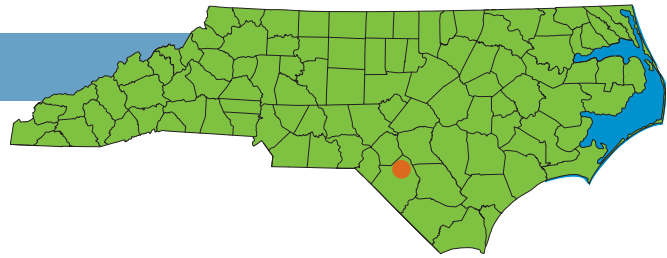
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Brown Pelican	B	345 prs.	2007	10.0	234 prs.	5.5
2a	Glossy Ibis	B	4 prs.	2007	1.1	19 prs.	4.2
3a	Great Black-backed Gull	B	4 prs.	2007	2.4	21 prs.	11.9
3a	Herring Gull	B	14 prs.	2007	2.2	16 prs.	2.4
3ei	waterbirds	B	378 prs.	2007	—	469 prs.	—

B = breeding

Dunahoe Bay



Location: Robeson County (no detailed map shown)

Total Size: 37.7 ha (93.3 acres)

Site Description: Carolina bays are unique landscape features found primarily in the southeastern United States. They are generally shallow, elliptical depressions with a northwest-southeast axis and an elevated sandy rim along the southern edge. They vary in size from less than half a hectare to several thousand hectares and can be predominantly open water or entirely covered by dense, woody vegetation. Carolina bays can be hard to distinguish on the ground but, viewed from the air, can easily be picked out on the landscape. Carolina bays have received much attention from scientists in many different fields, but only very limited attention from ornithologists or others interested in birds. Dunahoe Bay is an undisturbed and permanently flooded Carolina bay located near the town of Red Springs. It is an excellent example of a Carolina bay and supports a significant colony of nesting colonial waterbirds.

Habitats: Permanently flooded Carolina bay dominated by pond cypress (*Taxodium ascendens*) and black gum (*Nyssa biflora*). Open water areas are dominated by water lily (*Nymphaea odorata*) and bladderworts (*Utricularia inflata* and *U. purpurea*).

Land Use: Wildlife conservation, other conservation.

Primary Threats: Water pollution, agriculture conversion, water diversion, disturbance to birds.

Protection Status: The Nature Conservancy currently owns the entire Carolina Bay and a partial buffer zone.

Conservation Issues: Efforts should be made to prevent human disturbance during the nesting season (March–August) and secure a buffer sufficient to maintain the integrity of the bay. Numbers of breeding wading birds have plummeted since 1999, including most of the Cattle Egrets, Snowy Egrets, and Little Blue Herons. Few studies of birds during breeding season, migration periods, or winter have been conducted.

Birds: This site supports North Carolina’s largest known colony of nesting Anhingas and is one of the state’s largest inland waterbird colonies. The site is also an excellent example of a Carolina bay and its associated suite of bird species (Criterion NC4).

Monitoring and Research: In 2008 inland heronry surveys were completed by the North Carolina Wildlife Resources Commission using aerial counts followed by ground surveys. Inland heron surveys are conducted at approximately five-year intervals, and the years do not coincide with the coastwide colonial waterbird surveys.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 1999-2008
3a	Cattle Egret	B	40 prs.	2008	480 prs.
3a	Anhinga	B	45 prs.	2008	97 prs.
3ei	waterbirds	B	95 prs.	2008	1,781 prs.

B = breeding

Eagles Island

Location: Brunswick County

Total Size: 1,631.6 ha (4,031.6 acres)

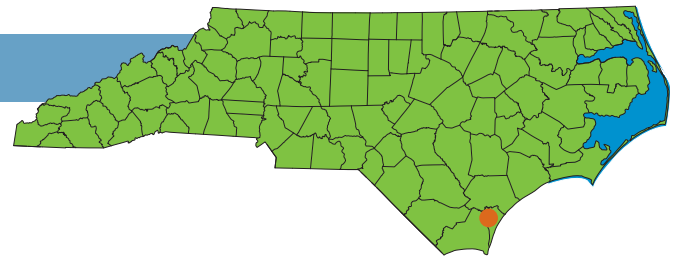
Site Description: Eagles Island is a large expanse of brackish marsh and swamp forest located between the Brunswick and Cape Fear Rivers near Wilmington. The southern half of the island is brackish marsh with diked, dredged-material disposal impoundments. The impoundments support shorebirds, waterfowl, and waterbirds. The impoundments comprise approximately 356 ha (880 acres).

Habitats: Brackish marsh, impoundments, small patches of pine and mixed forest. Interior areas of the impoundments consists of patchy, monotypic stands of *Phragmites communis*, shallow water and mudflat. The area outside of the impoundments is brackish marsh consisting of cattail (*Typha spp.*), threesquare (*Scirpus spp.*), and cordgrass (*Spartina spp.*) with scattered bald cypress.

Land Use: Conservation, disposal of dredged material, hunting.

Primary Threats: Timing of disposal of dredged material, pesticides from mosquito spraying, control of water levels, sea level rise.

Protection Status: The impoundments are gated and restricted by the United States Army Corps of Engineers. The rest of the site is in public and private ownership. The Eagles Island coalition is working to protect the marsh.



Conservation Issues: Control of water levels in the impoundments is a concern, along with spraying for mosquitoes and contaminants in dredged material deposited in the impoundments.

Birds: The site supports great numbers and a great diversity of shorebirds during migration. It is the only known breeding site for Black-necked Stilts in southern North Carolina and one of only a few North Carolina breeding sites for this species. As many as 33 adults and 15 young have been recorded in the past. The site is a good area for winter sparrows; with more than 1,000 present during some winters. Nesting Anhinga, Painted Buntings, and Tree Swallows have been recorded. Large numbers of Bobolink (>1,000) and mixed flocks of Red-winged Blackbirds and Common Grackles (>50,000) roost in the marsh during winter and migration. King Rails are present throughout the marsh, but no population estimates are available. Shorebirds can be abundant in the impoundments. No recent breeding season data is available.

Monitoring and Research: The site is within the Wilmington Christmas Bird Count circle. It is occasionally surveyed at other times of the year. Structured bird surveys at both the impoundments and marsh, especially at peak shorebird migration and breeding seasons, are needed.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2005-9
3a	Rusty Blackbird	W	100	2009	229

W = winter

Ferry Slip Island

Location: New Hanover County (no detailed map shown)

Total Size: 25.1 ha (62.1 acres)

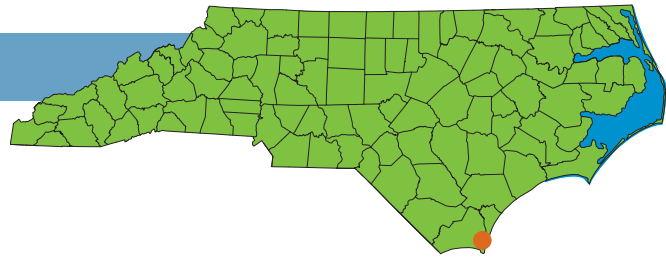
Site Description: Ferry Slip Island is an artificial, undiked, dredged-material island in the lower Cape Fear River south of Wilmington. The island consists entirely of dredged sand and is periodically renourished when suitable beach-quality sand is available. The sand provides excellent habitat for a variety of waterbird species, as well as nesting American Oystercatchers.

Habitats: Dredged sand, sparse to moderate-density vegetation.

Land Use: Wildlife conservation.

Primary Threats: Human disturbance to nesting birds, erosion, vegetation encroachment, lack of suitable dredged sand available for restoration of early-succession habitat.

Protection Status: The site is protected and managed by Audubon North Carolina and the North Carolina Wildlife Resources Commission.



Conservation Issues: The availability of sand to maintain the island and early-succession nesting habitat is a concern. There is a growing trend to place all clean, beach-quality sand on local beaches, thus reducing the sand available to renourish this and other critical nesting sites for colonial wading birds and seabirds. This sand has not been available in recent years, which jeopardizes habitat for nesting terns. The island is posted and patrolled throughout the nesting season to prevent disturbance to nesting birds. Human disturbance can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Ferry Slip supports a large colony of Royal and Sandwich Terns, nesting Laughing Gulls, and 9–10 breeding pairs of American Oystercatchers. The island also supports a significant colony of Brown Pelicans.

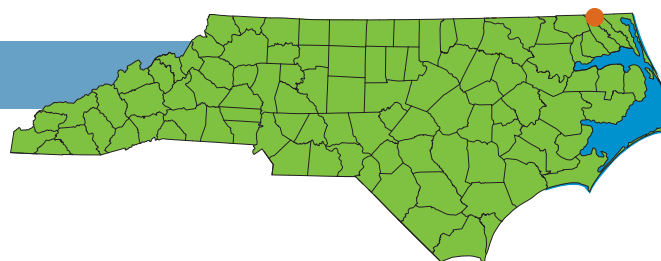
Monitoring and Research: This site is monitored by Audubon North Carolina in cooperation with the North Carolina Wildlife Resources Commission. Monitoring of American Oystercatchers extends beyond the breeding season to include migratory and wintering surveys. Royal Terns, Sandwich Terns, and Brown Pelicans have been banded annually for many years. Studies of nesting shorebirds and waterbirds are ongoing. This site supports the largest colony of nesting Sandwich Terns and the third largest colony of Royal Terns in North Carolina.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2b	Royal Tern	B	2,014 prs.	2007	10.9	1,965 prs.	9.9
2b	Sandwich Tern	B	912 prs.	2007	17.2	633 prs.	21.6
2a	Brown Pelican	B	296 prs.	2007	8.6	344 prs.	8.1
3a	Laughing Gull	B	820 prs.	2007	4.1	777 prs.	3.5
2a	American Oystercatcher	B	9 prs.	2009	—	—	—
3ei	waterbirds	B	4,042 prs.	2007	—	—	—

B = breeding

Great Dismal Swamp



Location: Gates, Camden, and Pasquotank Counties

Total Size: 21,936.0 ha (54,204.9 acres)

Site Description: The Great Dismal Swamp encompasses more than 40,470 ha (100,004 acres) of wilderness and largely inaccessible swamp forest on the border of North Carolina and Virginia. This Important Bird Area includes the North Carolina portion of the Great Dismal Swamp National Wildlife Refuge and Dismal Swamp State Natural Area on the Virginia–North Carolina line. The area contains significant nonriverine swamp forest, pond pine woodland, and pocosin, and some of the larger stands of Atlantic white cedar remaining in North Carolina.

Habitats: Nonriverine swamp forest, nonriverine forested wetland, pocosin, Atlantic white cedar (*Chamaecyparis thyoides*).

Land Use: Other conservation, wildlife conservation, recreation and tourism.

Primary Threats: Succession and fire suppression, hydrology.

Protection Status: Most of the Great Dismal Swamp is in public ownership and under the jurisdiction of the United States Fish and Wildlife Service or North Carolina Division of Parks and Recreation. However, there are significant private tracts adjoining the public lands that support significant habitat and birds.

Conservation Issues: Acquisition of important tracts, such as the “Green Sea” is needed. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place. More extensive surveys of landbirds during breeding, migration, and winter are needed.

Birds: Great Dismal Swamp is a very important site for nesting neotropical migrant birds. It may support one of the state’s largest populations of Swainson’s Warblers but more study is needed. The Wayne’s race of the Black-throated Green Warbler was once thought to be quite common here, but recent work by the Center for Conservation Biology suggests that they are greatly reduced in the Important Bird Area (Watts and Paxton 2002). This warbler still persists within the State Natural Area and more study is needed. The site also has large numbers of other warblers uncommon near the coast, such as American Redstart and Louisiana Waterthrush. It is one of the state’s best examples of bird communities of nonriverine swamp forest, nonriverine forested wetland, pocosin, and Atlantic white cedar forest (Criterion NC4).

Monitoring and Research: The Dismal Swamp Breeding Bird Survey route includes a portion of the perimeter of this area but is limited to where there is road access.

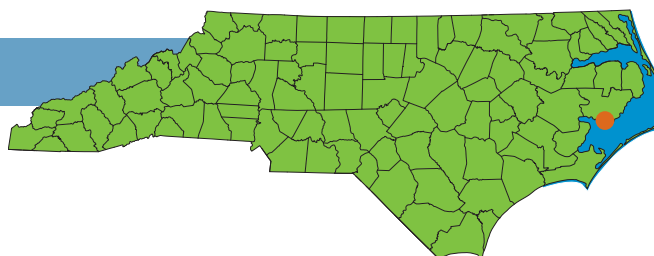
Watts, B. D., and B. J. Paxton. 2002. Investigating the distribution, population status, and habitat requirements of the Wayne’s Green-throated Warbler in the northern south Atlantic Coastal Plain. Center for Conservation Biology Technical Report Series CCBTR-02-08.

Key Bird Species

Criterion	Species	Season	Average Number
2b	Eastern Wood-Pewee	B	31
2b	Acadian Flycatcher	B	36
2b	Wood Thrush	B	28
2b	Prothonotary Warbler	B	42
2a	Swainson’s Warbler	B	—
2a	Black-throated Green Warbler	B	—
3g	migrant landbirds	FM, SM	—

B = breeding; FM = fall migration; SM = spring migration

Great Island



Location: Hyde County (no detailed map shown)

Total Size: 255.5 ha (631.2 acres)

Site Description: Great Island is a remote natural island located in northern Pamlico Sound. The island is primarily saltmarsh. Wrack deposited in the marsh during storm tides provides ideal nesting habitat for Forster's Terns.

Habitat: Saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, erosion, sea level rise.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 through August 31. Human disturbance is a significant concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Great Island is a nesting site for Forster's Terns and supports the state's largest colony of this species. The number of nesting Forster's Terns has varied but has shown a steady increase in recent years. A few pairs of Common Terns also nest at the site in some years.

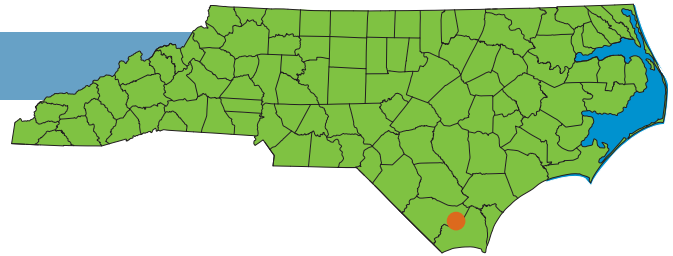
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	258 prs.	2007	25.0	100 prs.	10.2

B = breeding

Green Swamp



Location: Columbus and Brunswick Counties

Total Size: 6,402.3 ha (15,820.4 acres)

Site Description: The Green Swamp is a vast area of southeastern North Carolina between Supply and Lake Waccamaw. The Green Swamp is an area of open longleaf pine savannah interspersed with areas of dense, nearly impenetrable, shrubby pocosin. The longleaf pine savannahs of the Green Swamp are among the best examples of this community type in the United States. The pocosins are also exceptional. The area is known for its great diversity of plants, many of which are significantly rare, but it also harbors a great diversity of bird species.

Habitats: Pocosin, longleaf pine savannah.

Land Use: Wildlife conservation, other conservation, forestry, hunting.

Primary Threats: Drainage, tree cutting, conversion to agriculture and silviculture, water diversion, channelization, industrial and commercial development.

Protection Status: The Nature Conservancy has protected about 6,475 ha (16,000 acres) in its Green Swamp Preserve. Recent acquisitions of 7,284 ha (17,999 acres) by The Nature Conservancy have essentially connected the protected lands of the Waccamaw River basin with the Green Swamp. Much of the rest of the Green Swamp is in private holdings.

Conservation Issues: The Green Swamp area once extended approximately 80,940 ha (200,007 acres), but much of this has disappeared in the past few decades. Alteration of hydrology by ditching and draining threatens the entire system. Also of great concern are logging, conversion to agriculture, silviculture, industrial development, and commercial development. Concerns were raised in 2007 with the announcement of a regional landfill proposed nearby. This issue remains unresolved as the state implemented a moratorium to allow for further study of all so-called mega-dumps.

Birds: The site supports a great diversity of landbirds throughout the year. In addition to those species usually found in longleaf pine systems, Prothonotary, Pine, Yellow-throated and Hooded Warblers are also relatively common. Henslow's and Bachman's Sparrows have been reported from this location, and it has been suggested as a good area for the coastal plain population of Black-throated Green Warbler, but more study is needed. This is one of the state's best examples of longleaf pine savannah and pocosin, and supports birds typical of both habitats (Criterion NC4).

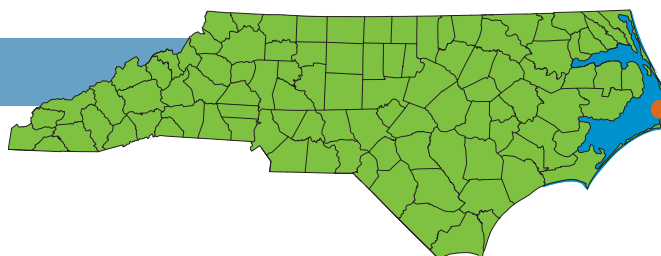
Monitoring and Research: The Green Swamp Breeding Bird Survey route lies mostly within this Important Bird Area. More extensive surveys of landbirds during breeding season, migration periods, and winter are needed.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Red-cockaded Woodpecker	all	5 active clusters	2006
2b	Prairie Warbler	B	42	2006

B = breeding

Gull Island



Location: Dare County (no detailed map shown)

Total Size: 32.6 ha (80.5 acres)

Site Description: Gull Island is a remote, natural island in Pamlico Sound. It was previously the site of the Gull Island hunting club. The clubhouse burned in the early 1990s and was not reconstructed. The island is primarily marsh with small areas of shrub thicket. For at least three decades, this island has been a haven for nesting colonial waterbirds of many species, including terns, gulls, wading birds, and pelicans. Records of birds on this island date back to T. Gilbert Pearson's surveys, conducted in the early 1900s, of birds along the North Carolina coast.

Habitats: Low saltmarsh, high saltmarsh, shrubland.

Land Use: Hunting, wildlife conservation.

Primary Threats: Erosion, disturbance to nesting waterbirds.

Protection Status: The island is protected and owned by the North Carolina Wildlife Resources Commission. The island is posted and is entirely off limits to visitors during the nesting season, from April 1 to August 31.

Conservation Issues: The island is remote and not easily accessible, so human disturbance to nesting waterbirds is a minor concern. The primary concern is erosion.

Birds: The site has supported nesting colonial waterbirds for many years. It has one of the state's largest colonies of Laughing Gulls and a long history of nesting Forster's Terns. Brown Pelicans were first recorded nesting in 1993 and then throughout the 1990s, but have been absent in recent years. A few wading birds nest on the island every year, Great Egrets being the most abundant.

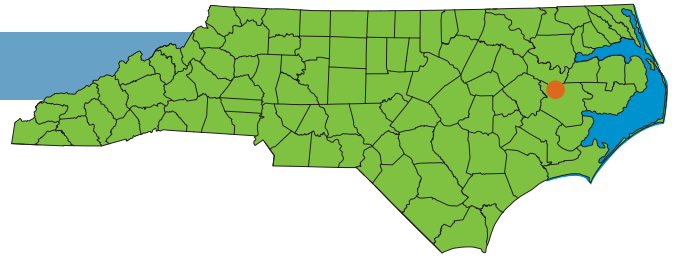
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Great Egret	B	24 prs.	2007	1.4	18 prs.	1.0
3a	Black-crowned Night Heron	B	7 prs.	2007	4.0	3 prs.	1.4
3a	Laughing Gull	B	5,000 prs.	2007	25.0	5,155 prs.	23.2
3a	Forster's Tern	B	89 prs.	2007	8.6	45 prs.	4.5
3a	Great Black-backed Gull	B	4 prs.	2007	2.4	6 prs.	3.4
3ei	waterbirds	B	5,124 prs.	2007	—	—	—

B = breeding

Henslow's Fields



Location: Beaufort County (no detailed map shown)

Total Size: 2,661.7 hectares (6,577.3 acres)

Site Description: This site is within the Voice of America installation. Habitat for breeding Henslow's Sparrows is maintained by the mowing regime implemented by the managers of the Voice of America site. This mowing regime is important for maintenance of the Voice of America site and for the Henslow's Sparrows. Access is restricted, and the area is maintained as early-successional habitat around the site.

Habitats: Wet meadow, grassland, shrubland.

Land Use: Communication towers.

Primary Threats: Disturbance to birds; suspension or diminution of consistent and regular mowing of the site outside of the nesting season.

Protection Status: About 90 percent of the site is owned and managed by the International Broadcasting Bureau for the Voice of America program.

Conservation Issues: Human use of the site is a major concern where it causes disturbance to nesting birds. Another concern is grasslands management, which should include well-timed mowing cycles.

Birds: These two fields are the best-known sites for Henslow's Sparrows in North Carolina.

Monitoring and Research: For many years, volunteer surveys have been conducted by John Wright. It is important that regular surveys continue.

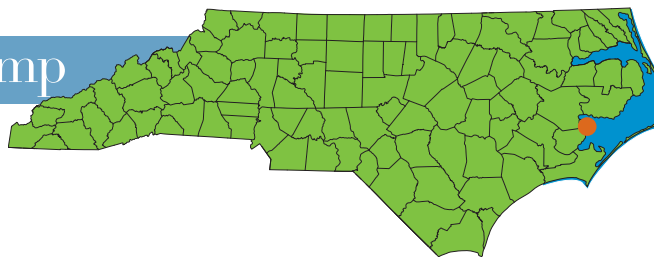
Key Bird Species

Criterion	Species	Season	Field	Number	Year	Average Number 2000–7
1	Henslow's Sparrow	B	1	45*	2007	60.3*
1	Henslow's Sparrow	B	2	23*	2007	43.3*

B = breeding

*Singing males detected on surveys

Hobucken Marshes–Gum Swamp



Location: Pamlico County

Total Size: 24,447.0 ha (60,409.9 acres)

Site Description: The Hobucken Swamp–Gum Swamp site is located on the western side of Pamlico Sound, near the town of Hobucken. This site consists of a diverse array of habitat types, including longleaf pine forest, pond pine flatwoods, cypress ponds, saltmarsh (black needlerush and *Spartina*), brackish water impoundments, and nonriverine hardwood swamps. About half of the site is part of the North Carolina Wildlife Resources Commission Game Lands Program, which provides wildlife habitat and public recreational opportunities.

Habitats: Coniferous forests, deciduous forests, impoundments, and brackish marsh.

Land Use: Wildlife conservation, recreation, hunting, and forestry.

Primary Threats: Low-elevation training flights by military aircraft, introduced plants, water pollution, lead contamination near the bombing target, and residential and commercial development.

Protection Status: The North Carolina Wildlife Resources Commission protects and manages a portion of the site. The remainder is privately owned, most of it in the form of managed waterfowl impoundments, extensive irregularly flooded marsh, and adjacent forest land.

Conservation Issues: Low-elevation military training flights over marsh and impoundments present a serious threat to waterfowl and other birds. Invading plants, especially *Phragmites*, are a serious threat to the impoundments and marsh as they compete with other native plant species that

provide important food and shelter benefits to waterfowl and other shorebirds. Declines in diving and sea ducks in the area could be the result of chronic disturbance from military training activities. Another conservation issue is a great potential for water quality degradation from nearby phosphate mining, agricultural uses, and residential development (e.g., septic systems). As residential development increases in areas adjacent to the game land, some management activities (e.g., prescribed burning) will become more difficult to implement.

Birds: The site is a key area for migrating and wintering waterfowl, especially the managed impoundments. It is also important for diving and sea ducks, Horned Grebe, and Common Loon. There have been significant declines in diving and sea ducks in the past 20 years. Canvasback and Scaup (spp.) once numbered in the thousands, but few remain. The causes of the declines are largely unknown, but could be related to degradation of food supply and chronic disturbance from low-flying military aircraft training at the nearby BT-9 open-water target site. Shorebirds utilize the impoundments when water levels are low. Very few bird surveys have been conducted during spring and summer months, thus breeding birds are poorly understood. It is likely that the site is significant for additional species, but spring and summer surveys need to be conducted.

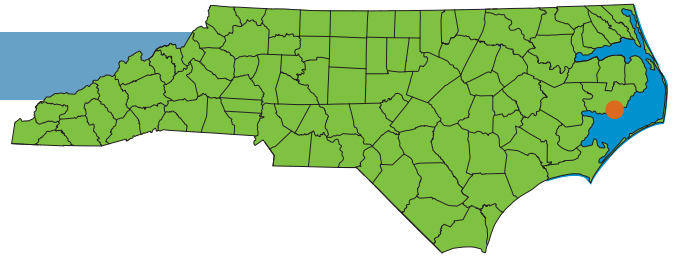
Monitoring and Research: A portion of the site is monitored by the North Carolina Wildlife Resources Commission. Midwinter waterfowl surveys are conducted by the United States Fish and Wildlife Service.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2006-9
2b	American Black Duck	FM, W	157	2009	63
3a	Gadwall	FM, W	1,735	2009	817
3a	American Wigeon	FM, W	1,890	2009	1,264
3a	Surf Scoter	W	276	2009	—
3a	Black Scoter	W	106	2009	—
3ei	American Coot	FM, W	2,724	2009	2,053
3a	Common Loon	W	419	2009	—
3a	Horned Grebe	W	79	2009	—
3b	waterfowl	FM, W	7,745	2009	5,936

FM = fall migration; W = winter

Hog Island



Location: Hyde County (no detailed map shown)

Total Size: 6.0 ha (14.7 acres)

Site Description: Hog Island is a natural estuarine island located on the northwestern side of Pamlico Sound. The island is primarily a regularly and irregularly flooded saltmarsh with a few small upland areas. Forster's Terns have used the site for many years and typically nest on wrack left in the marsh during storm tides.

Habitat: Saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: Disturbance to nesting birds is a primary concern. The island is posted and patrolled to discourage disturbances, and is entirely off limits to visitors from April 1 to August 31. Human disturbance is a significant concern because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Hog Island is one of North Carolina's most important nesting sites for Forster's Terns and supports one of the state's largest colonies of this species. Common Terns nest here in some years. Numbers of nesting wading birds have increased in recent years, likely because of birds leaving Judith Point or Rawls Island due to erosion or changes in the plant communities on those islands. The island supports the state's second largest colony of Tricolored Herons.

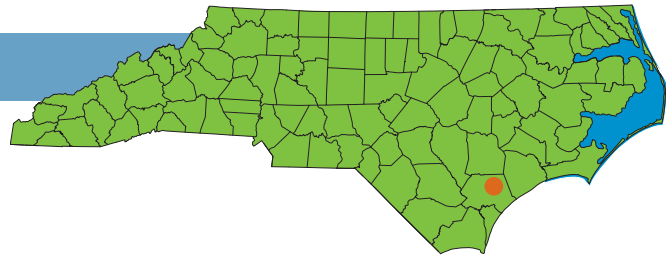
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	153 prs.	2007	14.8	156 prs.	15.9
2a	Glossy Ibis	B	82 prs.	2007	23.0	37 prs.	8.3
2b	White Ibis	B	743 prs.	2007	4.4	255 prs.	1.5
2a	Tricolored Heron	B	163 prs.	2007	16.6	69 prs.	6.5
2a	Snowy Egret	B	101 prs.	2007	25.4	36 prs.	1.4
2a	Little Blue Heron	B	66 prs.	2007	6.1	26 prs.	2.3
3eii	Laughing Gull	B	1,950 prs.	2007	9.8	1,995 prs.	9.0
3ei	waterbirds	B	3,258 prs.	2007	—	—	—

B = breeding

Holly Shelter–Angola Bay



Location: Pender and Duplin Counties

Total Size: 71,673.1 ha (177,108.2 acres)

Site Description: The Holly Shelter–Angola Bay site is an area of extensive forested habitats, including pine savannahs, pocosin, and cypress swamp. Most of the site is part of the state-owned game lands system managed by the North Carolina Wildlife Resources Commission. The site has one of the state's most important longleaf pine communities and is one of the state's best examples of pocosin habitats. The site is managed primarily to provide wildlife habitat and recreational opportunities for the public (primarily hunting). Much of the site is remote and inaccessible, but a series of roads are open to the public during fall and winter seasons.

Habitats: Coniferous forest, deciduous forest, shrubland, nontidal wetland, swamp forest, river.

Land Use: Wildlife conservation, hunting, forestry.

Primary Threats: Fire suppression, introduced species.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: Surrounding residential and commercial development isolates the state-owned game land from other habitat units. The area is subject to encroachments, due to many surrounding landowners and amount of boundary. Degradation of water quality from development and industrial uses may impact the Northeast Cape Fear River and other tributaries of the Cape Fear. This area continues to grow in conserved lands as tracts are added to state game lands and other parcels are added for conservation.

Birds: The site supports at least 36 breeding groups (2006 data) of Red-cockaded Woodpecker and has recently been recognized as a globally significant site for this species. Additional groups are suspected to exist within inaccessible pocosin habitats. The swamp forest along the Northeast Cape Fear River is thought to support significant populations of Prothonotary Warblers, Northern Parulas, Yellow-throated Warblers, and others, along with Wood Ducks and Barred Owls, but recent data is not available for these species. Much of the area is composed of pocosin habitat and support bird species associated with this habitat type (Criterion NC4). Breeding Bird Survey and eBird data indicate small populations of all three nesting nightjar species (Whip-poor-will, Chuck-will's-widow, and Common Nighthawk), but more study is needed.

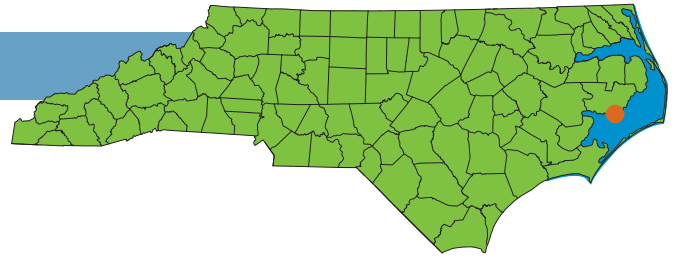
Monitoring and Research: Two Breeding Bird Survey routes are adjacent to this Important Bird Area. Species-specific surveys are needed for Bachman's Sparrow, possible breeding Henslow's Sparrow, and nightjars. Active management of longleaf pine and monitoring continues and is coordinated by the North Carolina Wildlife Resources Commission. Additional research on Red-cockaded Woodpeckers, among other species, is conducted by state agencies and universities. Surveys of breeding songbirds in the swamp forest along the Northeast Cape Fear River are needed.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004–7
2a	Northern Bobwhite	B	54	2007	57.0
1	Red-cockaded Woodpecker	all	36+ (active clusters)	2006	—
2a	Red-headed Woodpecker	all	10	2005	4.0
2b	Brown-headed Nuthatch	all	23	2007	14.5
2b	Prairie Warbler	B	19	2007	22.0
2a	Bachman's Sparrow	all	5+	2009	—
3g	migratory landbirds	all	—	—	—

B = breeding

Judith Island Point



Location: Hyde County (no detailed map shown)

Total Size: 26.0 ha (64.2 acres)

Site Description: Judith Island Point is a natural island located in northern Pamlico Sound. The site is primarily low saltmarsh dominated by salt grass (*Distichlis spicata*) and saltmeadow cordgrass (*Spartina patens*). Forster's Terns have used the site for many years, generally nesting on wrack deposited on the marsh during storm tides.

Habitat: Saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, erosion, sea level rise.

Protection Status: The site is protected and managed by the United States Fish and Wildlife Service.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Human disturbance is a significant concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

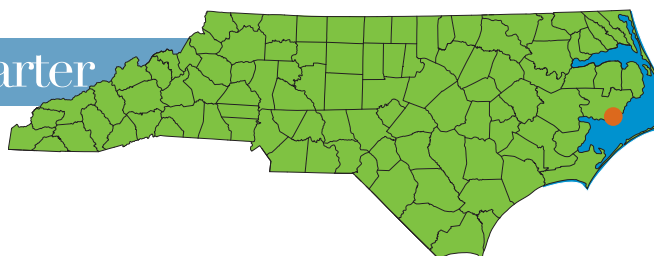
Birds: Judith Island Point is a nesting site for Forster's Terns. Common Terns have been recorded nesting in some years. Some birds appear to be moving over to Hog Island as Judith Island continues to erode.

Monitoring and Research: This site is monitored by the United States Fish and Wildlife Service.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	85 prs.	2007	8.2	57 prs.	5.8
B = breeding							

Lake Mattamuskeet–Swanquarter



Location: Hyde County

Total Size: 68,747.7 ha (169,879.2 acres)

Site Description: Lake Mattamuskeet National Wildlife Refuge, established in 1934, is located in Hyde County near the town of New Holland. Lake Mattamuskeet is approximately 16,200 ha (40,031 acres) in size. An additional 4,120 ha (10,181 acres) make up the rest of the refuge. Lake Mattamuskeet is best known for waterfowl. Canada Geese, Tundra Swans, and 22 species of ducks winter on and around the refuge. The lake, managed impoundments, and nearby agricultural lands provide important habitat for foraging and resting. The site has approximately 1,050 ha (2,595 acres) of managed impoundments that support waterfowl and shorebirds. The site also includes the Swanquarter National Wildlife Refuge, Gull Rock Game Lands, and privately owned tracts.

Habitats: Lake, managed impoundments, freshwater marsh, agriculture, deciduous forest, coniferous forest.

Land Use: Wildlife conservation, hunting, recreation and tourism.

Primary Threats: Alteration of lake water levels, saltwater intrusion, climate change, water pollution.

Protection Status: Most of this site is protected and managed by the United States Fish and Wildlife Service and the North Carolina Wildlife Resources Commission. The site also

includes significant private lands.

Conservation Issues: The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place. Recent changes to lake levels have prompted the adoption of a water control plan to maintain levels high enough for recreation, vegetation growth for waterfowl forage, and for fisheries. The area around the refuges has been explored for commercial wind development.

Birds: Lake Mattamuskeet is one of North Carolina's most important sites for wintering waterfowl, especially migratory populations of Canada Geese. The forests along the fringe of the lake are excellent for landbirds during migration and winter. The extensive marshes and impoundments provide habitat for a variety of marsh birds including wintering Clapper, King, and Virginia Rails, and Sora. During low lake levels, the site supports a wide variety of migrant and wintering shorebirds, often numbering in the thousands.

Monitoring and Research: The site is monitored by the United States Fish and Wildlife Service. Midwinter waterfowl surveys are conducted by the United States Fish and Wildlife Service. The Mattamuskeet Breeding Bird Survey route and Christmas Bird Count are within this Important Bird Area.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-9
3a	Canada Goose	W	7,970	2009	4,488
3a	Snow Goose	W	7,600	2009	3,483
2b	Tundra Swan	W	29,094	2009	26,470
3a	Mallard	W	1,087	2009	1,523
3a	Gadwall	W	4,497	2009	2,164
3a	Green-winged Teal	W	33,596	2009	37,910
3a	American Wigeon	W	8,881	2009	7,800
2b	American Black Duck	W	2,911	2009	3,022
3a	Northern Pintail	W	27,941	2009	25,084
3a	Northern Shoveler	W	956	2009	457
3a	Ring-necked Duck	W	25,394	2009	11,254
2b	Wood Duck	W	72	2008	232
3ei	American Coot	W	934	2009	8,091
3b	waterfowl	FM, W	151,665	2009	137,524
3d	shorebirds	FM, W	11,834	2009	—
1	Bald Eagle	all	39	2008	37
3a	Northern Harrier	W	52	2008	49
3a	American Kestrel	W	53	2008	43

FM = fall migration; W = winter

Lea-Hutaff Island

Location: Pender County

Total Size: 2,201.6 ha (5,440.7 acres)

Site Description: Lea and Hutaff Islands are undeveloped barrier islands and associated saltmarsh located between Figure 8 Island and Topsail Island. The islands were joined following the closure of Old Topsail Inlet and are characterized by dunes, swales, and overwash fans. The marsh is a tidally flooded saltmarsh and creek system with intertidal mud flats. Lea-Hutaff Island represents one of North Carolina's best barrier island habitats.

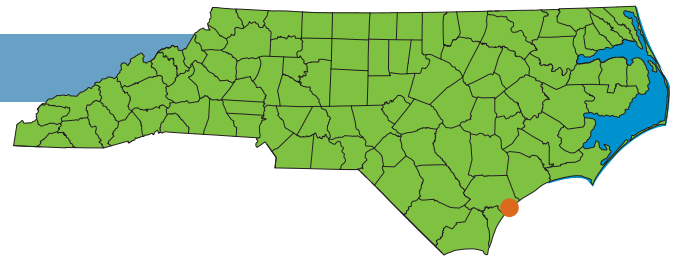
Habitats: Beach, saltmarsh, sandflat and mudflat, dune.

Land Use: Recreation and tourism, wildlife conservation, fishing.

Primary Threats: Human and dog disturbance to nesting, migratory, and wintering birds, residential development, predation.

Protection Status: The Lea Island State Natural Area, established in 2003, includes most of Lea Island. The remaining area of Lea-Hutaff Island is privately owned. The protection of Lea Island is part of a long-standing partnership between Audubon North Carolina, North Carolina Coastal Land Trust, and the State of North Carolina. In 2010, Audubon North Carolina acquired a 35.7-acre tract on Lea

Key Bird Species



Island that nearly doubled the acreage already protected. Audubon North Carolina monitors the site year round.

Conservation Issues: Both islands have heavy recreational use during the warmer months, especially during breeding season. Audubon posts and patrols the waterbird and shorebird nesting areas.

Birds: This excellent example of a barrier island system hosts a complete assemblage of species associated with that habitat type (Criterion NC4). The site supports thousands of shorebirds during migration and winter, hundreds of beach-nesting seabirds and shorebirds, wading birds, waterfowl, and marsh birds. It is the southernmost regular breeding site for Piping Plover; six individually banded plovers from the Great Lakes population have been recorded during migration and winter. Clapper Rails, Saltmarsh Sparrow, Nelson's Sparrow, and Seaside Sparrow are abundant. This Important Bird Area is a globally significant site for Saltmarsh Sparrow.

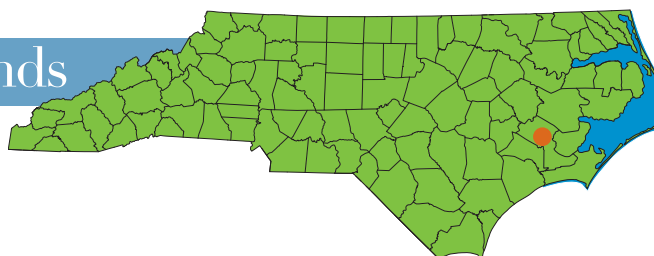
Monitoring and Research: Audubon North Carolina monitors the site. Studies of Seaside, Nelson's, and Saltmarsh Sparrows are conducted by the University of North Carolina at Wilmington. Shorebird surveys are ongoing.

Criterion	Species	Season	Number	Year	% of NC Population 2007**	Average Number 2001–7**	Avg % of NC Population 2001–7**
2a	Least Tern	B	290 prs.	2009	1.8	169 prs.	7.8
2a	Black Skimmer	FM	3,200	2009	—	—	—
2a	Black Skimmer	B	45 prs.	2009	4.5	61 prs.	9.9
2a	Common Tern	FM	1,250	2008	—	—	—
2a	Common Tern	B	13 prs.	2009	0.2	5 prs.	2.1
1	Piping Plover	FM	39	2008	—	—	—
1	Piping Plover	B	4 prs.	2009	6.3	4 prs.	—
3d	shorebirds	FM, SM, W	2,400	2008	—	—	—
2a	Wilson's Plover	B	14 prs.	2009	2.4	25 prs.	14.0
2a	Wilson's Plover	FM	32	2008	—	—	—
2a	American Oystercatcher	B	12 prs.	2009	1.8	10 prs.	3.2
2a	Red Knot	SM	113	2009	—	—	—
2a	American Bittern	FM, W	7–12	2008	—	—	—
2b	Nelson's Sparrow	FM, W	82	2007	—	—	—
1	Saltmarsh Sparrow	FM, W	41	2007	—	—	—
2a	Seaside Sparrow	FM, W	51	2007	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

**2007 was the last coastwide census and thus the last state population estimate. Data presented are the most recent (2009), but the population and averages cover only 2001–7, for which statewide population estimates were available.

Lower Neuse River Bottomlands



Location: Craven County

Total Size: 17,700.7 ha (43,739.3 acres)

Site Description: The Neuse River originates in Person County and flows approximately 320 km (199 miles) to Pamlico Sound. The lower Neuse River Bottomlands Important Bird Area includes the area along the Neuse in Craven County between New Bern and Grifton. The site consists of extensive cypress and bottomland hardwood forest bordered by pine forest along the Neuse River. Weyerhaeuser's Cool Springs Environmental Education Center is also part of the site. The lower Neuse is among the most diverse areas on the North Carolina coast.

Habitats: Bottomland hardwood forest, cypress-tupelo-gum swamp forest, pine forest, mixed hardwood forest, agriculture.

Land Use: Wildlife conservation, other conservation, education, hunting, and logging.

Primary Threats: Water quality (pollution, sedimentation, disease), introduced species, cowbird parasitism.

Protection Status: The site includes an area of approximately 690 ha (1,705 acres) called Cool Springs, which is protected and managed by Weyerhaeuser, Inc. It also includes the Neuse River Game Lands. The majority of the site is privately owned. Organizations such as the Neuse River Foundation are working to protect and improve water quality throughout the Neuse River basin.

Conservation Issues: The Neuse River has been listed among the 10 most threatened rivers in North America (2007). Excessive nutrients, primarily nitrogen, in addition to organics and sediments from runoff and other sources, threaten water quality in the river. Swamp forests within this Important Bird Area are essential to North Carolina's birds. More extensive surveys of landbirds, waterbirds, and waterfowl during breeding season, migration periods, and winter are needed. As recently as late summer 2009, over 20 million fish died from low oxygen levels along the lower Neuse.

Birds: This site has significant acreage of cypress-tupelo-gum swamp forest and supports the suite of species associated with these natural communities (Criterion NC4). It also supports a significant concentration and diversity of neotropical migrant landbirds. Over 100 species have been recorded at Weyerhaeuser's Cool Springs Environmental Education Center, including 20 species of warbler, 12 of which breed on the site. Recent data on the abundance of birds is not available.

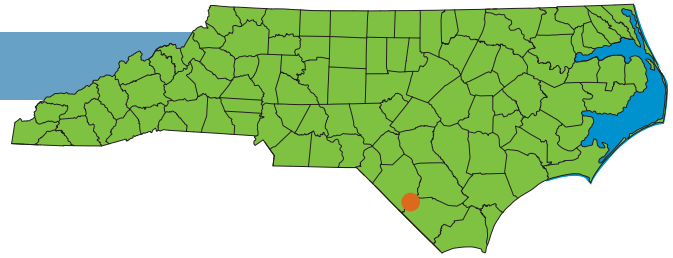
Monitoring and Research: A portion of this site is monitored as part of Weyerhaeuser's Cool Springs Environmental Education Center. Some general inventories of breeding birds have been conducted in the past, but more detailed surveys for birds are needed.

Key Bird Species

Criterion	Species	Season	Number
2b	Prothonotary Warbler	B	—
2a	Swainson's Warbler	B	—
3a	Summer Tanager	B	—
2b	Wood Duck	all	—
2b	Wood Thrush	B	—
2b	Northern Parula	B	—
2b	Hooded Warbler	B	—
3g	migratory landbirds	SM, FM	—

B = breeding; FM = fall migration; SM = spring migration

Lumber River Bottomlands



Location: Robeson and Columbus Counties

Total Size: 30,234.9 ha (74,712.0 acres)

Site Description: The Lumber River is a winding blackwater river that originates in the Sandhills region of North Carolina then flows through the southern coastal plain and into the Pee Dee River in South Carolina, and eventually to the Atlantic. The river is designated a State Natural and Scenic River and a National Wild and Scenic River [130 km (81 miles)]. The Lumber River has a long history of habitation by pre- and post-Columbian Native Americans, who apparently called the river “Lumbee.” It was not until 1809 that the river’s name was officially changed to “Lumber,” likely reflecting the heavy use of the river for transportation of timber products. Like many riverine forests in the coastal plain of North Carolina, the forest along the Lumber River was heavily logged in the early 1900s. Nevertheless, the river’s extensive second-growth forest is important to birds associated with the various habitat types within the floodplain.

Habitats: Bottomland hardwood forest, cypress-tupelo-gum swamp forest, blackwater river.

Land Use: Wildlife conservation, other conservation, hunting, fishing, recreation.

Primary Threats: Introduced species, logging, water pollution.

Protection Status: The site includes Lumber River State Park, other conservation lands, and extensive private holdings.

Conservation Issues: Logging and conversion of forest to other uses is a threat to birds and bird habitats. Water quality, including point and non-point source pollution, is a concern. Recent additions to Lumber River State Park have protected important habitats for birds.

Birds: This bottomland system provides excellent habitat for breeding and migrating songbirds, breeding Wood Ducks, and waterbirds associated with bottomland forest habitats. The bottomland hardwood forest and cypress-tupelo-gum swamp forest are extensive and excellent examples of these habitat types (Criterion NC4). Recent surveys have documented over 120 species of birds for the site and more than 70 species during the breeding season. Northern Parula, Prothonotary, and Yellow-throated Warblers are well represented at high densities, as well as other species typical of this habitat type.

Monitoring and Research: A portion of this site is monitored by North Carolina State Parks. In 2008, inland heronry surveys were completed by the North Carolina Wildlife Resources Commission via aerial counts followed by ground-truthing.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Wood Stork	Spring, summer nonbreeding	21	2008
3a	Anhinga	B	100+	2008
3a	Cattle Egret	B	295	2008
2b	Wood Duck	all	350	2008
2b	Northern Parula	B	34	2009
2b	Prothonotary Warbler	B	54	2009

B = breeding

Mackay Island

Location: Currituck County

Total Size: 3,059.0 ha (7,559.0 acres)

Site Description: This site includes the Mackay Island National Wildlife Refuge, located on Knotts Island, and privately owned tracts outside of the refuge. The refuge was established in 1960 for migrant and wintering waterfowl, but it provides habitat for many species of marsh birds and wading birds as well. The key feature of the refuge is Great Marsh, which is brackish marsh dominated by cattail (*Typha spp.*), black needlerush, and giant cordgrass. Managed impoundments provide additional habitat for birds.

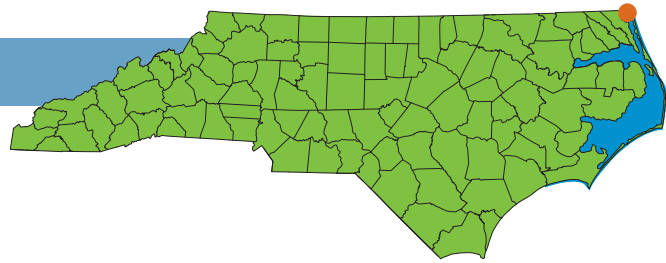
Habitats: Brackish marsh, managed impoundments, mixed forest, agricultural lands.

Land Use: Wildlife conservation.

Primary Threats: Nonnative plants, water quality, sea level rise.

Protection Status: Most of the site is protected and managed by the United States Fish and Wildlife Service.

Conservation Issues: The refuge itself has few conservation issues. Water levels in the managed impoundments are maintained at optimum levels for waterfowl and other birds. The marsh is burned periodically to improve habitat for waterfowl. Outside of the refuge, water quality associated with increased turbidity and introduction of salt water is one



of the greatest issues. Audubon North Carolina, The Nature Conservancy, and other organizations have formed the Albemarle-Pamlico Conservation and Communities Cooperative to plan for conservation in the region, including planning for sea level rise. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place. Further studies of water quality in northern Currituck Sound are warranted.

Birds: Mackay Island National Wildlife Refuge supports significant concentrations of wintering waterfowl. Snow Goose is the most abundant species. The site is probably one of the state's best sites for brackish marsh birds such as King Rails, Virginia Rails, and Least Bitterns.

Monitoring and Research: This site is monitored by the United States Fish and Wildlife Service. Midwinter waterfowl surveys are conducted intermittently at this refuge. Staff with the Southeast GAP program have been field-testing methods used to predict distribution of cryptic and hard-to-detect species using King Rail as the study species here since 2007.

Key Bird Species

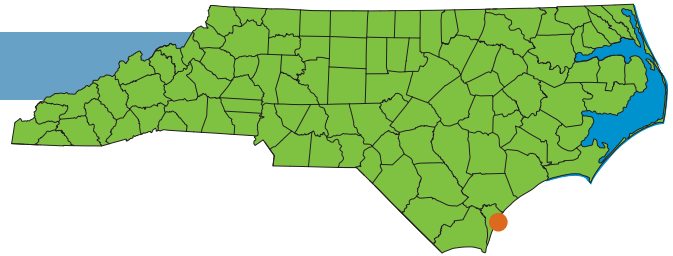
Criterion	Species	Season	Number	Year	Average Number 2004-7
3b	Snow Goose	W	1,400	2007	7,783
3b	American Black Duck	W	1,057	2007	1,282
3b	Green-winged Teal	W	108	2007	1,315
3b	Northern Pintail	W	329	2007	1,051
2b	Tundra Swan	W	475	2007	343
3b	waterfowl	W	5,297	2007	14,917
2b	King Rail	all	—	—	—
2b	Least Bittern	B, SM	—	—	—
3a	Virginia Rail	all	—	—	—

B = breeding; SM = spring migration; W = winter

Masonboro Island

Location: New Hanover County

Total Size: 1,955.4 ha (4,831.9 acres)



Site Description: Masonboro Island is a low-lying, undeveloped barrier island 13 km (8 miles) long, located between Wrightsville Beach and Carolina Beach. It is one of the few remaining undeveloped and relatively undisturbed barrier islands along North Carolina's coast. The barrier island and associated tidal marshes, creeks, and bays provide a diverse array of habitats for many species of birds throughout the year. A jetty built to maintain a navigable channel in Masonboro Inlet is one of the few places in North Carolina with wintering Purple Sandpipers and often a Great Cormorant or two. At the same time, the jetty causes accelerated erosion on the beachfront, which must receive dredged sand periodically to replace sand lost to erosion. Masonboro Island is a popular destination for recreational pursuits throughout the year.

Habitats: Barrier beach and dune, saltmarsh and estuary, sandflat and mudflat, maritime shrub thicket, dredged-sand disposal areas.

Land Use: Conservation, recreation, wildlife conservation, dredged-material deposition.

Primary Threats: Disturbance to birds, recreational overuse, introduced and overabundant mammalian predators.

Protection Status: The site is protected and managed by the North Carolina National Estuarine Research Reserve program.

Conservation Issues: Disturbance to nesting birds is a critical

concern. The island has heavy recreational use during the warmer months, especially on the northern and southern ends. This use has displaced nesting birds. In recent years, recreational use and unleashed pets appear to be increasing in the more remote areas of the island. This presents a significant problem for beach-nesting birds that have already abandoned the more heavily used areas of the island. Abundant raccoons and red foxes threaten nesting shorebirds and waterbirds. Most nesting shorebirds and waterbirds are not successful at fledging chicks.

Birds: Masonboro Island supports the suite of bird species typically associated with barrier island habitats (Criterion NC4). It is a key site for migrating and wintering shorebirds. Wilson's Plover, American Oystercatcher, and Willets are abundant and nest throughout the site; no formal surveys have been conducted for these species. It is an important site for migrating and wintering Seaside, Nelson's, and Saltmarsh Sparrows. Clapper Rails are abundant throughout the marsh year-round; Sora and Virginia Rails are present as well.

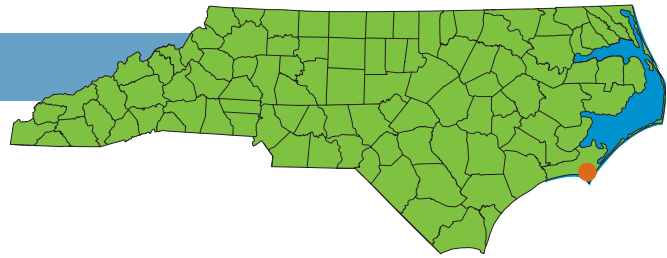
Monitoring and Research: This site is managed and monitored by the North Carolina National Estuarine Research Reserve, with periodic monitoring by Audubon North Carolina. Research on marsh sparrows continues through the University of North Carolina at Wilmington. In addition, research on water quality, sea turtle monitoring, and invasive plant species is conducted through the North Carolina National Estuarine Research Reserve program and other partners.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
1	Piping Plover	W	3	2009	—	—	—
2a	Wilson's Plover	B	21 prs.	2007	—	—	—
2a	Red Knot	SM	27	2009	—	—	—
2a	Black Skimmer	FM	2,500	2009	—	—	—
2a	Black Skimmer	B	0 prs.	2007	0	18 prs.	2.80
2a	Least Tern	B	2 prs.	2007	—	81 prs.	3.00
3d	shorebirds	FM, W, SM	3,000	2007	—	—	—
2a	American Oystercatcher	B	42 prs.	2007	—	—	—
2b	Seaside Sparrow	FM, W	100	2007	—	—	—
2b	Nelson's Sparrow	FM	70	2007	—	—	—
1	Saltmarsh Sparrow	FM, W	27	2007	—	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

Middle Marsh



Location: Carteret County (no detailed map shown)

Total Size: 311.6 ha (769.9 acres)

Site Description: Middle Marsh is a series of marsh islands located between Beaufort and Harkers Island. The entire marsh complex is a component of the Rachel Carson Estuarine Reserve. Most of the site is regularly flooded saltmarsh dominated by smooth cordgrass (*Spartina alterniflora*). The site has two elevated areas with shrub thickets.

Habitats: Shrub thicket, saltmarsh.

Land Use: Wildlife conservation, fishing, hunting.

Primary Threats: Disturbance to birds.

Protection Status: The site is protected and managed by the North Carolina National Estuarine Research Reserve program.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a primary concern. Surveys for marsh birds during migration and winter are needed.

Birds: The site has long supported nesting waterbirds. For many years, shrub thickets supported a mixed species colony of wading birds, but numbers have dwindled to just a few in recent years. Forster's Terns have nested on wrack in the marsh for about 20 years. The site supports the third largest colony of Forster's Terns in North Carolina.

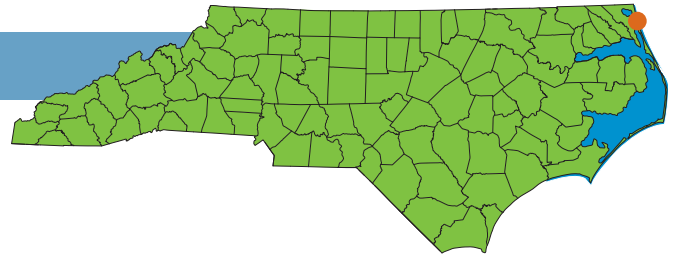
Monitoring and Research: This site is monitored by the North Carolina National Estuarine Research Reserve program.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	American Oystercatcher	all	11 prs.	2007	3.2	6 prs.	1.7
3a	Forster's Tern	B	105 prs.	2007	10.2	58 prs.	5.9
3a	Black-crowned Night Heron	B	10 prs.	2007	5.6	—	—
3a	Great Egret	B	38 prs.	2007	1.8	18 prs.	2.3

B = breeding

Monkey Island



Location: Currituck County (no detailed map shown)

Total Size: 6.0 ha (14.8 acres)

Site Description: Monkey Island is a remote natural island located in the middle of Currituck Sound. The island was once the site of the Monkey Island Hunting Club, whose building remains standing. Approximately half of the island is forest dominated by pine, live oak, red cedar, and yaupon. The site has long supported a large colony of wading birds.

Habitats: Shrub thicket.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion, and recreational development and overuse.

Protection Status: The site is currently under the jurisdiction of the North Carolina National Estuarine Research Reserve program.

Conservation Issues: The island is surrounded by a wooden bulkhead that protects it from erosion. The bulkhead is in need of repair: it has collapsed in many places, and in those places the shore is eroding. A second issue is human disturbance, which can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Monkey Island supports a mixed-species wading bird colony that includes Great Egret, Snowy Egret, Little Blue Heron, Tricolored Heron, Cattle Egret, and Glossy Ibis. It is North Carolina's northernmost wading bird colony and the only such colony in Currituck Sound. The site supported the state's largest colony of Little Blue Herons and Great Egrets in 2007, and the third largest colony of Snowy Egrets and Glossy Ibis.

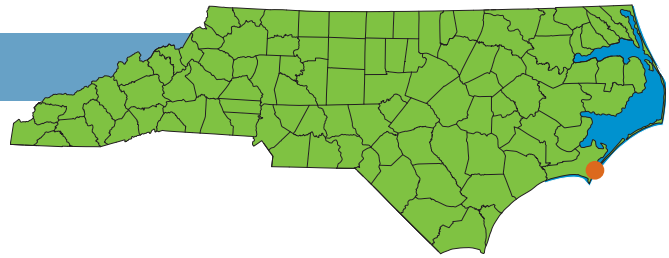
Monitoring and Research: This site is monitored by the United States Fish and Wildlife Service and the North Carolina National Estuarine Research Reserve program.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Great Egret	B	751 prs.	2007	36.4	635 prs.	34.8
2a	Little Blue Heron	B	332 prs.	2007	29.6	307 prs.	24.5
2a	Snowy Egret	B	69 prs.	2007	17.4	86 prs.	22.2
3a	Cattle Egret	B	74 prs.	2007	6.8	96 prs.	19.2
2a	Glossy Ibis	B	80 prs.	2007	22.5	69 prs.	16.1
2a	Tricolored Heron	B	20 prs.	2007	2.0	19 prs.	1.6
3ei	waterbirds	B	1,327 prs.	2007	—	1,183 prs.	—

B = breeding

Morgan Island



Location: Carteret County (no detailed map shown)

Total Size: 22.5 ha (55.5 acres)

Site Description: Morgan Island is a small island near Cape Lookout. The upland portion of the island was built of dredged sand. Because more than 10 years have elapsed since the last deposit of dredged sand, significant shrub thickets have developed. These thickets support several thousand nesting wading birds annually.

Habitats: Shrubland, bare sand, grassland, saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds.

Protection Status: The site is protected by the National Park Service.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. It is in an area of high watercraft usage, so human disturbances are a concern. Human disturbance can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Morgan Island has long supported nesting wading birds and other waterbirds. The site supports 10 species of nesting colonial waterbirds and approximately 2,000–2,500 nesting pairs. The site supports the state's second largest colony of White Ibis and Little Blue Herons.

Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Little Blue Heron	B	307 prs.	2007	27.6	412 prs.	25.1
2a	Tricolored Heron	B	84 prs.	2007	8.5	326 prs.	22.0
3a	Cattle Egret	B	113 prs.	2007	10.5	102 prs.	15.4
3a	Great Egret	B	128 prs.	2007	6.2	180 prs.	9.9
2a	Snowy Egret	B	5 prs.	2007	1.3	40 prs.	10.2
2b	White Ibis	B	1,442 prs.	2007	8.5	955 prs.	5.9
3a	Herring Gull	B	73 prs.	2007	11.6	56 prs.	8.2
2a	Glossy Ibis	B	10 prs.	2007	2.8	15 prs.	3.3
3a	Black-crowned Night Heron	B	54 prs.	2007	30.5	67 prs.	27.5
3ei	waterbirds	B	2,216 prs.	2007	—	2,820 prs.	—

B = breeding

New Dump Island

Location: Carteret County (no detailed map shown)

Total Size: 29.2 ha (72.0 acres)

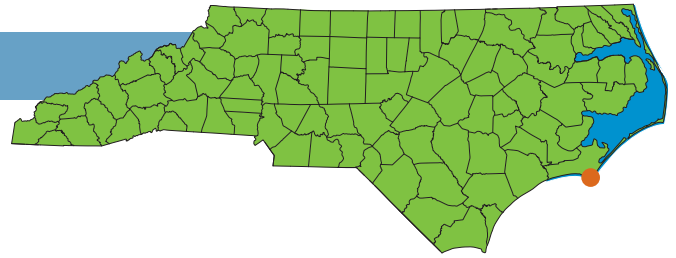
Site Description: New Dump Island is an artificial, undiked, dredged-material island in Core Sound. The island has supported a wide variety of colonial waterbirds over the years, depending on sand renourishment frequency. In recent years, storms and management by the North Carolina Wildlife Resources Commission have created ideal early-successional habitat that supports nesting pelicans, terns, and skimmers.

Habitats: Dredged sand, sparse to moderate-density vegetation.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.



Conservation Issues: The availability of sand to maintain the island and early-succession nesting habitat is a concern. The island is posted and patrolled from April 1 to August 31 to prevent disturbance to nesting birds. Human disturbance is a significant concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: New Dump Island has experienced significant changes in recent years. The island has supported large colonies of ground-nesting waterbirds including Brown Pelicans, terns, and skimmers, but few terns and skimmers nested in 2007. This was likely the result of vegetation succession. This is still one of the state's most frequented islands for nesting waterbirds. It supported the state's second-largest colony of Brown Pelicans in 2007.

Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission. Royal Tern and Sandwich Tern chicks have been banded annually for many years.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2b	Royal Tern	B	10 prs.	2007	<0.1	1,076 prs.	9.2
2b	Sandwich Tern	B	0 prs.	2007	0.0	347 prs.	10.9
2a	Brown Pelican	B	617 prs.	2007	17.9	827 prs.	17.2
1	Gull-billed Tern	B	1 pr.	2007	1.1	31 prs.	13.2
2a	Common Tern	B	2 prs.	2007	0.4	22 prs.	2.5
2a	Black Skimmer	B	16 prs.	2007	2.4	21 prs.	3.5
3a	Great Egret	B	20 prs.	2007	1.0	6 prs.	0.3
3a	Herring Gull	B	33 prs.	2007	5.2	12 prs.	1.9
2a	Snowy Egret	B	16 prs.	2007	4.0	7 prs.	1.9
3a	Black-crowned Night Heron	B	7 prs.	2007	4.0	2 prs.	1.4
3a	Cattle Egret	B	20 prs.	2007	1.9	6 prs.	0.6
3ei	waterbirds	B	773 prs.	2007	—	2,275 prs.	—

B = breeding

North Pelican Island

Location: New Hanover County (no detailed map shown)

Total Size: 81.3 ha (200.9 acres)

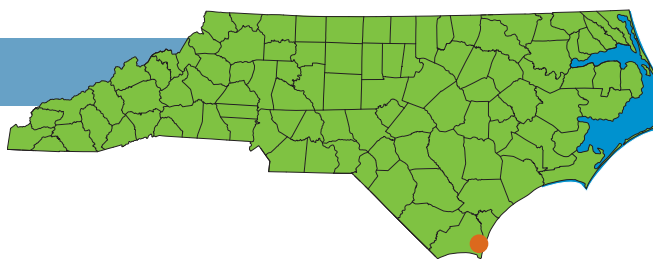
Site Description: North Pelican Island comprises in fact several islands, located in the lower Cape Fear River, south of Wilmington. The cluster is located along the Cape Fear River channel and has received deposits of dredged sand in the distant past. No recent deposit of dredged sand has occurred, as a result of which shrub thickets have formed on the uplands. These shrub thickets have supported nesting wading birds for many years. The site is posted and patrolled, and is off limits to all visitors.

Habitats: Saltmarsh, shrubland.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds.

Protection Status: The site is protected and managed by Audubon North Carolina and the North Carolina Wildlife Resources Commission.



Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Human disturbance is a significant concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: The North Pelican Island complex supports nesting wading birds, Brown Pelicans, and Laughing Gulls. Nine species of wading birds nest on the site. In 2007 the site supported the state's largest colony of nesting Brown Pelicans. In 2008 and 2009, White Ibis from the Battery Island colony moved to this site. The uplands are surrounded by contiguous high and low saltmarsh forming one island. Marsh Wrens nest in the marsh, along with Clapper Rails. Several pairs of Willets and American Oystercatchers also breed on the site.

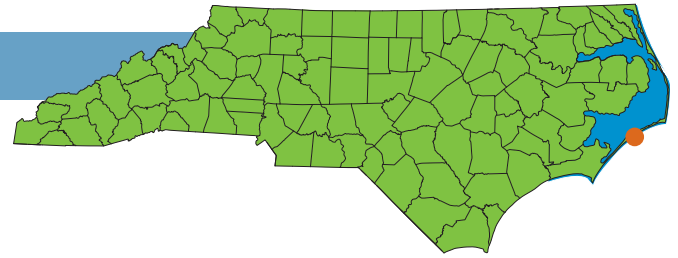
Monitoring and Research: This site is monitored by Audubon North Carolina in cooperation with the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Brown Pelican	B	723 prs.	2007	20.9	713 prs.	16.8
3a	Great Egret	B	76 prs.	2007	4.5	133 prs.	7.3
2a	Snowy Egret	B	40 prs.	2007	19.2	59 prs.	15.0
2a	Tricolored Heron	B	72 prs.	2007	7.4	90 prs.	6.9
3a	Black-crowned Night Heron	B	10 prs.	2007	5.6	16 prs.	6.4
3a	Cattle Egret	B	207 prs.	2007	43.2	89 prs.	19.5
3ei	waterbirds	B	1,136 prs.	2007	—	1,126 prs.	—

B = breeding

North Rock Island



Location: Carteret County (no detailed map shown)

Total Size: 55.3 ha (136.6 acres)

Site Description: North Rock Island is a natural estuarine island located in southeastern Pamlico Sound. The island is a National Audubon Society Sanctuary and has a long history of use by nesting colonial waterbirds. The IBA includes the island and the surrounding open water.

Habitats: High saltmarsh, oyster shell “rakes,” open water, submerged aquatic vegetation.

Land Use: Wildlife conservation.

Primary Threats: Erosion, disturbance to nesting birds.

Protection Status: The site is protected and managed by the Audubon North Carolina.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from March 15 to September 1. Erosion and disturbance to nesting birds are primary concerns. The number of nesting Herring and Great Black-backed Gulls continues to increase. The impact of these gulls on other nesting waterbirds should be studied.

Birds: North Rock Island has long been a nesting site for wading birds, terns, and gulls. Forster’s Terns nest in most seasons, but did not nest in 2007. American Oystercatchers breed and winter on the island, with eight nesting pairs in 2009. The island has eroded significantly and broken into fragments in recent years. It is progressively becoming less suitable for wading birds as shrub thickets disappear. This has likely contributed to the decline in the number of nesting wading birds in recent years. Royal and Sandwich Terns nest on the island inconsistently. The intertidal sand and mud flats surrounding the island support many shorebirds and waterbirds during migration. Shallow grass flats surrounding the island support one of the state’s largest concentrations of wintering Brant.

Monitoring and Research: This site is monitored by Audubon North Carolina. Research is ongoing on waterbirds and shorebirds.

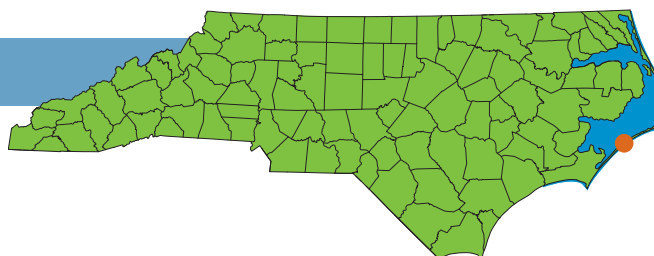
Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2b	Brant	W	582	2009	—	—	—
3a	Forster’s Tern	B	18 prs.	2004	2.2 *	13 prs.	1.3
1	Common Tern	B	43 prs.	2007	8.6	—	—
3a	Great Black-backed Gull	B	3 prs.	2007	1.8	5 prs.	2.7
3a	Herring Gull	B	14 prs.	2007	2.2	32 prs.	4.4
2a	American Oystercatcher	B	8 prs.	2009	—	—	—

B = breeding; W = winter

*Percentage of NC population 2004

Ocracoke Village Heronry



Location: Hyde County (no detailed map shown)

Total Size: 4.0 ha (9.9 acres)

Site Description: The Ocracoke Village Heronry is located on the outskirts of Ocracoke Village at Horse Pen Point. The original Ocracoke Village heronry colony was discovered near Springer's Point in the late 1980s. For more than two decades wading birds nested at this site, a stand of red cedars and wax myrtle with scattered pines surrounded by low and high marsh. The colony had been declining for several years and, in 2007, most wading birds from the Springer's Point site moved to the northeastern side of the village at Horse Pen Point. In 2009, the Horse Pen Point colony remained active.

Habitats: Shrub thicket, saltmarsh.

Land Use: Wildlife conservation, recreation and tourism.

Primary Threats: Disturbance to birds, predation, recreational overuse.

Protection Status: The North Carolina Coastal Land Trust purchased about half of the Springer's Point colony site for conservation in 2003. The remaining acreage is privately owned. The site was difficult to reach and was not posted or protected from human disturbances. The new location at Horse Pen Point is privately owned in part, and in part National Park Service property. It is not posted.

Conservation Issues: Disturbances from local tours and others visiting the heronry is a concern. The colony site should be posted, and human disturbances should be strongly discouraged. In addition, the portion of the site in private ownership should be acquired and protected. Predation from raccoons and possibly feral cats has never been investigated, but both are present in the vicinity and could have contributed to the decline in the Springer's Point colony. These predators may eventually threaten the colony at Horse Pen Point.

Birds: The Springer's Point colony has supported a mixed-species wading bird colony since at least 1989. The wading birds moved to the new site at Horse Pen Point in 2007, where they continue to nest. The number of nesting wading birds increased through the 1990s, but has declined in the past five years. Nevertheless, the new site remains important for nesting wading birds.

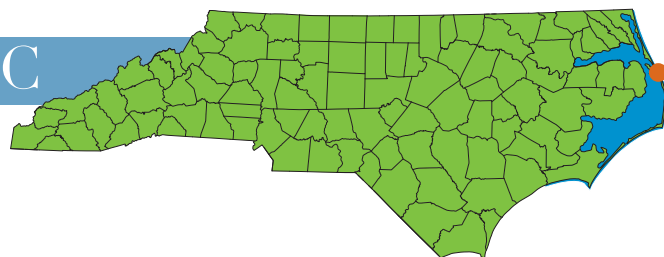
Monitoring and Research: This site is monitored by local volunteers.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Great Egret	B	23 prs.	2007	1.1	23 prs.	1.2
2a	Snowy Egret	B	11 prs.	2007	2.8	15 prs.	3.5
2a	Tricolored Heron	B	14 prs.	2007	1.4	21 prs.	1.4
2a	Little Blue Heron	B	61 prs.	2007	5.5	46 prs.	3.7
3a	Black-crowned Night Heron	B	12 prs.	2007	6.8	15 prs.	6.1

B = breeding

Old House Channel, Island C



Location: Dare County (no detailed map shown)

Total Size: 54.1 ha (133.6 acres)

Site Description: Island C is an undiked, dredged-material island located in northeastern Pamlico Sound, near Oregon Inlet. The site consists of fairly dense shrub thickets dominated by wax myrtle. It is rarely used for the deposition of dredged material and depositing any would jeopardize the existence of nesting habitat for wading birds.

Habitats: Shrubland, bare sand, grassland.

Land Use: Hunting, recreation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is in undetermined ownership and is not afforded protection.

Conservation Issues: Protection of habitats used by nesting waterbirds should be a priority for this island. Human disturbance is a significant concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: In the past, the site supported a large colony of nesting wading birds. It was the second largest colony of White Ibises in the state in 2001. After 2001, the number of wading birds on this site began to decline. By 2007, White Ibis, Great Egret, Tricolored Heron, Snowy Egret, and Little Blue Heron had disappeared. The shoals northeast of the island are sometimes used by wintering Piping Plovers.

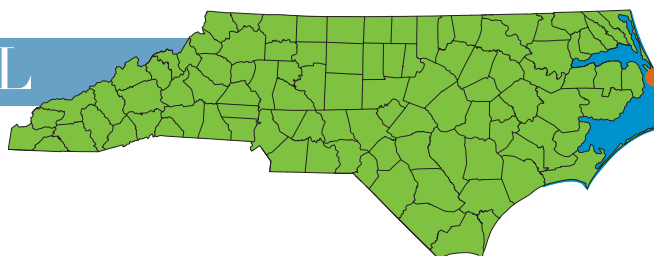
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Black-crowned Night Heron	B	15 prs.	2007	8.5	8 prs.	4.1
2b	White Ibis	B	509 prs.	2001	3.0	170 prs.	1.0
2a	Tricolored Heron	B	85 prs.	2001	7.0	28 prs.	2.3
2a	Snowy Egret	B	5 prs.	2001	1.4	—	—
2a	Little Blue Heron	B	91 prs.	2001	6.7	—	—

B = breeding

Old House Channel, Island L



Location: Dare County (no detailed map shown)

Total Size: 47.4 ha (117.2 acres)

Site Description: Island L is an undiked, dredged-material island located in northeastern Pamlico Sound. The island consists of two or more high domes of dredged sand, grass, and a fringe of shrubs. It has long been used by nesting waterbirds

Habitats: Shrubland, bare sand, grassland.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds.

Protection Status: Part of the site is protected and managed by the North Carolina Wildlife Resources Commission and part is privately owned.

Conservation Issues: The island is posted during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a primary concern.

Birds: The site has been a key nesting site for Brown Pelicans and other waterbirds. Brown Pelicans have moved to Old House Channel, Island MN. This island supported the state's second largest colony of Herring Gulls and largest colony of Great Black-backed Gulls in 2007. This is one of only three sites where Caspian Terns nested in 2007.

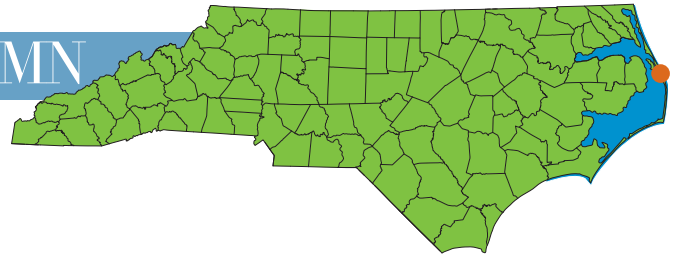
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2b	Royal Tern	B	666 prs.	2004	4.9	742 prs.	4.1
2b	Sandwich Tern	B	8 prs.	2004	<0.1	129 prs.	4.0
2a	Caspian Tern	B	2 prs.	2007	13.3	12 prs.	58.0
3a	Black-crowned Night Heron	B	2 prs.	2007	1.1	12 prs.	1.0
3a	Great Black-backed Gull	B	53 prs.	2007	32.1	27 prs.	15.9
3a	Herring Gull	B	100 prs.	2007	15.9	227 prs.	28.7
3ei	Waterbirds	B	157 prs.	2007	—	1,172 prs.	—

B = breeding

Old House Channel, Island MN



Location: Dare County (no detailed map shown)

Total Size: 44.0 ha (106.6 acres)

Site Description: The site is an undiked, dredged-material island located in northeastern Pamlico Sound. Island MN was once two separate islands that were joined by the deposition of dredged material. It consists of two or more high domes of dredged sand, grassland, and a fringe of shrubs. The island has long been used by nesting waterbirds.

Habitats: Shrubland, bare sand, grassland.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a primary concern.

Birds: The site is a key nesting site for Brown Pelicans and supports the state's largest colony of this species. When habitat is appropriate, usually following the deposition of dredged sand, the site has supported a large colony of Royal and Sandwich Terns. American Oystercatchers nest on the island. This is one of only three nesting sites for Caspian Terns. It supported the state's largest colony of nesting Herring Gulls in 2007.

Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Caspian Tern	B	6 prs.	2007	40.0	2 prs.	13.3
2a	Brown Pelican	B	757 prs.	2007	32.5	1,220 prs.	24.5
3a	Herring Gull	B	125 prs.	2007	19.8	54 prs.	7.4
3a	Great Black-backed Gull	B	25 prs.	2007	15.2	29 prs.	16.7
3ei	waterbirds	B	1,153 prs.	2007	—	1,385 prs.	—

B = breeding

Onslow Bay

Location: Inshore Atlantic Ocean waters between Topsail Inlet and Cape Fear

Total Size: 32,730.4 ha (80,878.6 acres)

Site Description: This site includes the inshore waters along the southern coast of North Carolina between Topsail Inlet and Cape Fear, the southernmost portion of an area known as Onslow Bay. The eastern and western boundaries of the site include an area of ocean from the surf zone to approximately 5 km (3 miles) offshore. The ocean area supports a diverse assemblage of birds and other marine life throughout the year.

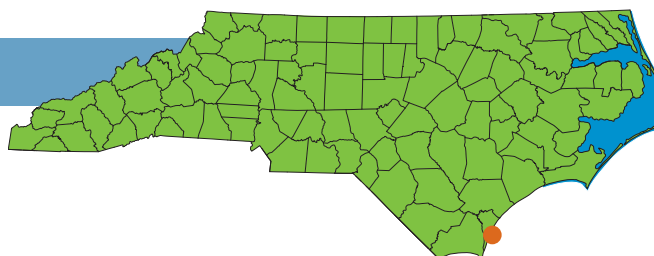
Habitat: Inshore open ocean.

Land Use: Commercial and recreational fishing.

Primary Threats: Bycatch of birds in commercial fishing gear, entanglement of birds in discarded monofilament fishing line, offshore wind energy development.

Protection Status: The site is currently afforded no formal protection. North Carolina Marine Fisheries and the National Marine Fisheries Service govern fishing activities.

Conservation Issues: Commercial fishing activity (primarily gill nets) peaks during fall months, typically from September to late December. Studies in other areas of the mid-Atlantic coast have indicated that commercial fishing activities are responsible for the death of thousands of diving birds annually. The primary species impacted include Northern Gannet and Common Loon. Observations of commercial



fishing activities and the timing of dead birds washing ashore on local beaches suggest that bycatch of birds in commercial fishing gear should be examined. Studies of the impact of commercial fishing activities on diving and fish-eating birds in the area are needed. Surveys of waterbirds using the site during breeding and migration seasons are needed. North Carolina is forming a task force to work with the United States Office of Minerals and Mines to formulate guidelines for offering leases for wind energy development and natural gas exploration that could impact this area.

Birds: This site is important for coastal birds throughout the year. During spring and summer months, the site is a key foraging area for terns nesting on nearby beaches and islands. During migration, the site is a foraging area for many species of gulls and terns, as well as a key migration corridor for loons and sea ducks. During winter months, the site may support North Carolina's largest population of Common Loons and a significant number of wintering Red-throated Loons. These birds move throughout the site depending on the location of forage fish.

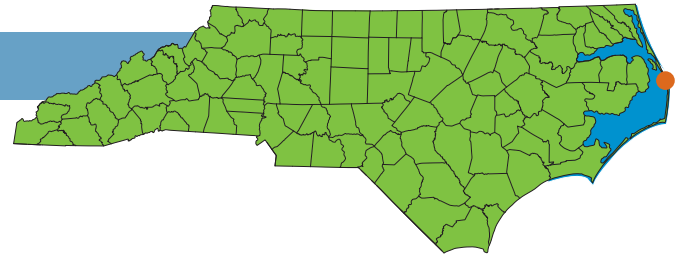
Monitoring and Research: A portion of this area is included in the Wilmington Christmas Bird Count circle. More research is needed.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2005-9
3a	Black Scoter	W	67	2009	1,038
3a	Red-breasted Merganser	W	239	2009	1,124
3a	Red-throated Loon	W	2,189	2009	2,099
3a	Common Loon	W	357	2009	1,183
3a	Northern Gannet	W	691	2009	1,350
3a	Brown Pelican	W	1,388	2009	1,698
3a	Double-crested Cormorant	W	2,667	2009	2,338
3a	Bonaparte's Gull	W	211	2009	1,110
3a	Herring Gull	W	620	2009	1,314
3a	Great Black-backed Gull	W	93	2009	1,051

W = winter

Oregon Inlet Shoals



Location: Dare County (no detailed map shown)

Total Size: 139.5 ha (344.7 acres)

Site Description: The Oregon Inlet shoals (also known as Green Island) are located immediately southwest of Oregon Inlet in Dare County. These shoals change shape and even location every year, depending on storms. Nevertheless, as long as some portion of the shoal remains exposed during the nesting season, the exposed sand becomes ideal for nesting terns and skimmers. Because this type of habitat has become increasingly in short supply, these dynamic shoals have become exceedingly important for nesting birds.

Habitats: Sandflat, exposed sand shoal.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is posted and monitored by the National Park Service.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from March 15 until two weeks after nesting is completed. Disturbance to nesting birds remains a concern. Another serious concern is the alteration of natural sand transport through Oregon Inlet by construction of a terminal groin and channelization of the inlet.

Birds: These shoals change often depending on storms, but are generally present every year. The site provides ideal early-succession habitat for nesting terns and migrating Piping Plovers. The site supported North Carolina's second largest colony of Common Terns in 2007. American Oystercatchers also nest at the site.

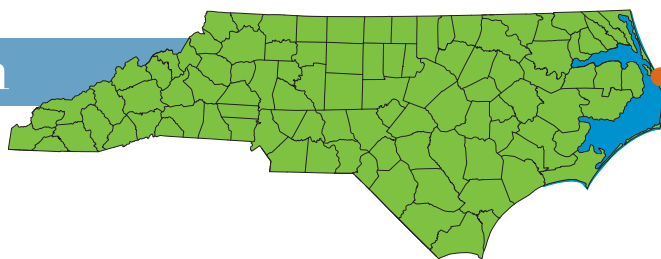
Monitoring and Research: This site is monitored by the National Park Service in cooperation with the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
1	Gull-billed Tern	B	6 prs.	2007	6.7	7 prs.	6.9
2a	Black Skimmer	B	10 prs.	2007	1.8	31 prs.	5.4
2a	Common Tern	B	87 prs.	2007	17.5	156 prs.	22.5
1	Piping Plover	W	5	2007	—	—	—

B = breeding; W = winter

Outer Banks, Inshore Ocean



Location: Inshore Atlantic Ocean waters between Cape Hatteras and Virginia

Total Size: 80,595.4 ha (199,155.6 acres)

Site Description: This site includes the inshore waters along the northern Outer Banks between Cape Hatteras and the North Carolina–Virginia state line. The eastern and western boundaries of the site include an area of ocean from the surf zone to approximately 5 km (3 miles) offshore. This is a rich and productive area of ocean that supports a diverse assemblage of birds and other marine life throughout the year.

Habitat: Inshore open ocean.

Land Use: Commercial and recreational fishing.

Primary Threats: Bycatch of birds in commercial fishing gear, entanglement of birds in discarded monofilament fishing line, oil spill from ship traffic offshore, offshore wind energy development, natural gas and oil extraction.

Protection Status: The site is currently afforded no formal protection. North Carolina Marine Fisheries and the National Marine Fisheries Service govern fishing activities.

Conservation Issues: Commercial fishermen set nets throughout the area. Studies have indicated that these commercial fishing activities are responsible for the death of more than a thousand diving birds annually. The primary species impacted include Northern Gannet, Common Loon, Red-breasted Merganser, and Double-crested Cormorant.

Studies of the use of this area by migrating waterbirds are needed. Also needed are studies of the impact of commercial fishing activities on diving and fish-eating birds in the area. North Carolina is forming a task force to work with the United States Office of Minerals and Mines to formulate guidelines for offering leases for wind energy development and natural gas exploration.

Birds: This site is important for coastal birds throughout the year. During spring and summer months, the site is a key foraging area for terns nesting on nearby beaches and islands. During migration, the site is a foraging area for many species of gulls and terns, as well as a key migration corridor for loons and sea ducks. During winter months, the site supports North Carolina's largest population of Northern Gannets and Red-breasted Mergansers. These birds move throughout the site depending on the location of forage fish. The large concentration of gulls at Cape Point on the Cape Hatteras National Seashore routinely uses this Important Bird Area for its primary foraging area.

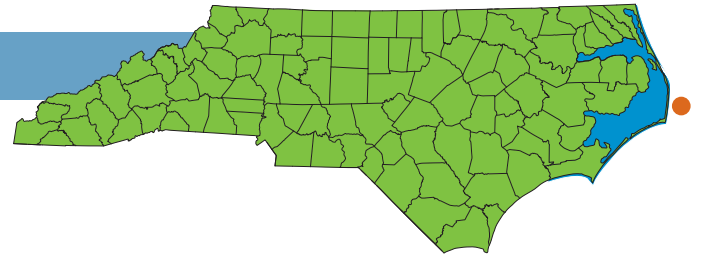
Monitoring and Research: Four Christmas Bird Count circles include the inshore ocean within this Important Bird Area: Kitty Hawk, Cape Hatteras, Ocracoke Island, and Bodie–Pea Island counts.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-8
3a	Surf Scoter	W	377	2008	804
3a	Black Scoter	W	490	2008	976
3a	Red-breasted Merganser	W	424	2008	653
3a	Red-throated Loon	W	3,631	2008	938
3eiii	Northern Gannet	W	16,693	2008	10,100
2a	Brown Pelican	W	2,164	2008	4,318
3eiv	Double-crested Cormorant	W	15,449	2008	73,890
3a	Bonaparte's Gull	W	2,198	2008	2,244
3a	Herring Gull	W	4,725	2008	5,290
3a	Ring-billed Gull	W	2,541	2008	4,377
3a	Great Black-backed Gull	W	1,826	2008	1,710

W = winter

Outer Continental Shelf



Location: Atlantic Ocean, offshore of Cape Hatteras

Total Size: 245,621.3 ha (606,943.4 acres)

Site Description: This site is unique in that it is the open ocean of the Atlantic. The Outer Continental Shelf site includes an area with water depth of 90–915 m (295–3,000 feet) on the western boundary of the Gulf Stream, offshore of Cape Hatteras. This is a site where two major Atlantic currents mix, forming a very rich marine environment. Large mats of Sargassum form surface reefs and concentrate rare and endangered seabirds, marine mammals, marine turtles, and fish. The site is an important commercial and sport fishing area, as well as an important commercial bird-watching area.

Habitats: Open ocean, Sargassum along frontal boundaries.

Land Use: Commercial and recreational fishing, ship traffic.

Primary Threats: Oil and natural gas exploration, Sargassum harvest, overfishing, commercial long-lining, offshore wind energy development.

Protection Status: The site is currently afforded no formal protection.

Conservation Issues: Oil companies hold offshore leases in the area of peak concentrations of seabirds. Past attempts to obtain permits for oil and natural gas exploration have met great public opposition and have not yet been successful. North Carolina is forming a task force to work with the United States Office of Minerals and Mines to formulate guidelines for offering leases for wind energy development and natural gas exploration.

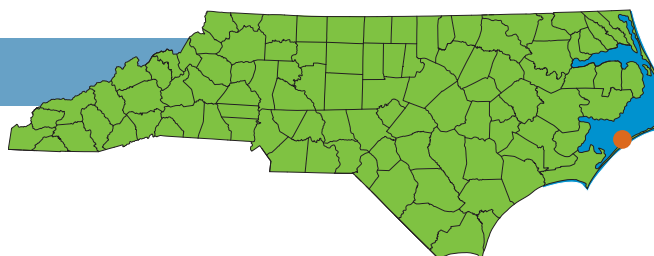
Birds: This site has the greatest diversity of seabirds and marine mammals in the southeastern United States. For tropical species, the site probably has the greatest density of seabirds in the southeastern United States. Birds and other marine life concentrate here because of upwelling and currents. An important percentage of the global populations of Black-capped and Bermuda Petrels may be present in this Important Bird Area.

Monitoring and Research: The only regular monitoring that occurs is through commercial pelagic trips offered by Patteson Tours.

Key Bird Species

Criterion	Species	No.	Year	Average Number 2004–9	Criterion	Species	No.	Year	Average Number 2004–9
3a	Northern Fulmar	51	2008	14	3a	White-tailed Tropicbird	3	2006	1
2a	Black-capped Petrel	312	2007	150	3a	Red-billed Tropicbird	2	2009	1
1	Bermuda Petrel	3	2009	1	3a	Pomarine Jaeger	11	2009	8
3a	Trinidad Petrel	6	2007	2	3a	Long-tailed Jaeger	11	2009	4
3a	Fea's Petrel	2	2009	2	3a	Parasitic Jaeger	5	2009	2
2b	Cory's Shearwater	130	2009	221	3a	South Polar Skua	20	2009	4
2b	Greater Shearwater	130	2007	65	3a	Great Skua	2	2008	<1
2b	Sooty Shearwater	166	2009	67	3a	Bridled Tern	39	2007	17
2b	Manx Shearwater	8	2009	15	3a	Sooty Tern	10	2009	50
2b	Audubon's Shearwater	80	2009	71	3a	Artic Tern	6	2009	1
3a	Wilson's Storm Petrel	554	2007	472	3a	Red Phalarope	1,151	2008	233
3a	European Storm Petrel	1	2009	1	3a	Red-necked Phalarope	81	2007	31
3a	Swinhoe's Storm Petrel	1	2009	<1	3a	Dovekie	106	2008	18
1	Band-rumped storm Petrel	16	2009	17	3a	Razorbill	78	2008	70
3a	Leach's Storm Petrel	36	2009	18	3a	Atlantic Puffin	3	2008	<1
					3c	pelagic seabirds	7,904	2009	10,129

Outer Green Island



Location: Hyde County (no detailed map shown)

Total Size: 64.7 ha (160.0 acres)

Site Description: Outer Green Island, not to be confused with Green Island, is located in Pamlico Sound near the northern end of Ocracoke Island. The site is a small, natural island. Outer Green Island has a long history of use by nesting Forster's Terns and occasionally other species of colonial waterbirds.

Habitats: Primarily low marsh and high marsh with scattered shrubs, surrounded by shallow water and extensive seagrass flats.

Land Use: The site is privately owned and appears to have no regular visitors or other use.

Primary Threats: The site can be reached by canoe or kayak or by small motor boat during high tides. Otherwise it is remote and has no primary threats. Like most small natural islands in Pamlico Sound, erosion is occurring and is a concern.

Protection Status: The site is currently afforded no formal protection.

Conservation Issues: There are no immediate conservation issues for this site.

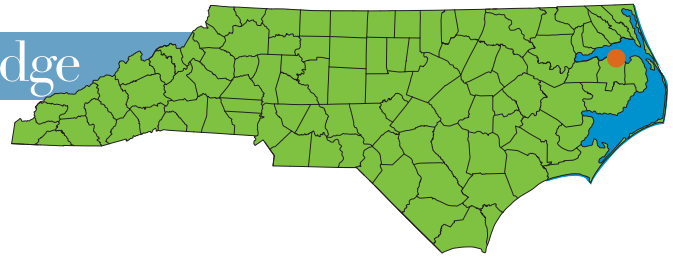
Birds: Outer Green Island supports a large colony of Forster's Terns. Occasionally other species of colonial waterbirds nest on the site.

Monitoring and Research: The site is not monitored regularly. It is included in the periodic statewide waterbird census.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	50 prs.	2007	4.8	50 prs.	7.6
B = breeding							

Palmetto-Peartree and Buckridge



Location: Tyrell County

Total Size: 37,238.9 ha (92,019.3 acres)

Site Description: The site is located in northeastern North Carolina, about 19 km (12 miles) northeast of Columbia, on the edge of Albemarle Sound. It includes the Palmetto-Peartree Preserve and the Emily and Richardson Preyer Buckridge Coastal Reserve. Palmetto-Peartree is 3,938 ha (9,731 acres) of habitat managed as a “working forest.” The site was purchased by The Conservation Fund in 1999 with funds provided by the North Carolina Department of Transportation as mitigation for the loss of Red-cockaded Woodpecker habitat in other areas of the state. The Conservation Fund is working with the local communities and others to enhance ecotourism in northeastern North Carolina. The Emily and Richardson Preyer Buckridge Coastal Reserve comprises more than 7,280 ha (17,989 acres). The site also includes a portion of the Pocosin Lakes National Wildlife Refuge, as well as private land.

Habitats: Nonriverine swamp forest, tidal brackish marsh.

Land Use: Wildlife conservation, recreation and tourism, forestry, hunting.

Primary Threat: Disturbance to nesting birds.

Protection Status: The site includes tracts protected and managed by The Conservation Fund, the North Carolina Estuarine Research Reserve program, and the United States Fish and Wildlife Service. The site also includes privately owned land.

Conservation Issues: Audubon North Carolina, The Nature Conservancy, and other organizations have formed the Albemarle-Pamlico Conservation and Communities Cooperative to plan for conservation in the region, including planning for sea level rise. Surveys of all bird species during breeding, migration, and winter are needed throughout. Areas outside of the Palmetto-Peartree Preserve should be surveyed for Red-cockaded Woodpeckers.

Birds: The Palmetto-Peartree site supports at least 28 clusters of Red-cockaded Woodpeckers. The Conservation Fund is employing sustainable management practices to manage timber and enhance habitat for Red-cockaded Woodpeckers. The site supports high-priority landbird species such as Prothonotary Warbler, Worm-eating Warbler, Swainson’s Warbler, and Brown-headed Nuthatch. The Emily and Richardson Preyer Buckridge Coastal Reserve includes extensive nonriverine swamp forest, along with Atlantic white cedar and cypress swamp. This Important Bird Area was recently recognized as a globally significant site for Red-cockaded Woodpecker. Over 125 species of birds have been recorded.

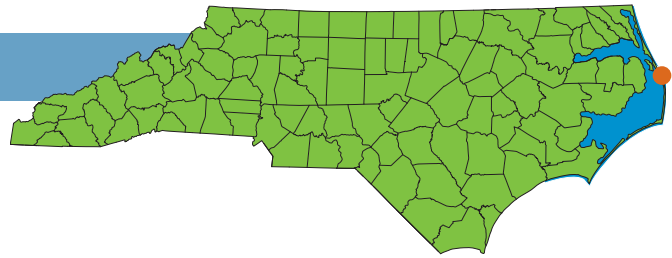
Monitoring and Research: Surveys for Red-cockaded Woodpecker are conducted periodically in accordance with the management agreement by The Conservation Fund. Data are entered regularly for all birds into eBird. More structured surveys are needed, especially outside of the Palmetto-Peartree Preserve portion of this Important Bird Area.

Key Bird Species

Criterion	Species	Season	Number	Year
2b	Wood Duck	all	30+	2009
1	Bald Eagle	all	2	2009
2a	Red-headed Woodpecker	all	12+	2009
1	Red-cockaded Woodpecker	all	28 clusters	2009
2b	Prothonotary Warbler	B	35+	2009

B = breeding

Parnell Island



Location: Dare County (no detailed map shown)

Total Size: 16.6 ha (41.0 acres)

Site Description: Parnell Island is a dredged-sand island located in northeastern Pamlico Sound near Oregon Inlet. The island was created entirely of sand dredged from the nearby navigation channel. From 2000 to 2005, the island received regular deposits of dredged sand, placed so as to create the right slope, elevation, and dredged material for an ideal nesting site, and eventually it was high enough to support nesting birds. Since 2005, the site has supported many terns and Black Skimmers.

Habitats: Bare sand, scattered grasses, and herbaceous vegetation.

Land Use: Conservation.

Primary Threats: Disturbance to nesting birds is a serious concern.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission. Like other state-owned waterbird nesting sites, the island is posted and patrolled, and off limits to all visitors from April 1 to August 31.

Conservation Issues: Even though the island is posted, disturbance to nesting birds remains a concern. Maintenance of the island with dredged sand is important to the continued viability of the site as a nesting site for terns and skimmers. The impact of Great Black-backed Gulls on nesting terns should be monitored.

Birds: Parnell Island has become an important nesting site for terns and skimmers in Pamlico Sound. The site supported the state's second largest colony of Black Skimmers in 2007 and one of the state's largest colonies of Least Terns in 2006 (Least Terns did not nest on the island in 2007). The island is one of three nesting sites for Caspian Terns. One to two pairs of American Oystercatchers also nest on the island. One pair of Great Black-backed Gulls began nesting there in 2007. Parnell Island requires periodic deposits of dredged sand to maintain habitats.

Monitoring and Research: The site is monitored by the North Carolina Wildlife Resources Commission. Royal and Sandwich terns have been banded annually for several years, and other research is ongoing.

Key Bird Species

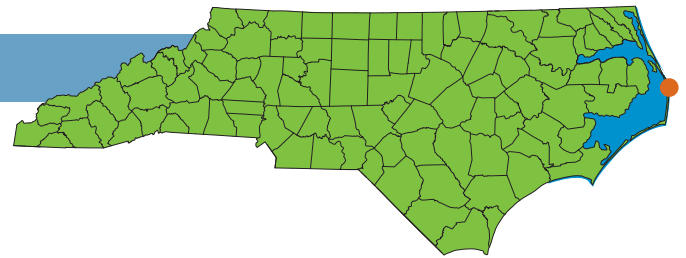
Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2005–7
1	Gull-billed Tern	B	2 prs.	2007	2.2	10 prs.	6.9
2a	Black Skimmer	B	135 prs.	2007	24.3	75 prs.	7.6
2a	Common Tern	B	33 prs.	2007	6.6	122 prs.	16.7
2a	Least Tern	B	610 prs.	2006	—	—	—
2b	Royal Tern	B	1,846 prs.	2007	17.3	665 prs.	5.7
2b	Sandwich Tern	B	674 prs.	2007	24.2	—	—
2b	Caspian Tern	B	7 prs.	2007	43.8	8 prs.	41.7
3ei	waterbirds	B	2,727 prs.	2007	—	1,571 prs.	—

B = breeding

Pea Island

Location: Dare County

Total Size: 3,052.0 ha (7,541.7 acres)



Site Description: This site includes Pea Island National Wildlife Refuge, which is located on North Carolina's Outer Banks. Three water impoundments that vary in salinity from brackish to fresh are managed for shorebirds, waterfowl, and other migratory birds. The site includes a cross-section of the Outer Banks from ocean to sound and the associated habitats. This is one of North Carolina's most popular birding destinations and one of the state's premier sites for shorebirds, waterfowl, and landbirds.

Habitats: Ocean beach, brackish-freshwater impoundments, ocean dune, maritime shrub thicket.

Land Use: Wildlife conservation, recreation and tourism.

Primary Threats: Introduced plants and animals, predation, recreational development and overuse, replacement of Bonner Bridge, global climate change, erosion, human disturbance to nesting birds.

Protection Status: The site is protected and managed by the United States Fish and Wildlife Service.

Conservation Issues: The National Wildlife Refuge has a comprehensive conservation plan in place. The key conservation issue for the refuge is artificial (soft) stabilization

of the beach with artificial dunes to protect Highway 12, and the resulting adverse impacts to shorebird and colonial waterbird habitats. The eventual fate of the Bonner Bridge and its replacement are of concern for this refuge and Important Bird Area. Of the many options considered, the construction of a bridge parallel to the existing bridge would be the most damaging to the refuge and would impact habitats for birds.

Birds: Pea Island is one of North Carolina's most important sites for shorebirds and waterfowl. It is important for several species of conservation concern. North Carolina's largest regularly occurring flock of American Avocets winters here. The site also has nesting American Oystercatchers and Least Terns; Common Terns and Black Skimmers have nested in previous years.

Monitoring and Research: This site is monitored by the United States Fish and Wildlife Service. Regular surveys for waterfowl, shorebirds, and other species are conducted throughout the year. Numerous birders contribute data to the United States Fish and Wildlife Service for this Important Bird Area.

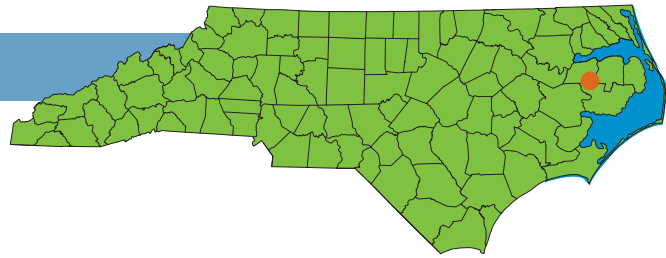
Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2004–9
2b	Tundra Swan	W	1,048	2009	—	920
3a	Snow Goose	W	500	2009	—	2,375
3a	Bufflehead	W	498	2009	—	308
3a	Redhead	W	6,064	2009	—	2,959
3a	Northern Pintail	W	836	2009	—	3,023
3a	American Coot	W	453	2009	—	943
2b	American Black Duck	W	1,226	2009	—	759
2b	American Black Duck	B	238	2007	—	—
3b	waterfowl	FM, W	11,578	2009	—	12,637
2a	Least Tern	B	174	2007	3.60	198*
2a	Common Tern	B	0	2007	0	47*
1	Gull-billed Tern	B	0	2007	0	48*
2a	Black Skimmer	B	0	2007	0	9*
3a	American Avocet	W	210	2004	—	117
1	Piping Plover	FM, W, SM	7	2006	—	—
1	Peregrine Falcon	FM	145	2007	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

*Average 2001–7

Pungo-Pocosin Lakes



Location: Hyde, Tyrrell, and Washington Counties

Total Size: 128,133.7 ha (316,625.4 acres)

Site Description: The site includes two large natural lakes—Phelps and Pungo—extensive agricultural lands, and forest, which provide habitat for a wide variety of birds. The agricultural lands provide foraging habitat in the winter months for tens of thousands of Tundra Swans and Snow Geese. Also included are several flooded fields and impoundments, mature hardwood forests along the north shore of Lake Phelps, and pocosin. The site encompasses Pocosin Lakes National Wildlife Refuge, Pettigrew State Park, including Lake Phelps, and private farmland west of these two lakes.

Habitats: Natural lakes, nonriverine forested wetland, agricultural land, pocosin.

Land Use: Wildlife conservation, agriculture (cultivation for waterfowl), recreation and tourism, hunting.

Primary Threats: Current threats include invasive species (*Phragmites*), groundwater extraction, drought, drainage, disturbance to birds, and global climate change impacts.

Protection Status: The majority of the site is under state or federal protection.

Conservation Issues: *Phragmites* is starting to appear at Pungo. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place.

Birds: The site supports 80,000 to 110,000 waterfowl during an average winter. It has North Carolina's largest wintering concentration of Snow Geese and one of the largest concentrations of Tundra Swans in the state. Common Mergansers winter on Lake Phelps. The fields west of Lake Phelps have a good wintering population of Short-eared Owl; sometimes 5 to 10 have been reported. Pocosin habitat likely provides very good habitat for species such as Worm-eating Warbler, Swainson's Warbler, Prothonotary Warbler, and other landbirds, but no population estimate is available. The site has one of the state's highest counts for Northern Harrier during Christmas Bird Counts.

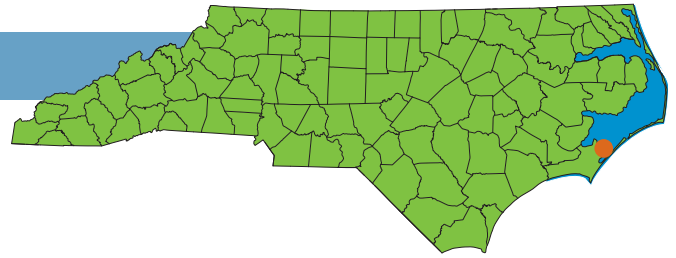
Monitoring and Research: Midwinter waterfowl surveys are conducted by the United States Fish and Wildlife Service. The Pettigrew Christmas Bird Count is centered at Pettigrew State Park and includes much of this Important Bird Area. Regular surveys of landbirds during the breeding season are needed.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2004-9
2b	Tundra Swan	W	15,219	2009	13,684
3a	Snow Goose	W	79,660	2009	60,232
2b	American Black Duck	W	392	2009	428
3a	Canada Goose	W	590	2009	605
3a	Ring-necked Duck	W	1,538	2009	377
3a	Green-winged Teal	W	9,039	2009	4,241
3a	Northern Pintail	W	120	2009	308
3a	Mallard	W	762	2009	1,236
3a	American Wigeon	W	555	2009	283
2b	Wood Duck	W	253	2008	212
3a	Canvasback	W	29	2008	335
3a	Common Merganser	W	3	2008	82
3b	waterfowl	W	108,100	2009	—
1	Bald Eagle	W	28	2008	24
3a	Northern Harrier	W	60	2008	72
3a	American Kestrel	W	27	2008	33
2a	American Woodcock	W	41	2008	15
3a	Red-winged Blackbird	W	688,285	2008	219,277
3a	Common Grackle	W	16,195	2008	25,310
3a	Rusty Blackbird	W	525	2008	130

W = winter

Raccoon Island



Location: Carteret County (no detailed map shown)

Total Size: 46.3 ha (119.3 acres)

Site Description: Raccoon Island is a natural, high-marsh island located in a remote area of Pamlico Sound. Nesting Forster's Terns used the site for more than a decade. In recent years, wading birds have nested.

Habitats: Saltmarsh, high brackish marsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance from military training; other disturbances are a minor threat.

Protection Status: The site is not currently afforded formal protection.

Conservation Issues: Disturbance by low-elevation military aircraft and the proposed expansion of the training zone for Bombing Target 11 (Piney Island) is a serious concern. The expansion will include this island and likely increase significantly the disturbance to nesting birds. The island is remote and not easily accessible, so human disturbance during the nesting season is otherwise a minor concern.

Birds: Raccoon Island has supported a variety of nesting colonial waterbirds for many years. In 2007, the state's largest colony of Laughing Gulls and Glossy Ibis was at this site, as was the third-largest colony of Tricolored Herons, and a significant colony of nesting Forster's Terns.

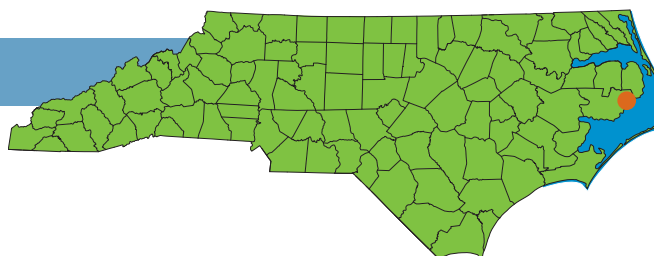
Monitoring and Research: This site is included in the periodic coastwide colonial waterbird survey, but it is not regularly monitored.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	103 prs.	2007	10.0	113 prs.	11.5
2a	Glossy Ibis	B	151 prs.	2007	42.4	177 prs.	39.9
2a	Tricolored Heron	B	120 prs.	2007	12.3	178 prs.	13.7
3a	Laughing Gull	B	6,750 prs.	2007	33.8	5,917 prs.	26.6
2a	Snowy Egret	B	92 prs.	2007	23.8	69 prs.	17.4
2a	Little Blue Heron	B	24 prs.	2007	2.2	13 prs.	0.9
3a	Black-crowned Night Heron	B	5 prs.	2007	2.8	4 prs.	1.4
3a	Great Black-backed Gull	B	10 prs.	2007	6.1	3 prs.	2.0
3a	Great Egret	B	6 prs.	2007	0.3	21 prs.	1.1
3ei	waterbirds	B	7,323 prs.	2007	—	6,531 prs.	—

B = breeding

Rawls Island



Location: Dare County (no detailed map shown)

Total Size: 2.8 ha (7.0 acres)

Site Description: Rawls Island is located on the northwest side of Pamlico Sound, near Engelhard. It is a remote, natural, estuarine island dominated by wax myrtle, morning glory, and saltmarsh.

Habitats: Saltmarsh, shrubland.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is in private ownership.

Conservation Issues: Erosion of the island appears to be having a big impact on the numbers of birds nesting. Human disturbance during the nesting season is a serious concern, because disturbances can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: Rawls Island was a newly discovered and important nesting site for wading birds in 2001. In that year, 783 nests of eight different species of colonial waterbird were found on the site. Of particular importance were the 198 Glossy Ibis nests and the 251 Little Blue Heron nests. The site supported North Carolina's largest colony of Little Blue Herons and Glossy Ibis at that time. Since that time, nesting pairs have plummeted on this island, and many of these birds appear to have moved to the nearby Hog Island.

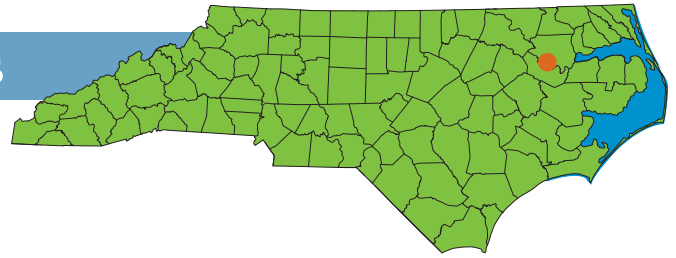
Monitoring and Research: The site is surveyed as part of the period colonial waterbird census, but otherwise is not regularly monitored.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–776
2a	Little Blue Heron	B	139 prs.	2004	10.3	130 prs.	10.3
2a	Glossy Ibis	B	37 prs.	2004	9.8	78 prs.	14.3
3a	Great Egret	B	44 prs.	2007	2.1	57 prs.	2.9%
2a	Tricolored Heron	B	15 prs.	2004	1.0	16 prs.	1.2
2a	Snowy Egret	B	1 pr.	2007	0.3	22 prs.	5.3
3a	Cattle Egret	B	31 prs.	2004	5.7	50 prs.	25.2
3a	Great Black-backed Gull	B	4 prs.	2007	2.4	2 prs.	11
3a	Black-crowned Night Heron	B	3 prs.	2007	1.7	3 prs.	1.2
3ei	waterbirds	B	52 prs.	2007	—	390 prs.	—

B = breeding

Roanoke River Bottomlands



Location: Martin, Halifax, Bertie, and Northampton Counties

Total Size: 65,042.5 ha (160,723.4 acres)

Site Description: This vast Important Bird Area begins near the small community of Weldon and continues downriver more than 160 km (99 miles) to Albemarle Sound. The bottomland hardwood forest stretches nearly 8 km (5 miles) wide in places and is the best example of this habitat type in North Carolina. The site abounds with birds and other wildlife.

Habitats: Bottomland hardwood forest (bald cypress and water tupelo along the lower reaches of the river and mixed bottomland hardwood species in other areas).

Land Use: Wildlife conservation, other conservation, recreation, hunting, fishing.

Primary Threats: Regulated water flow, logging.

Protection Status: About 20,600 ha (50,904 acres) of the site is protected and managed by both public and private groups including the United States Fish and Wildlife Service, North Carolina Wildlife Resources Commission, and The Nature Conservancy. The remaining acreage is in private ownership.

Conservation Issues: The potential impact of regulated water flows on aquatic life downriver is a significant concern, but very little is known about how this would affect the area. Logging is also a concern, as a major timber company has significant holdings here. Industrial development along the river and associated activities, if permitted, could also threaten the entire system. Audubon North Carolina, The Nature

Conservancy, and other organizations have formed the Albemarle-Pamlico Conservation and Communities Cooperative to plan for conservation in the region, including planning for sea level rise. The National Wildlife Refuge portion of this Important Bird Area has a comprehensive conservation plan in place. More extensive surveys of landbirds, waterbirds, and waterfowl during breeding, migration, and winter are needed, especially for Cerulean Warbler.

Birds: With 214 bird species recorded, 88 of which are known to breed, this site is one of the most diverse in the coastal plain. Forty-four species of neotropical migrants are known to breed within the site. Several colonies of wading birds are present. The site supports a significant diversity and abundance of neotropical migrant songbirds, as well as a large number of breeding Wood Ducks. The site holds a significant diversity and abundance of species associated with bottomland hardwood forests (Criterion NC4). It has recently been identified as a globally significant Important Bird Area for Cerulean Warbler.

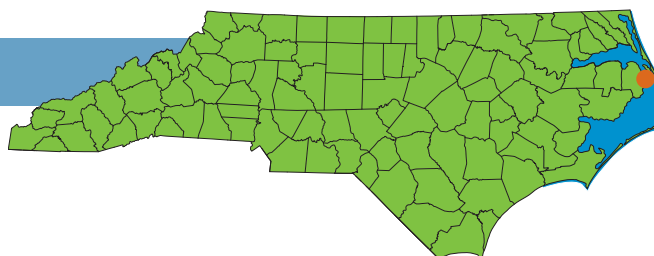
Monitoring and Research: Cerulean Warbler surveys have been conducted in the past and need to be repeated on a more regular basis. Research on Swainson's Warbler use of the bottomland forest is ongoing. The Speed and Jackson Breeding Bird Survey routes lie within or adjacent to this Important Bird Area.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2005-9
3a	Canvasback	W	752	2009	711
3a	Ring-necked Duck	W	533	2009	1,156
3a	Canada Goose	W	3,482	2009	1,948
2b	Tundra Swan	W	2,882	2009	2,748
3a	American Coot	W	1,738	2009	2,490
3b	waterfowl	W	9,907	2009	10,155
2a	Northern Bobwhite	B	29	2007	17
1	Cerulean Warbler	B	35	2005	—
2a	Swainson's Warbler	B	50	2009	—

B = breeding; W = winter

Roanoke Sound, Island G



Location: Dare County (no detailed map shown)

Total Size: 50.0 ha (123.5 acres)

Site Description: Island G is an undiked, dredged-material island located in Roanoke Sound, near Manteo. The site has relatively dense shrub thickets. It has not received dredged sand since the early 1980s. Waterbirds have nested on this island since the early 1970s.

Habitats: Shrubland, saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, erosion.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted and is entirely off limits to visitors during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a concern. The shrubland habitat used by nesting wading birds should be maintained.

Birds: Island G is an important nesting site for seven species of wading birds. In 2007 the site supported the state's second-largest colony of Black-crowned Night Herons, third-largest colony of Little Blue Herons, and fourth-largest colonies of White Ibis and Great Egrets.

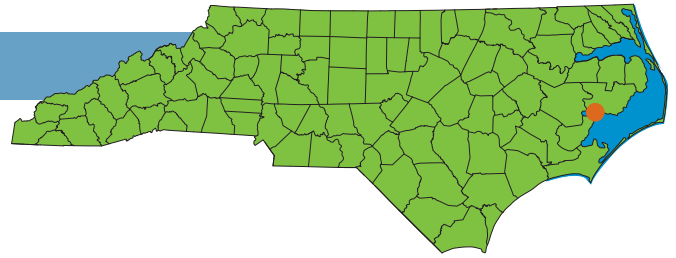
Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Great Egret	B	175 prs.	2007	10.3	159 prs.	8.7
2a	Little Blue Heron	B	110 prs.	2007	10.1	40 prs.	3.1
2a	Tricolored Heron	B	90 prs.	2007	9.2	38 prs.	2.9
3a	Black-crowned Night Heron	B	23 prs.	2007	13.0	15 prs.	6.3
2b	Snowy Egret	B	8 prs.	2007	2.0	9 prs.	2.0
3a	White Ibis	B	625 prs.	2007	3.7	697 prs.	4.3
2a	Glossy Ibis	B	22 prs.	2007	6.2	12 prs.	2.6
3ei	waterbirds	B	1,053 prs.	2007	—	—	—

B = breeding

Roos Point



Location: Hyde County (no detailed map shown)

Total Size: 4.0 ha (9.9 acres)

Site Description: Roos Point is located on the northwest side of Pamlico Sound, near the mouth of the Pamlico River. The site is a natural estuarine island dominated by regularly and irregularly flooded saltmarsh. Forster's Terns nest on wrack deposited on the marsh during storm tides.

Habitats: Saltmarsh.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion.

Protection Status: The site is in private ownership.

Conservation Issues: Human disturbance during the nesting season is a concern.

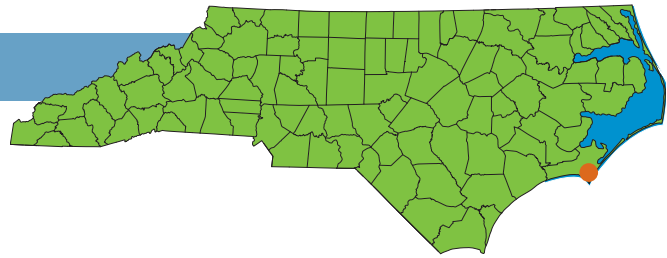
Birds: This site has supported a significant colony of nesting Forster's Terns during most seasons, but the species has abandoned the site for unknown reasons. The last known nesting by Forster's Terns was in 2004.

Monitoring and Research: This site is included in the periodic colonial waterbird census, but otherwise is not regularly monitored.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	55 prs.	2004	6.6	42 prs.	4.3
B = breeding							

Sand Bag Island



Location: Carteret County (no detailed map shown)

Total Size: 16.4 ha (40.5 acres)

Site Description: Sand Bag Island is a dredged-sand island located near Cape Lookout. The island is managed for nesting waterbirds that require bare to sparse vegetation habitats, such as terns. Royal Terns and Sandwich Terns are the dominant species.

Habitats: Bare sand, sparse to moderate-density grasses and herbs.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to birds, erosion, loss of bare sand habitats.

Protection Status: The site is protected and managed by the North Carolina Wildlife Resources Commission.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Sand Bag Island needs periodic sand renourishment to maintain its size, shape, and habitats. This has been accomplished by the United States Army Corps of Engineers in cooperation with the North Carolina Wildlife Resources Commission, and the North Carolina Colonial Waterbird Management Committee.

Birds: Sand Bag Island is one of North Carolina's most important nesting sites for Royal and Sandwich Terns. In 2007, the site supported the state's second-largest colony of Royal Terns. In some years, the island has supported nesting Brown Pelicans.

Monitoring and Research: This site is monitored by the North Carolina Wildlife Resources Commission. Royal and Sandwich Terns have been banded annually for many years.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Laughing Gull	B	500 prs.	2007	2.5	2,129 prs.	10.4
2b	Royal Tern	B	2,226 prs.	2007	20.8	1,280 prs.	10.9
2b	Sandwich Tern	B	451 prs.	2007	16.2	298 prs.	11.3
3a	Great Black-backed Gull	B	8 prs.	2007	7.5	4 prs.	2.1
3a	Herring Gull	B	47 prs.	2007	7.5	49	6.8
3ei	waterbirds	B	3,232 prs.	2007	—	4,271 prs.	—

B = breeding

Sandhills East

Location: Hoke and Cumberland Counties

Total Size: 62,896.2 ha (155,419.8 acres)

Site Description: This site includes the extensive sandhills east of the Lumber River, near Fayetteville. Within the Important Bird Area is Fort Bragg, a military installation used extensively for military training, Weymouth Woods State Park, and the newly established Carver's Creek State Natural Area. This Important Bird Area, together with the Sandhills West site, encompasses extensive longleaf pine-wiregrass forests, hardwood bottomlands, riparian areas and lakes, and large specially managed grasslands. This is one of the best examples of this community type in the eastern United States.

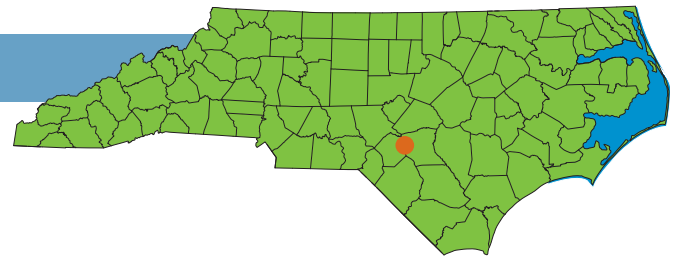
Habitats: Longleaf pine forest, mixed forest, deciduous forest, riparian forest.

Land Use: Military training, wildlife conservation, water supply, and hunting.

Primary Threats: Disturbance to birds, soil erosion, predation, residential and commercial development, drought, and hurricanes.

Protection Status: An extensive management program to monitor and reduce land use impacts and enhance habitats for wildlife is in place on the military installation. The Department of Defense, United States Fish and Wildlife Service, and North Carolina Wildlife Resources Commission are signatory partners on an Integrated Natural Resource Management Plan.

Conservation Issues: Avian threats are limited mostly to direct or indirect impacts from military training and infrastructure. Outside the military base, threats include conversion of the



sandhills to residential, commercial, and industrial development. Additional avian threats may include parasitism and predation.

Birds: The site consists of extensive longleaf pine forest-sandhills habitat (Criterion NC4). The site supports one of the largest groups of nesting Red-cockaded Woodpeckers in the United States. This focus area has already met its recovery goal (2008) for this endangered species. It was recently designated a globally significant site for Red-cockaded Woodpecker. Healthy populations of birds that frequent longleaf-forested grassland, such as Brown-headed Nuthatch, Northern Bobwhite, Bachman's Sparrow, Prairie Warbler, Pine Warbler, and Summer Tanager, also occur here.

Monitoring and Research: Avian monitoring and research includes Monitoring Avian Productivity and Survivorship banding projects, BBIRD, more than 200 point counts, winter foraging flock studies, fire and avian community studies, and landscape ecology studies conducted on the military installation. State Parks data is entered into Natural Resource Inventory Database, and the Weymouth Woods data are some of the most extensive in that system. Weymouth Woods is also the home base of operations for Susan Campbell, who coordinates winter hummingbird studies within North Carolina. Regular monitoring of the Red-cockaded Woodpecker population also occurs. The South Pines Breeding Bird Survey route lies almost completely within this Important Bird Area.

Key Bird Species

Criterion	Species	Season	Number	Year
2a	Northern Bobwhite	all	18+	2002
1	Red-cockaded Woodpecker	all	464 active clusters	2009
2b	Brown-headed Nuthatch	all	30+	2005
2a	Bachman's Sparrow	all	6+	2005

Sandhills West

Location: Richmond, Scotland, and Moore Counties

Total Size: 47,817.3 ha (118,159.1 acres)

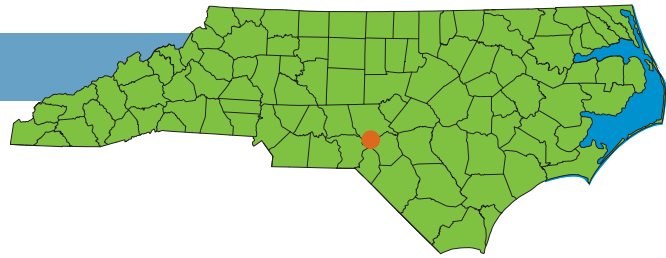
Site Description: This site includes the Sandhills Game Lands and Camp Mackall, as well as adjacent private lands. This site, together with the Sandhills East, has extensive longleaf pine forests, hardwood bottomlands, riparian areas and lakes, and large specially managed grasslands. This is one of the best examples of this community type in the eastern United States.

Habitats: Coniferous forest, mixed forest, deciduous forest, riparian.

Land Use: Military training, wildlife conservation, water supply, hunting.

Primary Threats: Disturbance to birds, soil erosion and degradation, predation, residential and commercial development, drought and hurricanes, cowbird parasitism, predation.

Protection Status: An extensive management program is in place to monitor and reduce land use impacts and enhance habitats for wildlife. The Department of Defense, United States Fish and Wildlife Service, and North Carolina Wildlife Resources Commission are signatory partners on an Integrated Natural Resource Management Plan.



Conservation Issues: Avian threats on the installation are limited mostly to direct threats (disturbance, facilities development) or indirect ones (erosion impacts from military training). Additional avian threats may include parasitism and predation.

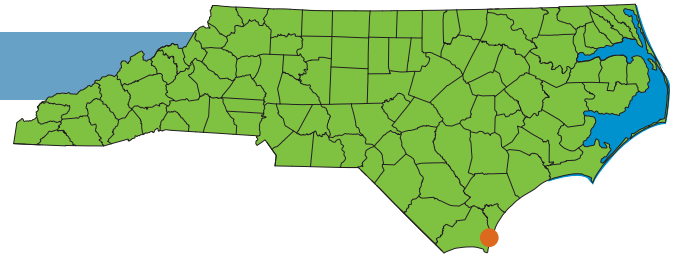
Birds: The site comprises extensive longleaf pine–sandhills habitat (Criterion NC4). Red-cockaded Woodpecker, Bachman’s Sparrow, Brown-headed Nuthatch, Loggerhead Shrike, American Kestrel and Lark Sparrow all occur here. Substantial populations of birds such as Brown-headed Nuthatch, Prairie Warbler, Pine Warbler, and Summer Tanager, which frequent longleaf-forested grassland, are also plentiful. This site was recently designated a globally significant site for Red-cockaded Woodpecker.

Monitoring and Research: The primary regular monitoring here is conducted on the Sandhills Game Lands and includes point counts, Bachman’s Sparrow monitoring, and calling Northern Bobwhite surveys. In addition, the Raeford Breeding Bird Survey route is almost completely within this Important Bird Area. Red-cockaded Woodpecker surveys are regularly conducted by Department of Defense and United States Fish and Wildlife Service personnel.

Key Bird Species

Criterion	Species	Season	Number	Year
2a	Northern Bobwhite	all	52	2006
2a	Red-headed Woodpecker	all	58	2006
1	Red-cockaded Woodpecker	all	178 active clusters	2007
2b	Brown-headed Nuthatch	all	62	2006
2a	Bachman’s Sparrow	all	20	2006

South Pelican Island



Location: Brunswick County (no detailed map shown)

Total Size: 13.4 ha (33.2 acres)

Site Description: South Pelican Island is a dredged-sand island located in the lower Cape Fear River south of Wilmington. The island has been a haven for nesting pelicans, gulls, and terns for more than two decades. The site is posted and patrolled, and is off limits to all visitors.

Habitats: Bare sand, sparse, moderate-density, and dense grasses and herbs.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, vegetation succession resulting in loss of habitat for nesting terns.

Protection Status: The site is protected and managed by Audubon North Carolina and the North Carolina Wildlife Resources Commission.

Conservation Issues: The availability of sand to maintain the island and early-succession nesting habitat is a concern. This island has gone a decade or longer without sand, during which time the habitat for nesting terns has been greatly reduced. The island needs sand every four to seven years to maintain habitats. The island is posted and patrolled throughout the nesting season to prevent disturbance to nesting birds. Human disturbance can result in egg or chick loss, nest abandonment, and colony abandonment.

Birds: South Pelican Island is an important nesting site for Royal Terns, Sandwich Terns, and a few Gull-billed Terns. Sandwich Terns did not nest in 2007, but returned to nest in 2008 and 2009. It is not uncommon for Royal and Sandwich Terns to nest on either or both South Pelican Island and Ferry Slip Island in the lower Cape Fear River. An average of 10 to 11 breeding pairs of American Oystercatchers nest there annually. Snowy Egret, Tricolored Heron, and Cattle Egret nest on the site in some years.

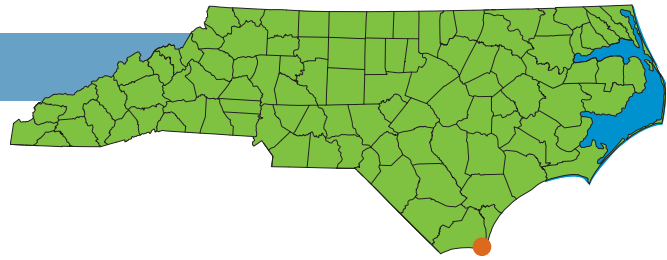
Monitoring and Research: This site is monitored annually by Audubon North Carolina in cooperation with the North Carolina Wildlife Resources Commission. Monitoring of American Oystercatchers extends beyond the breeding season to include migratory and wintering surveys. Royal and Sandwich Terns have been banded at this site for many years. Research on other waterbird and shorebird species has been conducted for many years.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
2a	Brown Pelican	B	332 prs.	2007	9.6	480 prs.	11.3
2b	Royal Tern	B	35 prs.	2007	<0.1	1,244 prs.	10.6
2b	Sandwich Tern	B	10 prs.	2006	—	407 prs.	15.4
2b	Sandwich Tern	B	211 prs.	2009	—	—	—
3a	Laughing Gull	B	649 prs.	2007	3.3	375 prs.	1.7
1	Gull-billed Tern	B	11 prs.	2007	12.2	13 prs.	6.4
2b	American Oystercatcher	B	11 prs.	2007	3.3	—	—
3ei	waterbirds	B	1,038 prs.	2007	—	1,129 prs.	—

B = breeding

Striking Island



Location: Brunswick County (no detailed map shown)

Total Size: 23.8 ha (58.9 acres)

Site Description: Striking Island is a natural marsh island located in the lower Cape Fear River south of Wilmington. The site consists primarily of intertidal and high saltmarsh with small islands of upland washed oyster shell banks, shrubs, and grassy areas.

Habitats: Saltmarsh, shrubland, oyster shell “rakes.”

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds.

Protection Status: The site is protected and managed by Audubon North Carolina. The site is posted and patrolled, and is off limits to all visitors.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Disturbance to nesting birds is a primary concern.

Birds: Striking Island is an important foraging site for wading birds from the nearby Battery Island Audubon Sanctuary. The site supports nesting Laughing Gulls, American Oystercatchers, Willets, and Clapper Rails. The number of nesting Laughing Gulls varies annually, but typically ranges between 100 and 300 nesting pairs. The site is also important to the lower Cape Fear River population of breeding and wintering American Oystercatchers.

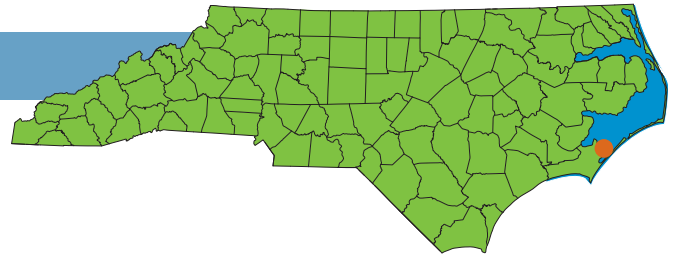
Monitoring and Research: This site is monitored by Audubon North Carolina and is included in the periodic Colonial Waterbird Atlas project in cooperation with the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Laughing Gull	B	115 prs.	2007	0.6	251 prs.	1.1
2a	American Oystercatcher	B	5 prs.	2009	—	—	—

B = breeding

Tump Island



Location: Carteret County (no detailed map shown)

Total Size: 8.0 ha (19.8 acres)

Site Description: Tump Island is a small, remote island located on the western side of the Cedar Island peninsula. It is part of the Cedar Island National Wildlife Refuge. The island is primarily marsh, with small areas of shrub thicket and bare sandy habitat. It supports nesting waterbirds during most seasons.

Habitats: Shrubland, bare sand, grass.

Land Use: Wildlife conservation.

Primary Threats: Erosion, disturbance to birds.

Protection Status: The site is protected and managed by the United States Fish and Wildlife Service.

Conservation Issues: The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31. Human disturbance during the nesting season is a serious concern.

Birds: Tump Island has supported a mixed-species colony of nesting waterbirds for nearly two decades, but no waterbirds nested on the site in 2007. This is likely due to erosion on the island and the loss of suitable nesting habitat for waterbirds.

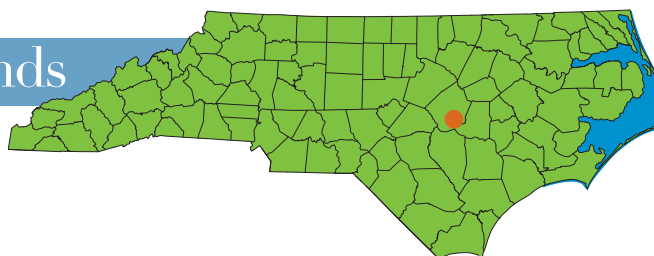
Monitoring and Research: This site is monitored by the United States Fish and Wildlife Service.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2001–7	Avg % of NC Population 2001–7
1	Gull-billed Tern	B	40 prs.	2004	17 prs.	14.9%
2a	Black Skimmer	B	14 prs.	2004	7 prs.	1.2
2a	Common Tern	B	3 prs.	2004	19 prs.	1.8
3a	Forster's Tern	B	65 prs.	2004	45 prs.	4.7

B = breeding

Upper Neuse River Bottomlands



Location: Johnston County

Total Size: 17,624.1 ha (43,550.1 acres)

Site Description: The upper Neuse River Bottomlands Important Bird Area is located along the Neuse River between Goldsboro and Smithfield. The site consists of extensive bottomland hardwood forest, cypress-gum swamp bordered by longleaf and loblolly pine, mixed hardwoods, and agriculture lands. A central feature of the Important Bird Area is Howell Woods Environmental Learning Center. This 1,156 ha (2,857 acres) complex, established by Johnston Community College, has implemented long-term bird monitoring programs, conducts regular bird identification workshops, and works to protect, manage, and restore habitats for birds.

Habitats: Bottomland hardwood forest, cypress-tupelo-gum swamp forest, pine forest, mixed hardwood forest, agriculture.

Land Use: Wildlife conservation, other conservation, agriculture and cultivation, education.

Primary Threats: Logging, introduced species, water pollution.

Protection Status: The Howell Woods Environmental Learning Center protects and manages approximately 7 percent of the Important Bird Area. The remaining acreage is in private holdings.

Conservation Issues: The bottomland forests within this Important Bird Area are essential to North Carolina's birds, but these forests are also prime targets for timber harvest. Protecting the swamp forests in this area is vital for the species of birds that depend on this habitat type. In 2007, the Neuse was named one of the ten most endangered rivers in the United States.

Birds: This site has significant acreage of bottomland hardwood forest and cypress-tupelo-gum swamp forest and supports the suite of species associated with these natural communities (Criterion NC4). It has a significant diversity of landbirds, with a recent checklist naming 173 species. This is likely one of North Carolina's most important sites for Mississippi Kites. The Howell Woods Environmental Learning Center manages agricultural lands and grassland habitats that support species such as Northern Bobwhite, Eastern Meadowlark, and Grasshopper Sparrow.

Monitoring and Research: The Howell Woods facility is the site of a Monitoring Avian Productivity and Survivorship banding station and also conducts migration period banding. The director, Jamie Sasser, conducts master workshops about banding on a regular basis. Records are now being entered into eBird on a fairly regular basis.

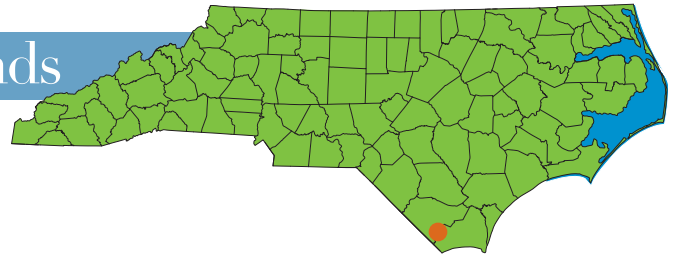
Key Bird Species

Criterion	Species	Season	Number*	Year*
2b	Acadian Flycatcher	B	63	2000–7
2b	Brown-headed Nuthatch	all	9	2000–7
3a	Blue-gray Gnatcatcher	B	23	2000–7
2b	Wood Thrush	B	61	2000–7
2b	Prothonotary Warbler	B	33	2000–7
2b	Kentucky Warbler	B	65	2000–7
3a	Ovenbird	B	52	2000–7
2a	Swainson's Warbler	B	63	2000–7
2b	Hooded Warbler	B	62	2000–7
3a	American Redstart	B	64	2000–7
3a	Mississippi Kite	B	8	2009

B = breeding

*"Number" is the number of unique individual birds banded at Howell Woods Environmental Education Center.

Waccamaw River Bottomlands



Location: Brunswick and Columbus Counties

Total Size: 48,906.2 ha (120,849.9 acres)

Site Description: The Waccamaw River Bottomlands Important Bird Area begins in the Red Hull Swamp area, north of the town of Lake Waccamaw and Whiteville, and continues south to include the bottomlands associated with Lake Waccamaw and the Waccamaw River to the South Carolina line. This is an extensive area of bottomland hardwood forest and cypress-gum swamp forest. As with most North Carolina forests, much of the Waccamaw River bottomland forests were logged in the early half of the 20th century. Nevertheless, this site is one of the largest areas of bottomland forest in North Carolina and is critical to North Carolina birds.

Habitats: Bottomland hardwood forest, cypress-tupelo-gum swamp forest, blackwater river, lake.

Land Use: Wildlife conservation, other conservation, hunting, fishing, recreation.

Primary Threats: Introduced species, logging, water quality degradation.

Protection Status: This site includes the Lake Waccamaw State Park, which encompasses 4,227 ha (10,445 acres). The majority of the Important Bird Area is in private holdings.

Conservation Issues: Because the forest habitat along the Waccamaw River is critical to birds, it is essential to maintain the integrity of the forest. More attention should be given to further changes in ownership of private industrial forest lands in this Important Bird Area since forest management and ownership are undergoing rapid changes.

Birds: This drainage supports an excellent assemblage of bottomland species, including high densities of Prothonotary Warbler and Northern Parula. Yellow-throated Warbler, Blue-gray Gnatcatcher, Wood Duck, and woodpecker species are abundant here as well. Some White Ibis from Battery Island travel to the Waccamaw River swamps to forage during the nesting season. In 2009 an emaciated Snail Kite was recovered here. Swallow-tailed Kites have also been observed during late April, but no evidence of nesting has been found. The bottomland hardwood forest and cypress-tupelo-gum swamp forest are extensive and excellent examples of these habitat types (Criterion NC4). This site includes the only known breeding site for Wood Stork in North Carolina.

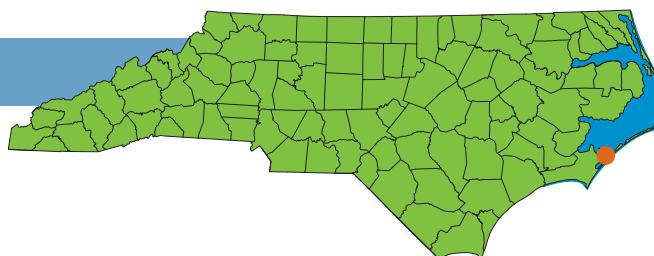
Monitoring and Research: Audubon North Carolina conducted regular bird surveys within this Important Bird Area during 2008 and 2009. Bird records for Lake Waccamaw State Park are entered in the Natural Resource Inventory Database. In 2008 inland heronry surveys were completed by the North Carolina Wildlife Resources Commission using aerial and ground surveys.

Key Bird Species

Criterion	Species	Season	Number	Year
3a	Anhinga	B	21	2008
2a	Little Blue Heron	B	35	2008
1	Wood Stork	B	149	2008
3a	Cattle Egret	B	341	2008
2a	Little Blue Heron	B	35	2008
3a	Great Egret	B	78	2008
3ei	Waterbirds	B	1360+	2008
1	Bald Eagle	all	4	2007
2b	Northern Parula	B	33	2009
2b	Prothonotary Warbler	B	46	2009
3g	migrant and wintering songbirds	FM, W, SM	—	—

B = breeding; FM = fall migration; SM = spring migration; W = winter

Wainwright Island



Location: Carteret County (no detailed map shown)

Total Size: 46.7 ha (115.4 acres)

Site Description: Wainwright Island is a natural estuarine island that sits at the junction of Core and Pamlico Sounds. The site has received deposits of dredged sand sporadically since the 1970s. Dredged sand has enlarged the island and created suitable habitat for a variety of waterbirds. At the present time, the island is eroding and has lost a significant amount of upland habitat.

Habitats: Bare sand, areas with moderate-density grasses and herbs, and saltmarsh, seagrass flats.

Land Use: Wildlife conservation.

Primary Threats: Disturbance to nesting birds, lack of availability of dredged sand.

Protection Status: The site is protected and managed by Audubon North Carolina as the Wainwright Island Audubon Sanctuary. The island is posted, patrolled, and entirely off limits to visitors during the nesting season, from April 1 to August 31.

Conservation Issues: Disturbance to nesting birds is a primary concern. Storms of recent years have caused significant erosion on the island. Maintenance of the island with dredged sand is important to the continued viability of the site as a nesting site for colonial waterbirds. Nesting Great Black-backed Gulls and Herring Gulls have increased in number in recent years. The impact of these species on nesting terns should be studied. The placement of dredged sand on this island once every 7 to 10 years is important to the maintenance of the habitat for nesting terns and pelicans.

Birds: Wainwright Island has long been a nesting site for Brown Pelicans and other colonial waterbirds. In past years, this site has supported one of the state's largest colonies of Royal and Sandwich Terns. Erosion had reduced the size of the island and eliminated much of the habitat by 2006. In the winter of 2007, dredged sand was deposited on the island. Royal and Sandwich Terns returned to the island to nest in 2007 and have nested ever since. The island also supports a small colony of Black-crowned Night Herons, Great Egrets, and Forster's Terns.

Monitoring and Research: This site is monitored by Audubon North Carolina. Royal and Sandwich Terns have been banded annually at the site for many years.

Key Bird Species

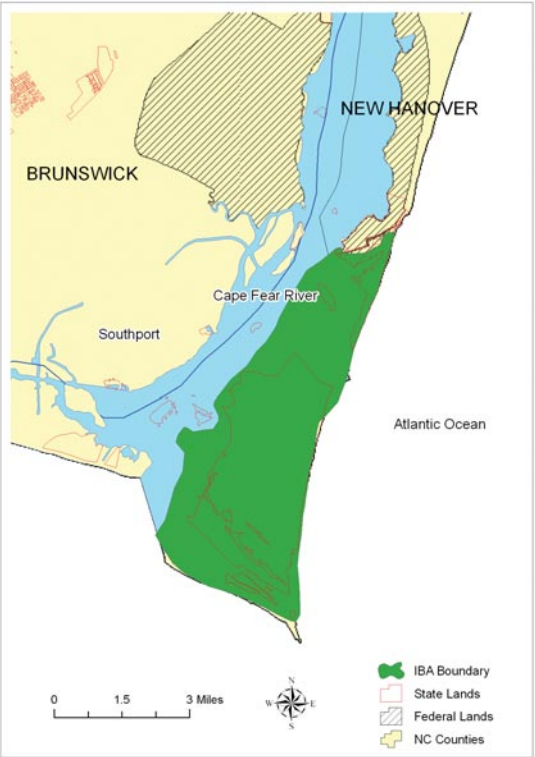
Criterion	Species	Season	Number	Year	% of NC Population 2007	Average Number 2001–7	Avg % of NC Population 2001–7
3a	Forster's Tern	B	52 prs.	2007	5.0	21 prs.	2.4
2b	Sandwich Tern	B	64 prs.	2007	2.3	21 prs.	0.4
2b	Royal Tern	B	619 prs.	2007	5.8	206 prs.	1.1
3a	Herring Gull	B	8 prs.	2007	1.3	32 prs.	4.4
3ei	waterbirds	B	743 prs.	2007	—	339 prs.	—

B = breeding

Alligator River Lowlands



Bald Head–Smith Island



Bird Island–Twin Lakes



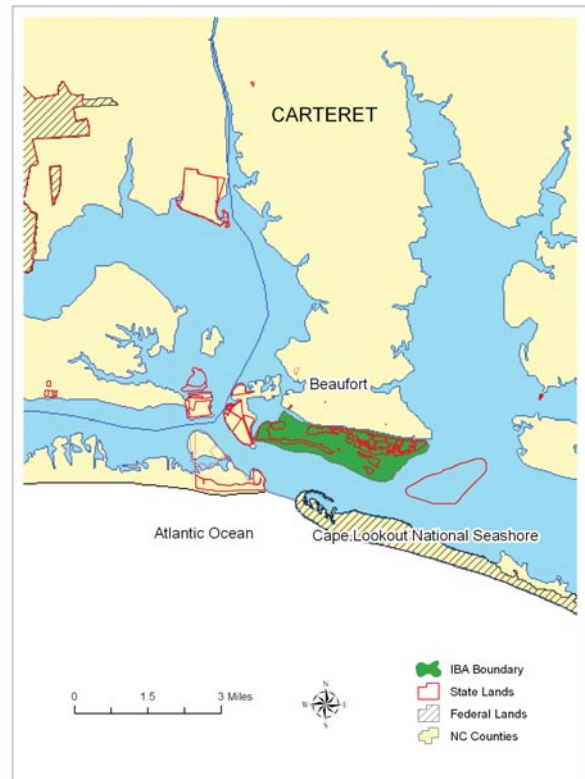
Cape Hatteras National Seashore



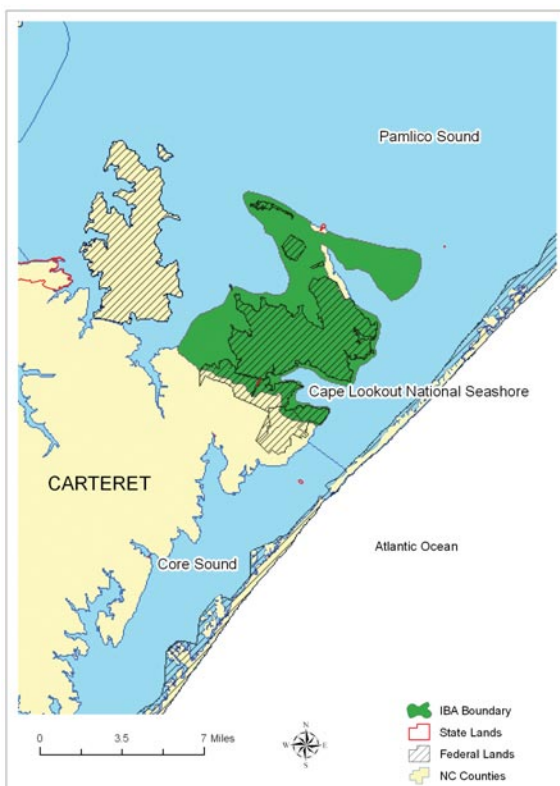
Cape Lookout National Seashore



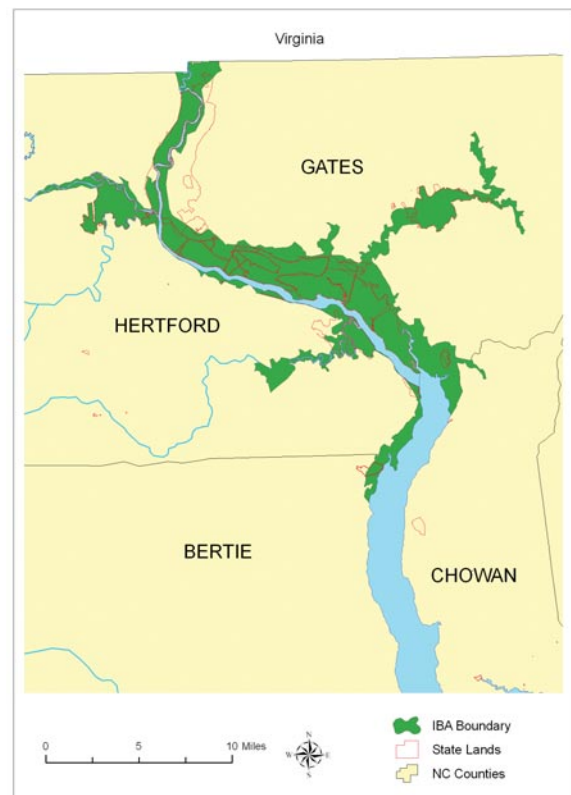
Carrot Island–Bird Shoal



Cedar Island Marsh



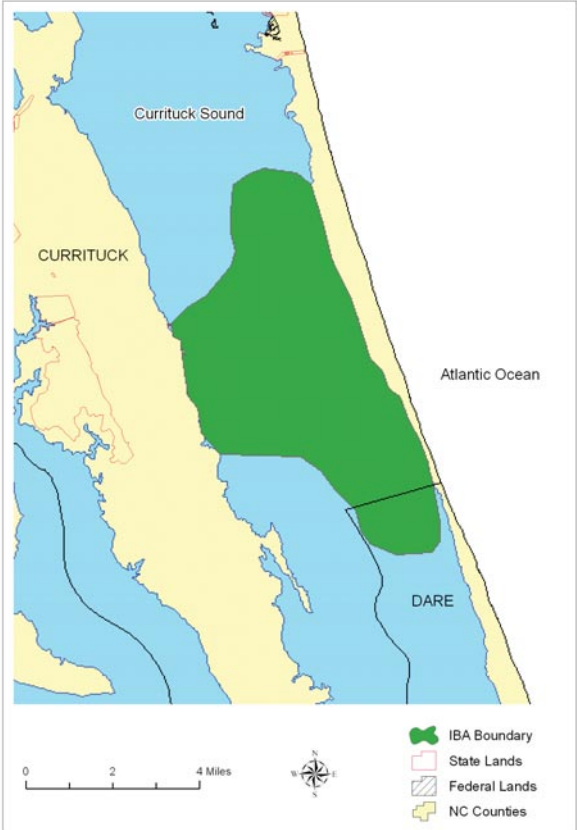
Chowan River Bottomlands



Croatan Forest



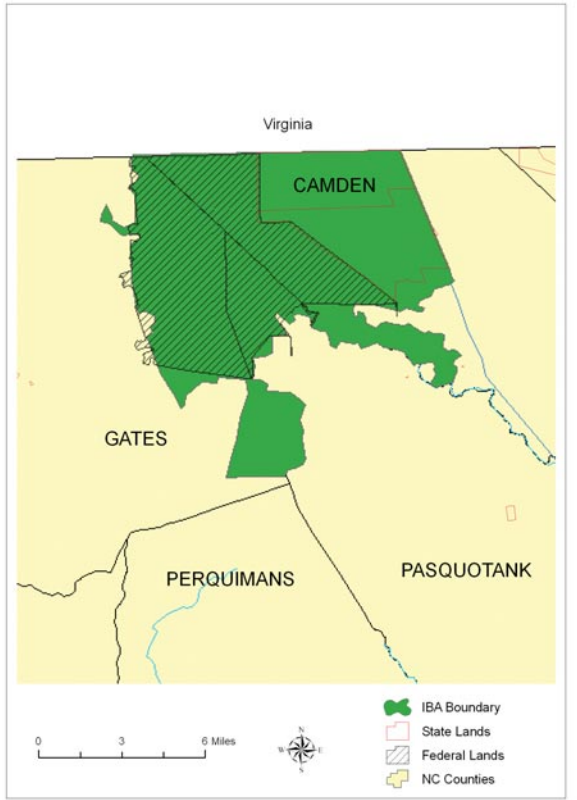
Currituck Marshes–Pine Island



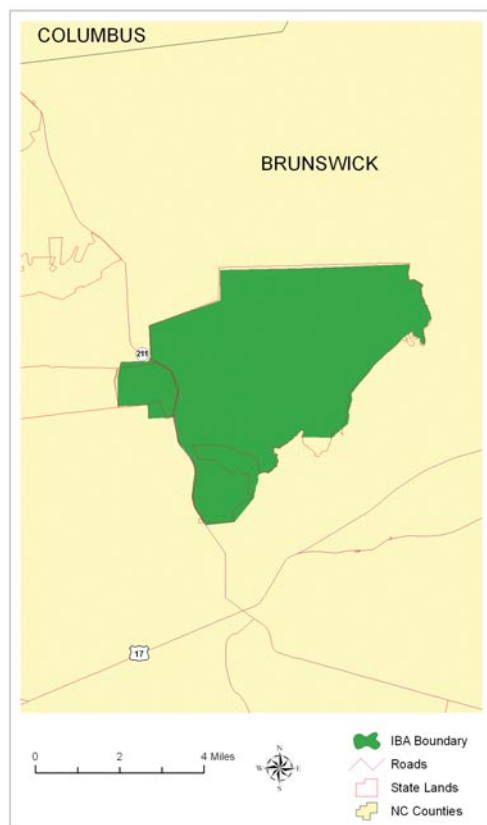
Eagles Island



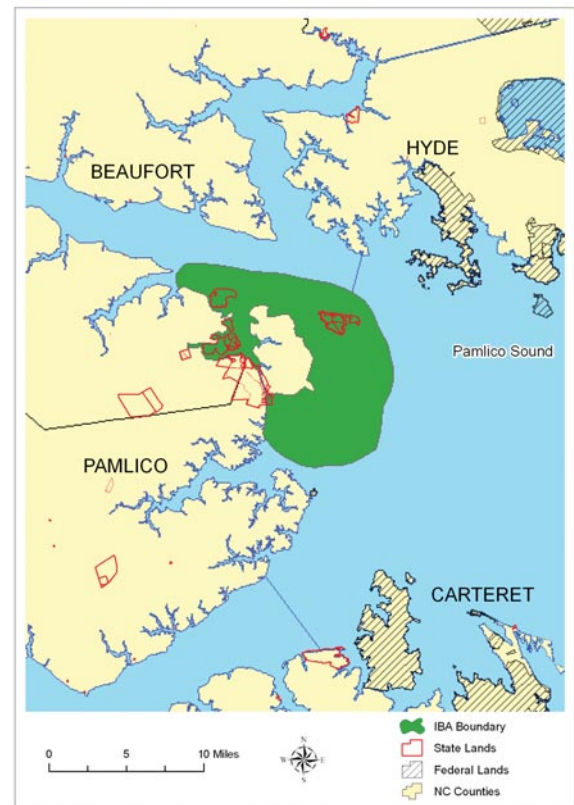
Great Dismal Swamp



Green Swamp



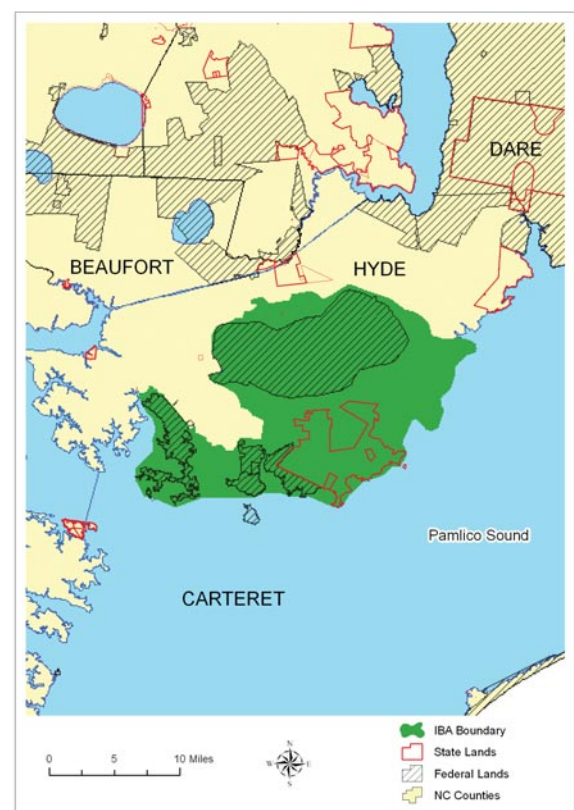
Hobucken Marshes–Gum Swamp



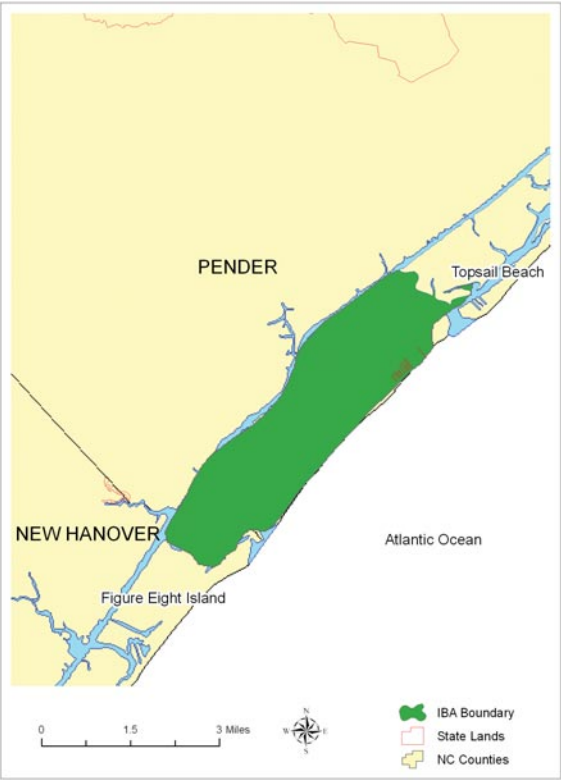
Holly Shelter–Angola Bay



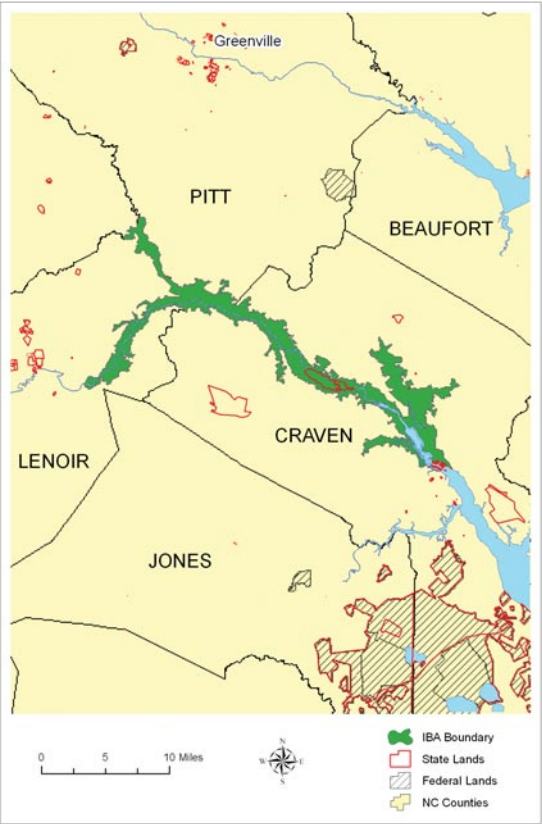
Lake Mattamuskeet–Swanquarter



Lea-Hutaff Island



Lower Neuse River Bottomlands



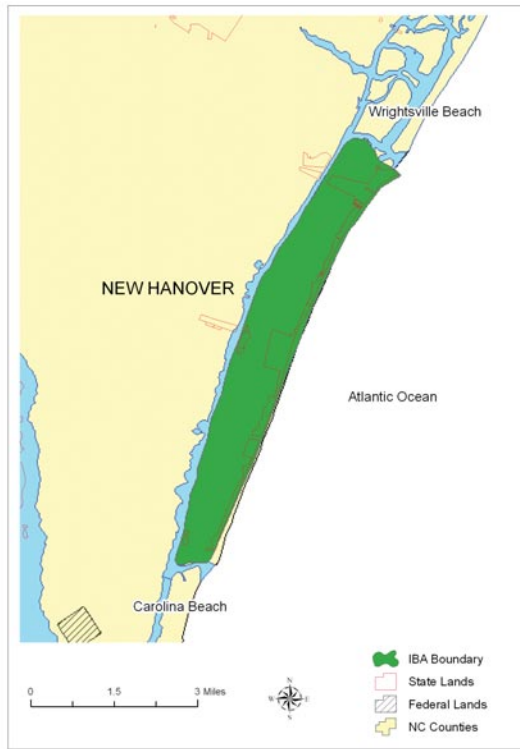
Lumber River Bottomlands



Mackay Island



Masonboro Island



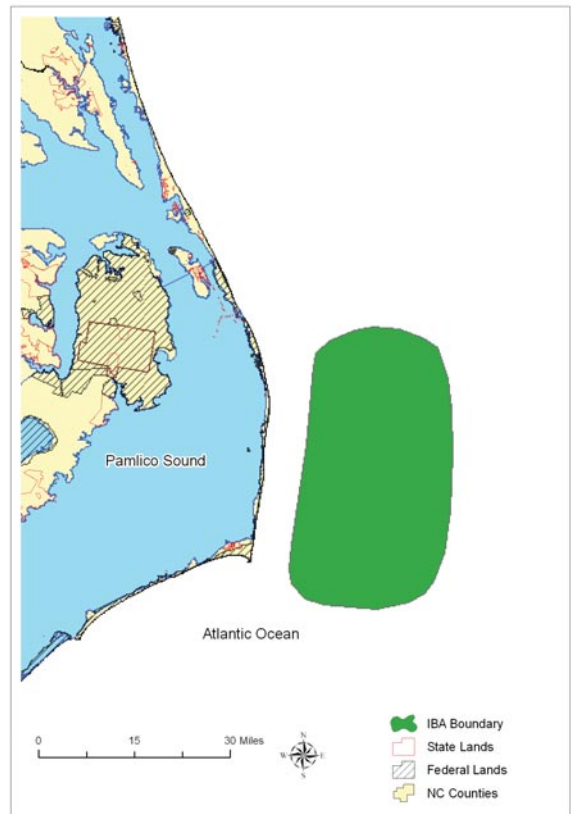
Onslow Bay



Outer Banks, Inshore Ocean



Outer Continental Shelf



Palmetto-Peartree and Buckridge



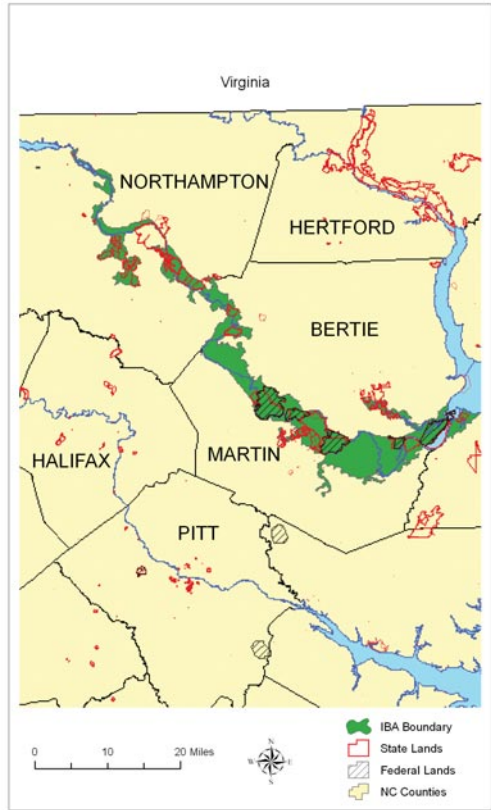
Pea Island



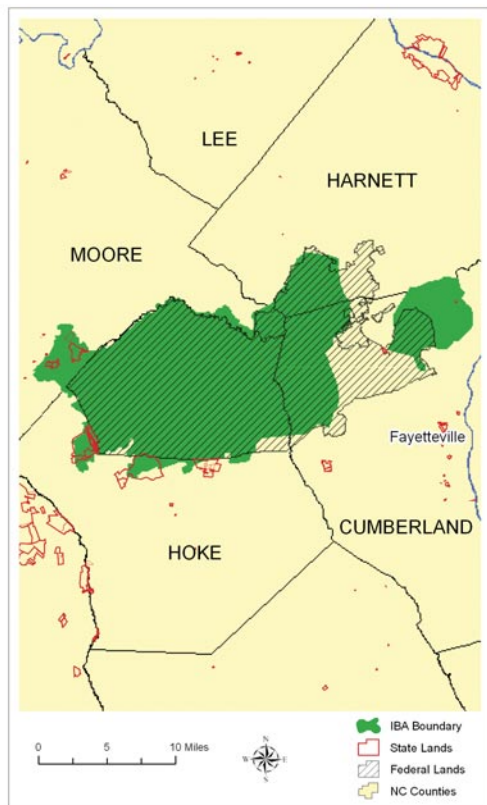
Pungo-Pocosin Lakes



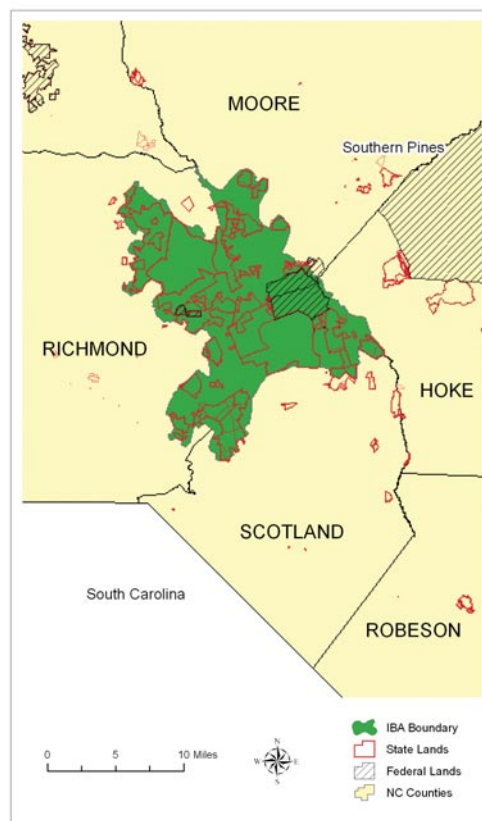
Roanoke River Bottomlands



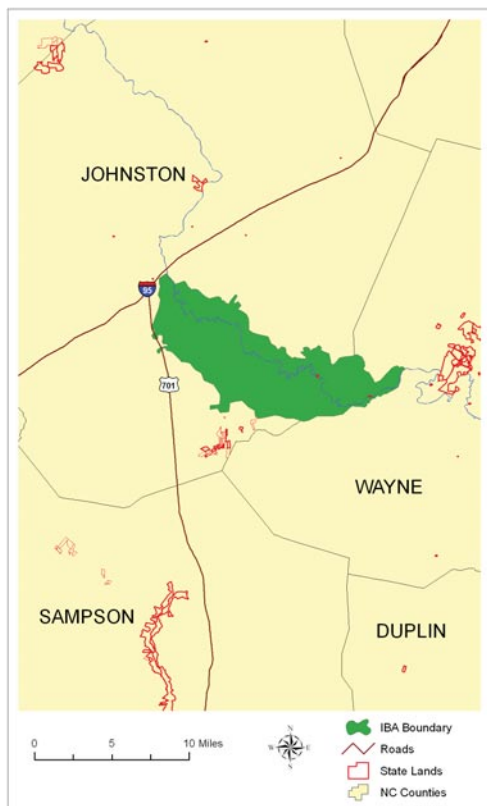
Sandhills East



Sandhills West



Upper Neuse River Bottomlands



Waccamaw River Bottomlands



North Carolina's Piedmont



The physiographic province known as the Piedmont occupies roughly 35 percent of the state, extending from the coastal plain Fall Line, on the east, to the Blue Ridge escarpment at the base of the mountain region, on the west.

The Piedmont is considered a “plateau,” though it is really a gradually descending (in elevation) plain from west to east, about 457 m (1,500 feet) at the base of the escarpment ranging down to 61 to 91 m (200–300 feet) above sea level near the Fall Line. Metamorphic rocks underlie nearly all of the Piedmont, though a few regions known as Triassic basins were later formed that filled with younger sediments (now sedimentary rocks). As one would expect, the Piedmont does have irregular landforms. In the western section there are outlier “mountain ranges”: these are, from north to south, the Sauratowns, the Brushies, and the South Mountains. East of these are other distinct montane outliers, such as Kings Mountain, the Uwharrie Mountains, and a scattering of other exposed hills, such as Oconeechee Mountain. These outliers, called “monadnocks,” consist of areas of rocks that are more

resistant than the surrounding sediments.

The Piedmont is drained by numerous rivers and streams, generally flowing east and south. Quite a few of them have been dammed in recent decades, such that many dozens of reservoirs now cover the region’s floodplains.

The province’s climate is generally one of warm to hot summers (high temperatures averaging in the upper 80s in midsummer) and cool winters, with midwinter temperatures averaging 50°F for highs and 30°F for low temperatures. Rainfall is rather evenly distributed throughout the year, typically in the range of 102 to 127 cm (40–50 inches) per year. Snowfall is light, typically averaging close to 10 cm (4 inches) near the Fall Line to 25 to 30 cm (10–12 inches) near the mountains.

The Piedmont contains, by far, the largest human population of the state’s three provinces. The Piedmont Crescent extends from Raleigh on the east and runs through Greensboro, Winston-Salem, and Charlotte, continuing south through upper South Carolina to Atlanta, Georgia. Fortunately, other portions of the state’s Piedmont are more thinly settled, and

North Carolina's Piedmont



the southeastern Piedmont, centered on the Uwharrie Mountains and the Pee Dee River valley, is heavily forested. The western and northwestern Piedmont also contain extensive forests, particularly as these areas contain foothill ranges that are difficult to develop.

Birds of the Piedmont

The Piedmont is not as critical to breeding birds in North Carolina as is the mountain region or the coastal plain, in terms of providing habitat for rare or other sensitive species. This is due in part to the fact that the province is rather homogeneous from northern Virginia to eastern Alabama. Because it is situated between the mountains and the coastal plain, it has practically no species that do not nest in either of the adjacent provinces. Nonetheless, because it is sandwiched between the other provinces, it does have a wide array of nesting birds, sharing especially breeders with the coastal plain.

The most important habitats for breeding birds in the province are the various hardwood forests, especially the extensive upland forests found in the foothills. Such forests are home to neotropical migrant breeders such as Worm-eating Warbler, Swainson's Warbler (near the escarpment), Broad-winged Hawk, Hooded Warbler, Ovenbird, Scarlet

Tanager, Wood Thrush, and many others. Bottomland hardwood forests in the Piedmont are home to other neotropical migrant breeders, such as Louisiana Waterthrush, Acadian Flycatcher, Kentucky Warbler, American Redstart, and Prothonotary Warbler. Of course, extensive hardwood forests provide habitat for permanent residents, such as a variety of woodpeckers, in particular the Pileated and Hairy, and raptors such as the Barred Owl and Red-shouldered Hawk.

The Piedmont receives its share of logging activity, and large amounts of land exist in seral stages of forest. Pine forests are common across the Piedmont; they host species such as Pine Warbler, Brown-headed Nuthatch, and Eastern Wood-Pewee in summer, and mixed species flocks (Carolina Chickadees, Tufted Titmice, kinglets, and others) in winter. Early-succession clearcuts are important habitats for neotropical species such as Prairie Warbler, Yellow-breasted Chat, and Blue Grosbeak, and the abundant forest edges and openings are home to large numbers of Indigo Buntings. For poorly known reasons, several permanent resident species are decreasing drastically in our old-field habitats, in particular the Northern Bobwhite and Field Sparrow. However, no



birds are in more serious trouble in the Piedmont than the grassland species, which rely on pastures, airports, and other mowed grassy areas for survival. Breeding Bird Surveys have shown steep declines in the Piedmont for the Loggerhead Shrike, Grasshopper Sparrow, and Eastern Meadowlark. Other birds that make use of open lands such as farmyards, groves, and orchards exhibit mixed trends on the Breeding Bird Surveys. Eastern Kingbirds are declining, whereas

Eastern Bluebirds are increasing, thanks to an increase in nesting boxes erected for their use.

Because the Piedmont is the most urban of the provinces in the state, a number of birds dependent on human-created habitats occur in large numbers. Some species are clearly increasing, such as American Robin and Chipping Sparrow, whereas most other “suburban” species such as Northern Mockingbird, Northern Cardinal, and Common Grackle



appear to be stable or even declining. Nonetheless, there is little concern for the overall populations of such urban species.

Another key habitat in the Piedmont is reservoirs and other bodies of water. The province is devoid of natural lakes, with beaver ponds being the only natural source of open standing water. For better or worse, dozens of reservoirs, some up to 32 km (20 miles) or more in length, have been created in the past few decades. This reservoir construction has drastically affected local birdlife. A few decades ago, wintering waterfowl were scarce in the Piedmont, but now ducks and other waterbirds winter in often large numbers as habitat has become available. Migrating shorebirds frequently drop in at reservoirs with exposed mudflats, particularly in late summer and fall. Waterbirds such as Bald Eagle, Osprey, and Double-

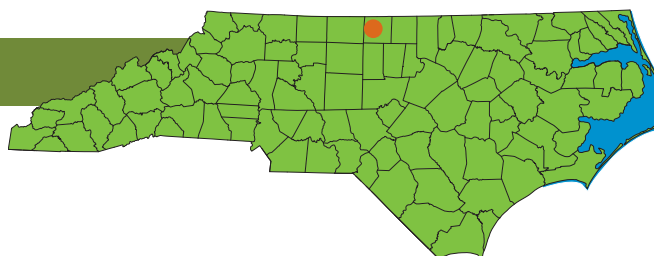
crested Cormorant now nest at scattered lakes. A few birds nest under bridges and dams, and the Cliff Swallow breeds in the state, mainly at Piedmont reservoirs.

Conservation Concerns

As the human population continues to expand in the Piedmont, however, more and more bird habitats are being lost. Former croplands and pastures are now rapidly being covered with homes. Upscale developments now place widely scattered homes within extensive forests, further fragmenting the forests. Powerlines and new highways bisect forested areas, reducing populations of birds such as Wood Thrush, now in rapid decline in the region. Fortunately, in the past few decades we have seen a major thrust in conservation, with a number of national and regional land trusts assisting local, state, and national agencies and organizations in protecting lands. The Piedmont now has major areas of protected lands, such as Uwharrie National Forest, South Mountains State Park and Game Land, Umstead State Park, Caswell Game Land, and lands surrounding reservoirs such as Jordan Lake and Falls Lake. Many of the monadnocks are protected, such as Hanging Rock and Pilot Mountain. But more protection work is needed, particularly in the foothills region, where there are still extensive forest lands that are unprotected.



Caswell Game Lands



Location: Caswell County

Total Size: 10,658.2 ha (26,337.1 acres)

Site Description: Caswell Game Lands is an Important Bird Area in north-central North Carolina near the town of Yanceyville. The site is characterized by rolling hills with heavy clay soils, mixed woodlands, and bottomland hardwood forest. Mixed forest contains all age classes, the oldest being from hardwoods 100 or more years old, while the bottomland hardwoods average 80 or so years. The site contains excellent second-growth hardwood forest. It also has agricultural areas that are rotated for crops that include small grain and legumes. In addition, there are beaver ponds and managed waterfowl impoundments.

Habitats: Coniferous forest, mixed forest, bottomland hardwoods, agriculture.

Land Use: Wildlife conservation, forestry, hunting.

Primary Threats: No major threats, though cowbird parasitism is a potential threat.

Conservation Issues: No major conservation issues. Continuing surveys of landbirds during breeding season, migration periods, and winter are needed. Northern Bobwhite calling surveys and Bachman's Sparrow surveys are needed to investigate the game land's global Important Bird Area status.

Protection Status: The entire tract is protected and managed by the North Carolina Wildlife Resources Commission.

Birds: The site supports the state's largest population of wild turkey and is a key migration corridor for raptors. It also has significant acreage of bottomland hardwood forest that supports breeding neotropical migrant and other songbirds typical of the Piedmont region (Criterion NC4). Many other priority species (e.g., Acadian Flycatcher, Kentucky Warbler) are present in this Important Bird Area and more study is needed to determine population levels. Black Vulture roosts with as many as 500 individuals occur on the site during fall migration. This is likely one of the largest Black Vulture roosts in the state.

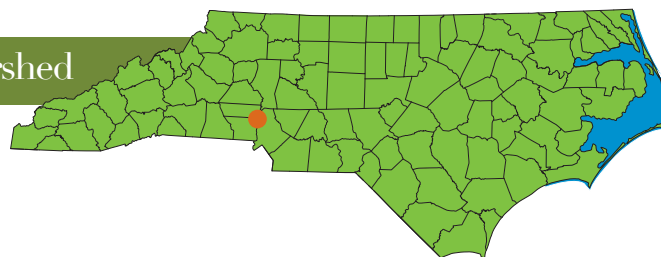
Monitoring and Research: As a part of the North Carolina Wildlife Resources Commission's Cooperative Upland Restoration and Enhancement program, this Important Bird Area has been surveyed for gamebirds and landbirds from 2002 to 2006 at 26 regular point count locations. Other research on migration, habitat usage, and other topics has been and is being conducted by the North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year
3a	Black Vulture	FM	500	2002
2a	Northern Bobwhite	B	9+	2004
2b	Brown-headed Nuthatch	W	57	2004
2b	Wood Thrush	B	39	2004
2b	Prairie Warbler	B	25	2004
2b	Hooded Warbler	B	21	2004

B = breeding; FM = fall migration; W = winter

Catawba River Mountain Island Lake Watershed



Location: Lincoln, Gaston, and Mecklenburg Counties

Total Size: 2,176.2 ha (5,377.6 acres)

Site Description: The site includes the bottomland forest and riparian corridor along the Catawba River from Lake Norman to Mountain Island Lake. Tracts along the Catawba River were purchased by Mecklenburg County in 1992 to preserve wildlife habitat and open space and to help provide protection for the water quality of Mountain Island Lake, the primary source of drinking water for the city of Charlotte. The site includes the Mecklenburg County Cowan's Ford Wildlife Refuge. The most significant feature of the refuge is its mosaic of natural community types, including bottomland hardwood forest, that have been left intact along the river.

Habitats: Coniferous forest, bottomland hardwood forest, deciduous forest, mixed forest.

Land Use: Other conservation, wildlife conservation.

Primary Threats: Introduced plants, cowbird parasitism, overbrowsing.

Protection Status: Tracts within the area are protected by Mecklenburg, Lincoln, and Gaston Counties, and the North Carolina Wildlife Resources Commission. The remaining land is in private ownership.

Conservation Issues: Invasive exotic plant species have spread into many areas. An overabundance of white-tailed deer has caused serious damage to vegetation due to overbrowsing. An obvious browse line is evident in many areas of deciduous and bottomland forest. Past management practices have resulted in forest fragmentation and increased predation by forest edge

predators. Management programs are being implemented by Mecklenburg County and the North Carolina Wildlife Resources Commission to address these issues.

Birds: As of February 2009, 206 species of birds have been recorded at Cowan's Ford Wildlife Refuge. From 1996 to 1998, 360 point counts were conducted at Cowan's Ford Wildlife Refuge as part of a habitat selection study of neotropical migratory land birds. Data collected from that study included a total of 115 species of birds, 54 (47%) of which were neotropical migrants. Of the 54 neotropical migratory species, 27 were transients to the North Carolina piedmont; and at least 23 of the remaining species breed at Cowan's Ford Wildlife Refuge. The Catawba River is a well-known migratory corridor.

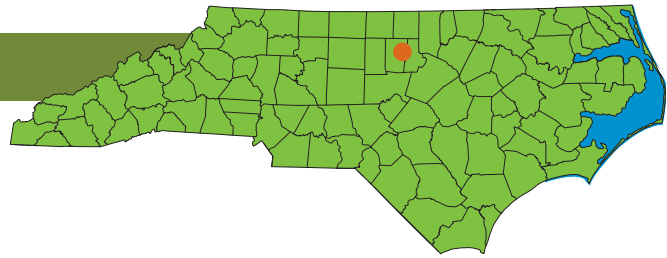
Monitoring and Research: Adopt an Important Bird Area volunteers are entering data from this Important Bird Area directly into eBird. In addition, Mecklenburg's Park and Recreation Department conducts wintering and migratory waterfowl surveys, point counts, nest box programs, education and outreach, and other monitoring efforts. These data are stored in the county's own in-house, web-based database system known as "Mecklenburg Wildlife Identification Location and Documentation."

Key Bird Species

Criterion	Species	Season	Number	Year
2b	American Black Duck	FM, W	50	2000
2b	Wood Duck	B	23	2004
2a	Northern Bobwhite	B	17	2000
3a	Yellow-billed Cuckoo	B	34	1997
2b	Wood Thrush	B	71	2002
2b	Prairie Warbler	B	87	2002
2b	Prothonotary Warbler	B	26	1997
2b	Field Sparrow	B	123	2002
3a	Rusty Blackbird	W	75	2005

B = breeding; FM = fall migration; W = winter

Eno River Bottomlands



Location: Orange and Durham Counties

Total Size: 5,077.9 ha (12,547.7 acres)

Site Description: The Eno River is located in the central Piedmont of North Carolina, near Durham. Much of the Important Bird Area consists of Eno River State Park, which contains upland and lowland hardwoods, bottomland hardwoods, mixed pine—hardwood areas, pine, and old fields, as well as steep, mesic wooded slopes, which are atypical for the Piedmont of North Carolina.

Habitats: River and riparian, mixed forest, rocky cliff, old field.

Land Use: Wildlife conservation, other conservation, and recreation.

Primary Threats: Residential and commercial development, and sedimentation.

Protection Status: Much of the site is protected and managed by the North Carolina Division of State Parks. Local groups like the Eno River Association and Triangle Land Conservancy are working to protect additional areas outside of the park boundaries.

Conservation Issues: Residential development near the State Park boundaries, encroachment on the park, fragmentation of surrounding habitats, and sedimentation are all concerns in this Important Bird Area surrounded by urbanization.

Birds: This site provides a diversity of habitats and is an exceptional example of alluvial riverine forest with the suite of species associated with this habitat type (Criterion NC4).

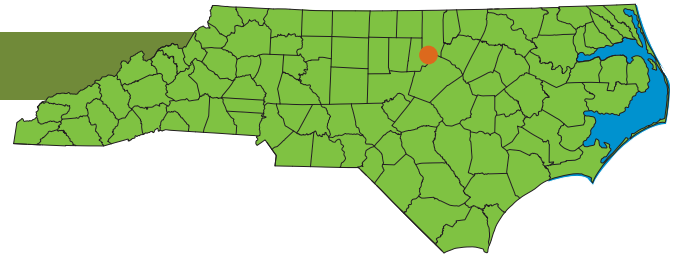
Monitoring and Research: North Carolina Division of State Parks currently conducts a Monitoring Avian Productivity and Survivorship banding station in this Important Bird Area at Eno River State Park. Adopt an Important Bird Area activities are getting under way with New Hope Audubon, and these will include point counts and transects in breeding season, migration periods, and winter months. Data collected are being shared with State Parks through the Natural Resource Inventory Database. The Durham Christmas Bird Count circle covers a portion of this Important Bird Area. In addition, portions of the Chapel Hill Bird Club Mini-Breeding Bird Survey route system include this Important Bird Area.

Key Bird Species

Criterion	Species	Season	Number
2b	American Black Duck	B	—
2b	Wood Duck	B	—
2a	American Woodcock	all	—
2a	Northern Bobwhite	all	—
2b	Whip-poor-will	B	—
2b	Acadian Flycatcher	B	—
2b	Brown-headed Nuthatch	all	—
2b	Wood Thrush	B	—
2b	Northern Parula	B	—
2b	Prairie Warbler	B	—
2b	Prothonotary Warbler	B	—
2b	Louisiana Waterthrush	B	—
2b	Kentucky Warbler	B	—

B = breeding

Falls Lake



Location: Wake, Granville, and Durham Counties

Total Size: 22,698.7 ha (56,089.6 acres)

Site Description: Falls Lake is located near the center of North Carolina and borders the eastern edge of the rolling hills of the Piedmont plateau. The dam impounds the waters of the upper Neuse River and is located immediately upstream of the village of Falls in Wake County, North Carolina. The drainage area above the dam is 200,000 ha (494,211 acres) with approximately one-third of this area in the Eno River basin, one-fourth in the Flat River Basin, with the remaining drainage area in the Little River basin and numerous smaller tributaries. Although some portions of the project area remain rural in character, the rapidly expanding urban and suburban growth areas of Raleigh surround project lands on the lower third of the project, as do outlying neighborhoods of Durham to a lesser degree in the western part.

Habitats: Lake, mixed forest, bottomland hardwood forest, coniferous forest.

Land Use: Wildlife conservation, recreation and tourism, water supply, hunting.

Primary Threats: Residential and commercial development, introduced plants, disturbance to birds.

Protection Status: Lands at Falls Lake are managed by the United States Army Corps of Engineers, North Carolina Wildlife Resources Commission, North Carolina Division of Parks and Recreation, Wake County Parks, Raleigh Parks Department, and North Carolina Botanical Gardens of the University of North Carolina at Chapel Hill.

Conservation Issues: Increasing development adjacent to project boundaries is a problem for birds and other types of wildlife. Development results in an increase in edge communities, fragmentation of habitat, and interruption of natural corridors for wildlife movement. Development may also result in pressure from domestic animals, increased sedimentation and runoff, increased recreational use of project land, increased boundary encroachments, and increased land use requests. Exotic and invasive plant species are widespread and should be controlled.

Birds: The site includes nearly 1,525 ha (3,768 acres) of bottomland hardwood forests and supports a significant diversity of species typically associated with this habitat type (Criterion NC4). The site also supports a significant diversity of migratory landbirds. At least two pairs of Bald Eagles are known to nest on the lake and up to 40 individuals are present at other times of the year.

Monitoring and Research: Thanks to the efforts of Brian Bockhahn with Falls Lake State Park and his cadre of volunteers, extensive bird monitoring is undertaken at Falls Lake. Monitoring include spring counts, Christmas Bird Counts (Falls Lake circle), fall migration counts, shorebird surveys, Bald Eagle counts, the annual Bioblitz, and Wood Duck, Prothonotary Warbler, and Eastern Bluebird nest box programs, among many other activities.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Bald Eagle	B	40	2006
2b	Whip-poor-will	B	22	2006
2b	Brown-headed Nuthatch	B	57	2006
3a	Cliff Swallow	B	142	2007
2b	Wood Thrush	B	35	2006
2b	Northern Parula	B	63	2007
2b	Prairie Warbler	B	51	2007
2b	Hooded Warbler	B	36	2007
3g	migratory landbirds	FM, SM	—	—

B = breeding, FM = fall migration, SM = spring migration

Jordan Lake

Location: Chatham and Wake Counties

Total Size: 29,582.3 ha (73,099.3 acres)

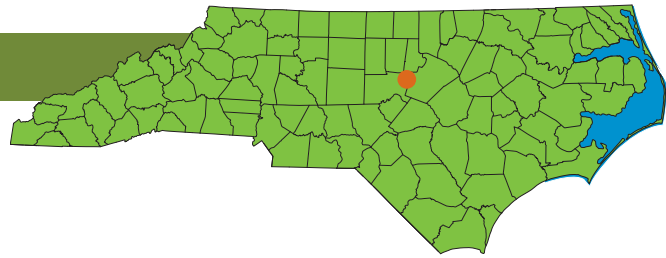
Site Description: B. Everett Jordan Dam and Lake is located in central North Carolina, with much of the state's human population living within a 120 km (75 miles) radius of the project. The Jordan Lake Project preserves thousands of hectares of natural lands in the midst of an expanding urban area. Of this total, 4,239 ha (10,475 acres) have been flooded to form the lake, and 10,025 ha (24,772 acres) are being managed for recreation and wildlife management. The dam impounds the waters of the Haw River and its largest tributary, the New Hope River, which joins the Haw River about 500 m (547 yards) above the dam site. The Haw joins the Deep River 6.8 km (4 miles) downstream of the dam to form the Cape Fear River. Although the lower portions of the project area remain rural in character, the rapidly expanding urban and suburban growth areas of Raleigh and Cary surround the upper reaches of the project to the east and Chapel Hill and Durham to the north.

Habitats: Lake, bottomland hardwood forest, mixed forest, coniferous forest.

Land Use: Wildlife conservation, recreation and tourism, forestry.

Primary Threats: Residential and commercial development, introduced plants, disturbance to birds.

Protection Status: The site is protected and managed by the United States Army Corps of Engineers, the North Carolina



Department of Parks and Recreation, North Carolina State University, and the North Carolina Wildlife Resources Commission.

Conservation Issues: Increasing development adjacent to project boundaries is a problem for birds and other types of wildlife. Development results in an increase in edge communities, fragmentation of habitat, and interruption of natural corridors for wildlife movement. Disturbance of the Bald Eagles during the nesting season is a concern. Recently adopted water quality standards are being challenged as too stringent.

Birds: One of the largest populations of Bald Eagles in North Carolina (four active nests and 10–20 individuals) is found here. Jordan Lake is one of only two nesting sites for Double-crested Cormorants known in North Carolina. Bottomland hardwood forest comprises approximately 20 percent of the total area and supports a significant suite of species typically associated with this habitat type (Criterion NC4).

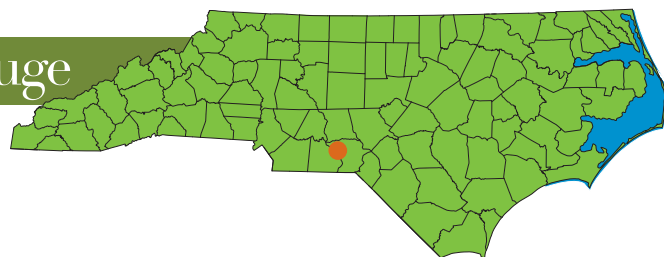
Monitoring and Research: A number of regular research and monitoring activities are undertaken, including the Bald Eagle Census by New Hope Audubon Adopt an Important Bird Area volunteers, the Christmas Bird Count (Jordan Lake circle), the Chapel Hill Bird Club Mini-Breeding Bird Survey routes, records in the Natural Resource Inventory Database for State Parks lands, and a variety of other projects.

Key Bird Species

Criterion	Species	Season	Number	Year
2a	Double-crested Cormorant	B	—	—
2b	Wood Duck	all	39	2004
1	Bald Eagle	all	47	2007
2b	Whip-poor-will	B	11	2007
2a	Red-headed Woodpecker	all	21	2008
2b	Brown-headed Nuthatch	all	53	2005
3a	Cliff Swallow	B	265	2005
2b	Wood Thrush	B	51	2005
2b	Northern Parula	B	81	2008
2b	Prairie Warbler	B	40	2004
2b	Prothonotary Warbler	B	38	2008
2b	Hooded Warbler	B	31	2005
3g	migratory landbirds	FM, SM	—	—

B = breeding; FM = fall migration; SM = spring migration

Pee Dee National Wildlife Refuge



Location: Anson and Richmond Counties

Total Size: 4,732.8 ha (11,694.9 acres)

Site Description: Pee Dee National Wildlife Refuge is located in Anson and Richmond Counties approximately 10 km (6.2 miles) north of Wadesboro. The site consists of a variety of habitat types along the Yadkin–Pee Dee River. Freshwater wetlands are found throughout and include small creeks, five ponds, one lake, two moist soil units, six impoundments, and one green-tree reservoir. Uplands, including mixed deciduous forests, upland pine forests, old fields and farmland, are found throughout. Pee Dee National Wildlife Refuge was established in 1965 “for use as an inviolate sanctuary, or for any other management purpose for migratory birds.” It is located adjacent to the famous Lockhart Gaddy Wild Goose Refuge, which provided sanctuary for over 15,000 Canada Geese in the 1940s through the 1960s.

Habitats: Bottomland hardwood forest, mixed forest, agricultural fields, open fields, managed impoundments.

Land Use: Wildlife conservation, recreation and tourism.

Primary Threats: Water pollution, energy generation, deforestation and tree cutting, recreational overuse, residential and commercial development

Protection Status: Protected and managed by United States Fish and Wildlife Service.

Conservation Issues: Water pollution by non–point source discharges upstream on Brown Creek is a major concern to the aquatic environment for all species. A landfill is proposed for upstream. A hog operation nearby on Hurricane Creek spray irrigates. Primarily, the conservation issue with bird management is clear-cutting on adjacent forested lands,

which are then converted to loblolly pine plantation.

Birds: For 34 years the refuge has been managed primarily for waterfowl and the Southern James Bay Canada Goose. However, special emphasis has been placed on the neotropical migratory songbirds by establishing, in recent years, a Monitoring Avian Productivity and Survivorship station. Other research and monitoring projects have been conducted for more than 25 years. The 915 ha (2,261 acres) of bottomland hardwood forest is one of the largest and largely intact communities of this type left in the Piedmont (Criterion NC4). The refuge has been managed for endangered Red-cockaded Woodpecker and will continue toward the recovery goal of 10 clusters. Bald Eagles are seen frequently during the winter along the floodplain of the Pee Dee River. Waterfowl have peaked to over 10,000 birds in one season.

Monitoring and Research: Midwinter waterfowl surveys (ground) are now being conducted annually throughout the winter season. Adopt an Important Bird Area volunteers from the Mecklenburg Chapter are active and entering eBird data from the site. They also help conduct an annual Christmas Bird Count that each year turns up good numbers of wintering sparrows, Northern Bobwhite, and excellent counts of Red-headed Woodpecker.

Key Bird Species

Criterion	Species	Season	Number	Year	Average Number 2005–9
2b	Wood Duck	W	463	2007	330
3b	Mallard	W	5,655	2008	3,449
2b	American Black Duck	W	132	2007	87
3b	Ring-necked Duck	W	1,427	2009	903
2a	Red-headed Woodpecker	all	40	2007	23
2b	Brown-headed Nutchatch	all	44	2006	23
3a	Rusty Blackbird	W	225	2006	72

W = winter

Pilot Mountain

Location: Surry and Yadkin Counties

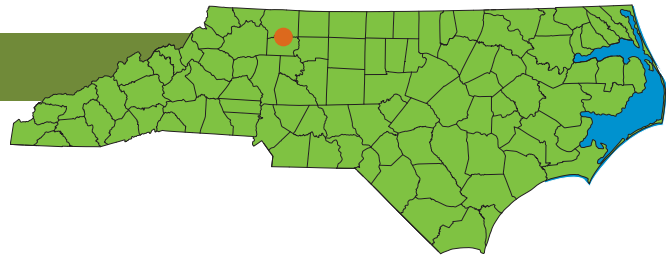
Total area: 897.1 ha (2,216.9 acres)

Site Description: The site is a Monadnock mountain rising 738 m (2,421 feet) above sea level, located in the upper Piedmont in Surry County. The summit and upper slopes consist of steep rocky slopes, 60 m (197 feet) vertical cliffs and ledges, dominated by chestnut oak (*Quercus montana*), pitch pine (*Pinus rigida*), Table Mountain pine (*Pinus pungens*), rhododendron (*Rhododendron maximum*), laurel (*Kalmia latifolia*), fetterbush (*Pieris floribunda*), and blueberry (*Vaccinium corymbosum*). The lower slopes are dominated by oak-hickory forests.

Habitats: Mixed forest, piedmont oak-pine forest, rocky outcrops.

Land Use: Wildlife conservation, other conservation, recreation and tourism.

Primary Threats: Residential and commercial development, air pollution, water pollution, soil erosion and degradation, natural and introduced pests.



Conservation Issues: Air quality concerns become evident here on hazy summer days when visibility is diminished, especially to the south toward the urban areas of Winston-Salem and Greensboro. Surveys of landbirds during breeding season, migration periods, and winter are needed.

Protection Status: The site is owned and protected by the State of North Carolina as Pilot Mountain State Park.

Birds: The site is a key corridor for migrating raptors (1,500–10,000 annually). Counts of migrating raptors began in 1973 and were restarted in 2006. Broad-wings are the most abundant, followed by Sharp-shinned Hawk, Cooper’s Hawk, Osprey, Turkey Vulture, Red-tailed Hawk, and American Kestrel. The park is small, but it contains birds more typical of higher elevations in the nearby mountains (Black-throated Blue and Black-throated Green Warblers, for example).

Monitoring and Research: Adopt an Important Bird Area volunteers from the Audubon Society of Forsyth County have restarted the annual migration station. Additional records are entered into the State Parks Natural Resource Inventory Database.

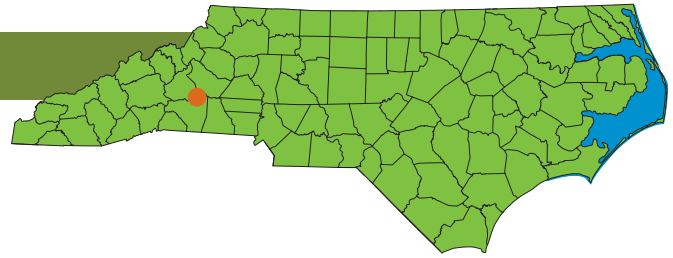
Key Bird Species

Criterion	Species	Season	Number
3f	Migrating raptors	FM	2,684

FM = fall migration

“Number” represents the average number of fall migrants during Septembers of 2006–9, as reported on the Hawk Migration Association of North America web site at www.hawkcount.org.

South Mountains



Location: Burke, McDowell, Rutherford, and Cleveland Counties

Total Size: 18,708.7 ha (46,230.2 acres)

Site Description: The South Mountains are located in the foothills region of North Carolina, near Morganton. The highest point is at an elevation of about 915 m (3,002 feet) and is characterized by relatively steep slopes and fairly rugged terrain, with narrow ridge tops and valleys. The majority of the site includes relatively undisturbed forest and nearly 48 km (30 miles) of mountain streams. The site is more like the Blue Ridge Mountains than the Piedmont. South Mountains State Park, established in 1974, includes about 6,758 hectares of unbroken forest, including the Henry Fork and Jacobs Fork Watersheds. Hiking trails provide access for visitors. The State Park receives approximately 160,000 visitors per year. Additional lands surrounding the park are also protected as the South Mountain Game Lands and the North Carolina School for the Deaf and the Broughton Hospital properties.

Habitats: Mixed forest, rich cove forest, montane acidic cliff, chestnut oak forest, pine-oak heath, riparian, open field, and acidic cove forest.

Land Use: Wildlife conservation, recreation and tourism, other conservation, hunting.

Primary Threats: Introduced plants and animals, natural pests and disease, soil erosion and degradation.

Protection Status: The entire site is under the jurisdiction of the State of North Carolina – North Carolina Wildlife Resources Commission and North Carolina State Parks and Recreation being the largest landowners.

Conservation Issues: Nonnative vegetation, soil erosion from vehicle use.

Birds: The assemblage of bird species found in the higher elevations of the South Mountains resembles species typically found in the mountain physiographic province. Common Ravens have nested at High Shoals Falls. At least 60 species have been recorded breeding in South Mountains State Park. The site is of significant acreage and supports a significant diversity of birds associated with the upper piedmont and foothills regions of the state (Criterion NC4).

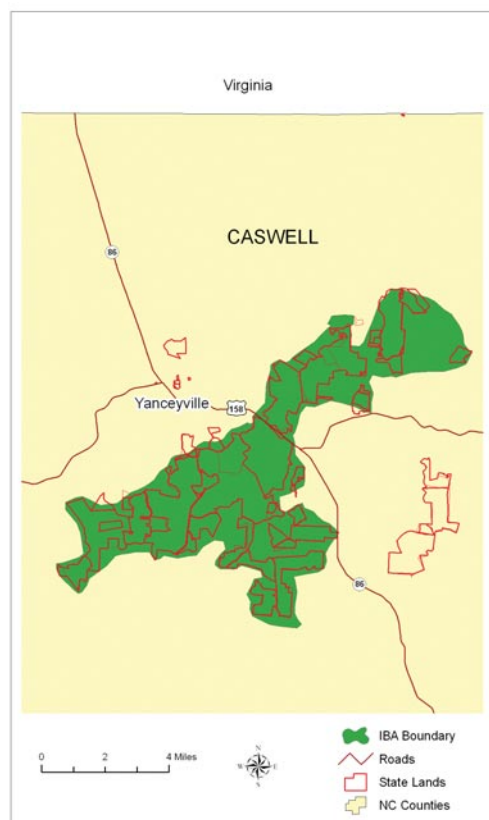
Monitoring and Research: Annual (or biannual) point counts have been conducted by Adopt an Important Bird Area volunteers at the state park and by the North Carolina Wildlife Resources Commission on the Game Lands portion of the Important Bird Area. In 2007–8, nightjar surveys were also conducted.

Key Bird Species

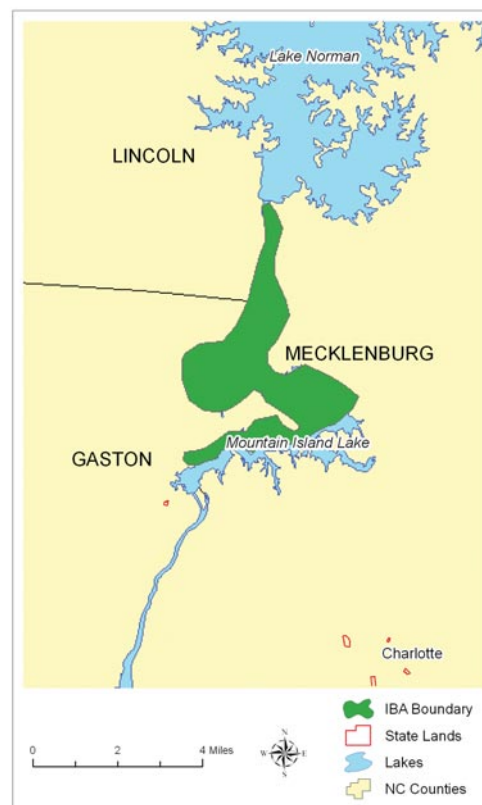
Criterion	Species	Season	Number	Year
2b	Wood Thrush	B	19	2004
2a	Black-throated Green Warbler	B	39	2004
2b	Prairie Warbler	B	45	2003
2b	Hooded Warbler	B	25	2004

B = breeding

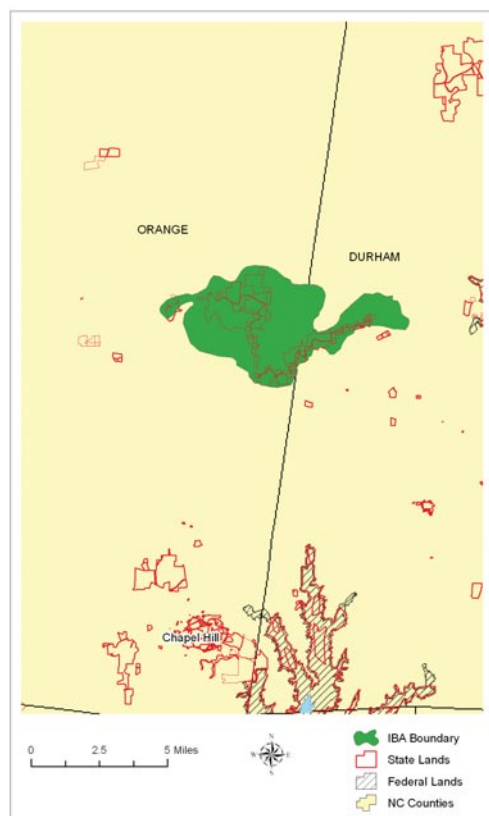
Caswell Game Lands



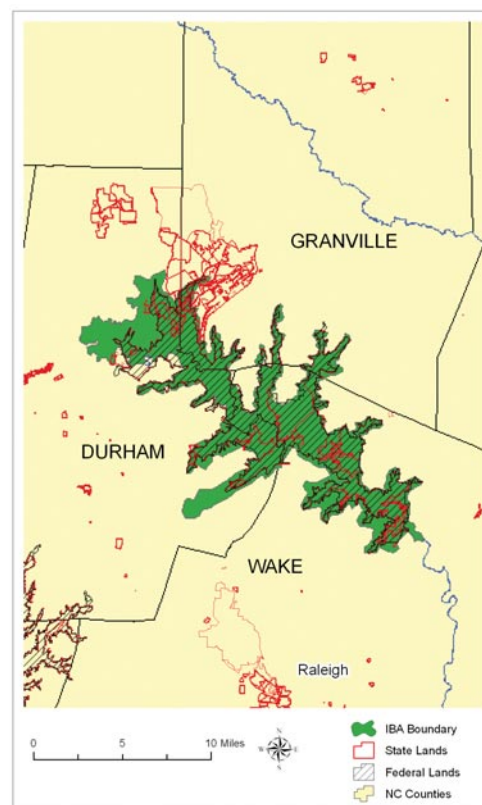
Catawba River–Mountain Island Lake Watershed



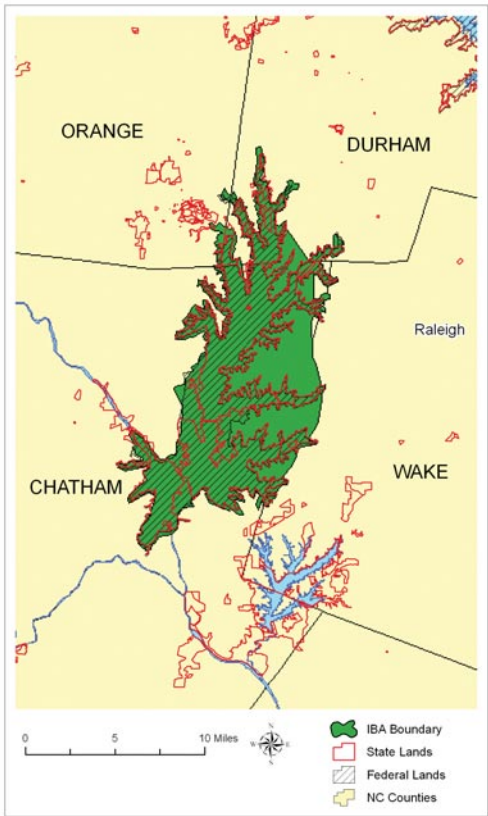
Eno River Bottomlands



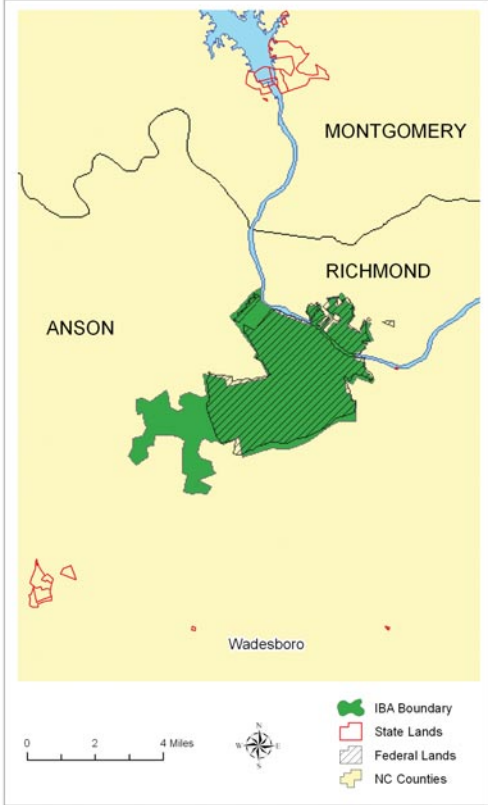
Falls Lake



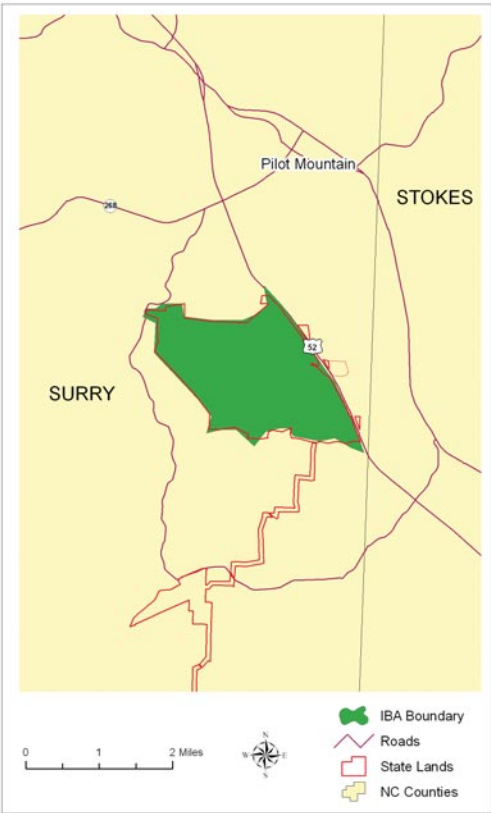
Jordan Lake



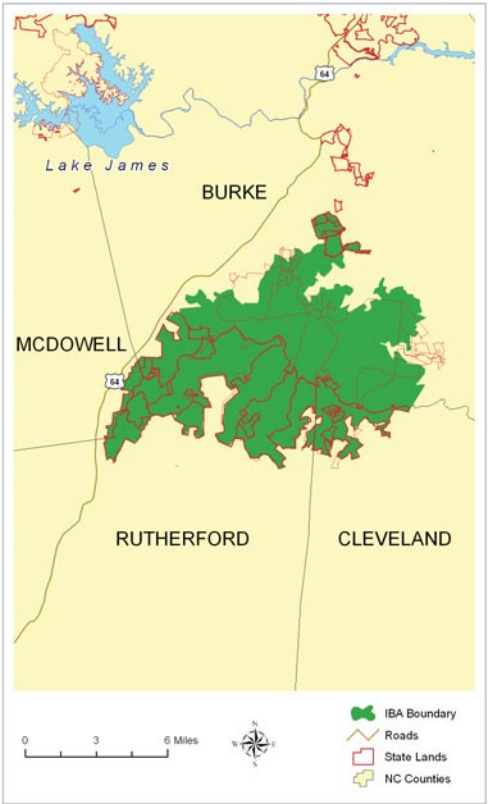
Pee Dee National Wildlife Refuge



Pilot Mountain



South Mountains



North Carolina's Mountain Region

The mountain region of North Carolina (North American Bird Conservation Initiative region 28) has many distinctive biotic features resulting from the moist, cooler climate of high and mid-elevations. This characteristic of the region has a pronounced influence on the region's bird life, in that many nesting species abound whose centers of distribution are in New England and Canada. Of particular interest are the endemic taxa that nest in the mountains. An excellent review of the area's bird life is provided by M. B. Simpson, Jr. (1992, *Birds of the Blue Ridge Mountains*, University of North Carolina Press).

Glaciated climate conditions have predominated in North America for more than 80 percent of the past 900,000 years. During this time, the never-glaciated southeast region of North America, including all of North Carolina, was occupied by spruce-fir and northern hardwood forest. A tree line probably existed at the elevation where spruce-fir now starts. The last tree line and alpine meadow vegetation disappeared from the South only about 12,000 years ago. The

warmer and dryer period that the region is now experiencing is one of near maximum deglaciation and has been in existence for only about the last 500 years. Thus, bird communities that we consider in the Southeast to be montane are actually relicts from the Pleistocene and recent period, when they were the dominant species throughout the Southeast. While these distinctive features of the North Carolina mountains are currently linked to species of the boreal and transition forest of northern North America, this pattern of distribution is actually very recent. These are in fact southeastern species that have invaded the northern portion of the continent in the wake of retreating glaciers. The Piedmont and coastal plain fauna are the recent invaders, with the relict mountain biota giving us a good idea of what the plant and animal communities were like across the state until very recent times.

Geology and Geography

While a number of southeastern states have portions of the unglaciated southern Appalachians within their political borders, only in southwestern Virginia and western North Carolina does this mountain range cover extensive areas and

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reach high elevations. This province is based mostly on pre-Cambrian crystalline gneisses and schists and covers about 12 percent of the state (ca. 15,539 km² [6,000 square miles]), and all or a significant portion of 17 of North Carolina's counties. South of the Roanoke River this physiographic province shifts from a narrow, high ridge to a broad, steep-sided plateau covered with ridges, knobs, and scattered mountains. Elevations on the plateau generally range from 610 to 762 m (2,000 to 2,500 feet), and across the plateau are a series of transverse ridges with some of the highest elevations in eastern North America. There are over 200 named mountains that exceed 1,524 m (5,000 feet) and nearly 50 that exceed 1,829 m (6,000 feet). Mt. Mitchell, at 2,037 m (6,684 feet), is the highest point east of the Rocky Mountains. Mean annual temperature drops about two to three degrees for every increase of 305 m (1,000 feet) of elevation. This is accompanied by an increase in precipitation. Thus, 305 m (1,000 feet) of elevation is equivalent to about two hundred to two hundred and fifty miles of similar climatic change in latitude. The average July temperatures for Mt. Mitchell are 59°F and for January 28°F. The variation in perception is more complex. Higher areas are generally wetter, but areas of fog, condensation, rain, and rain shadow vary, and slope exposure results in differential drying. Some areas get as little as 102 cm (40 inches) of precipitation. These climatic conditions result in avifauna that contrast sharply from what is found in the Piedmont and coastal plain regions of the southeast, with considerable variation within the province. The Appalachians is one of the oldest mountain ranges on earth and the actual topography of the region has not changed since early Pleistocene (although a number of the river systems in existence today flow differently than they did even 15,000 years ago).

Birds and Habitats

The mountain region supports two major upland communities, but these communities vary considerably in soil type, moisture, exposure, and the timing and extent of human disturbance. The transition zones between these forest types are normally narrow.

Upland Mesophytic Forest: Various seral stages of the middle-latitude deciduous forest occur throughout most of the state up to elevations of nearly 1,829 m (6,000 feet). The following plant associations dominate in subcommunities that occur in North Carolina's mountains. Typically a subcanopy of trees, shrubs, and shade-tolerant herbs exists. Extreme variation in the appearance of the community results from local differences in elevation, soil fertility, and maturity of forest.

- > Rhododendron-alder: mountain balds
- > Red oak: chiefly between 1,219 and 1,524 m (4,000 and 5,000 feet)
- > American chestnut-black oak: chiefly between 762 and 1,524 m (2,500 and 5,000 feet), with chestnut no longer a dominant tree
- > White oak-southern red oak: fertile soils below 914 m (3,000 feet)
- > River birch-American sycamore: flood plains
- > Black willow-alder: stream borders
- > Red maple-beech: climax community below 1,676 m (5,500 feet) on fertile soils.
- > Black jack oak-post oak: sterile soils

Characteristic breeding birds of these forests and ones that are primarily restricted to the mountains at our latitude include Broad-winged Hawk, Ruffed Grouse, Black-billed Cuckoo, Yellow-bellied Sapsucker, Alder, Willow and Least Flycatchers, Common Raven, Veery, Blue-headed Vireo, Warbling Vireo, Golden-winged Warbler, Chestnut-sided Warbler, Black-throated Blue Warbler (also in spruce-fir), Cerulean Warbler, Swainson's Warbler, Scarlet Tanager, Rose-breasted Grosbeak, and Vesper Sparrow.

Within these forests are several subcommunities that are important to various assemblages of mountain birds. These include hemlock stands, cove hardwoods, and mountain bogs. In many cases these communities support fauna that are more characteristic of those found at higher elevations.

Boreal Forest: Boreal spruce-fir forests are found above 1,524 m (5,000 feet) on cold mountain summits in the extreme western portion of the state. The characteristic flora consist of Fraser's fir, red spruce, mountain ash, mountain rosebay, and a dense, damp ground cover dominated by mountain fern moss and common wood sorrel.

Characteristic breeding birds which at our latitude are species restricted to the mountains include Northern Saw-whet Owl, Olive-sided Flycatcher, Black-capped Chickadee, Red-breasted Nuthatch, Brown Creeper, Winter Wren, Golden-crowned Kinglet, Hermit Thrush, Magnolia Warbler, Blackburnian Warbler, Canada Warbler, Dark-eyed Junco, Red Crossbill, and Pine Siskin.

Visiting the Area

The North Carolina portion of the Blue Ridge Parkway bisects a good representative cross-section of the high and middle elevations of the region. The various overlooks along



the parkway are good for observing breeding-season birds, and linked to the parkway are a number of the Important Bird Areas discussed here (Grandfather Mountain, Mt. Mitchell, Bull Creek, and Chimney Rock, for example). The parkway terminates near the entrance for the Smoky Mountain National Park. For people not familiar with the region, traveling the length of the parkway with side excursions to various Important Bird Areas would provide an excellent introduction to the region's biotic communities and bird life. From a bird-watching perspective, this route is not recommended during the fall because of the large number of parkway visitors coming to see fall colors. The only habitats not represented in this 241-mile north-to-south transect (the North Carolina stretch) are the ancient-growth forest of Joyce Kilmer and some of the mountain valley habitats, best represented by the New River Flood Plain.

The 19 Important Bird Areas in the mountain region contain representative habitats of all the key natural communities of the region. They also support breeding populations of all the species indigenous to the region, with a concentration among high-elevation communities. Important populations of all the mountain specialties breed in the various Important Bird Areas.

Historical Perspectives

Much of the present-day distributions of breeding birds are a direct result of human activities. A number of factors are responsible. In large, relatively undisturbed tracts the avifauna

has remained stable, both in species composition and relative dominance of species. The combination of extensive National Forests, National Parks, wilderness areas, State Parks, and the Blue Ridge Parkway provides a mosaic of protected habitats, which in turn creates a landscape for a wide variety of breeding birds. The various land management techniques on these federal lands allows for a continuum of successional communities and ecotonal communities. The parkway provides linear and easily accessible habitats for edge and early-successional species across a wide range of elevations, while forestry practices provide extensive areas of early- and midsuccession plant communities in the national forest.

The removal of grazing rights on National Forest land in the eastern United States had a dramatic effect on the vegetation of most of our forested public lands. For the most part this should be viewed as a good decision for conservation, but, compared to lands along the Blue Ridge where grazing continues, it is clear that a number of communities and rare species, including some birds, benefit from allowing grazing on public lands. Old-growth forest and virgin forest occur in patches in a number of gorges, coves, and wilderness areas. While these latter forest types are fragmented, they do provide glimpses into the composition of the precolonial avian community. To some degree, where original forest or old-growth forests persist, species that are now regarded as high-elevation specialists occur in densities that are similar to what they are in high-elevation spruce-fir forests. This suggests that prior to logging these species had much broader distributions and occurred in a wider variety of habitats than they do today, with many "high-elevation" species breeding as low as 610 m (2,000 feet) in old-growth communities.

Historically and presently most of the land clearing has been in mountain valleys. Here, open areas cleared for agriculture, golf courses, and similar uses provide habitat for a number of species that would not be expected in the region. The clearing of land and subsequent succession, which is often held in check by current land use, has allowed at least 20 breeding species to invade the region. These are all species that were not present 100 years ago. At the same time only seven montane species have exhibited declines in their current distribution within the region. Thus, the faunal diversity is much higher today than in historical times. This gives an inflated impression that all is well with the avian community and that conditions are actually improving. This is not the case. Many of the recent arrivals are "weed" species, species dependent on human activities or structures. In all cases this increase in diversity is a result of loss of natural habitats, and

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the creation of artificial ones at the expense of our indigenous fauna.

Present-Day Threats

Natural communities on floodplains of major and secondary rivers, and other low alluvial areas have suffered the greatest loss through development. Terraces of low-order streams are the major corridors of roads resulting in the loss of wetlands and riparian habitats found on these terraces. The construction of a vast reservoir system by the Tennessee Valley Authority resulted in the flooding of large sections of lowland habitats. This was accomplished before any specific information could be gathered on the natural communities that these lands supported. Mountain bogs are the rarest of wetland habitats in the southeastern United States, due to the effects of road construction following stream terrace corridors, flooding for reservoirs, and direct drainage of small isolated wetlands. Christmas tree farms cover vast acreages on lower and mid-elevation slopes. The extent to which these tree farms are used by native songbird communities is unclear.

The Brown-headed Cowbird is a species that only recently invaded the region. This nest parasite is not a factor in large forested blocks or old growth, but it is common in fragmented and early-succession landscapes. To what degree it influences population dynamics of breeding birds in the southern Appalachians is unknown, but its impacts for some species must be considerable. Natural canopy gaps caused by minor wind throw or hurricanes do not appear to provide inroads for nest predators and nest parasites such as cowbirds, but artificial, abrupt edges often have twice the nest loss.

Past land use consisted of logging and general clearing of lowlands. A surge of real-estate demand for mountainside second homes, and an increase in the Christmas tree industry is resulting in loss of forested lands.

The balsam woolly adelgid was accidentally introduced to the United States and spread to the Mt. Mitchell area by the late 1950s. They are now present in almost all fir stands in the southern Blue Ridge. By the 1970s acid rain and other pollutants began affecting the red spruce in our region. This combination has had a devastating effect on many spruce-fir forests and secondary impacts on the bird communities. The American chestnut, which once made up about 40 percent of the hardwood forest of the southern Appalachians, was infected with a blight that caused the complete disappearance of this species as an important component of our forest before the mid-1900s. The chestnut disappeared before any systematic studies on the bird life of the region could be

conducted, and while the impact on the bird life is unknown, the effect on Cerulean Warblers and other mid- and upper-canopy hardwood dependent species must have been considerable.

The loss of mature hemlocks from the landscape was pronounced during the late 1800s and early 1900s because the bark of this tree was extremely important to the tanning industry. Mature stands of these trees provide habitat for many species of birds that are dependent on old-growth or high-elevation forests. If the stands that persist today had been allowed to achieve maximum size and age (hemlock is one of the longest-lived trees of the region) many coniferous species (Blackburnian Warblers, Golden-crowned Kinglets, and Red-breasted Nuthatches, to name a few) would have been able to expand their currently restricted distributions back into low- and mid-elevation forests, but the arrival of the hemlock wooly adelgid has eliminated that possibility. Now in most areas of the mountain region, hemlock is dying off at alarming rates and none seem immune to the destruction. Aggressive eradication and maintenance efforts are under way, but with limited success.

Various human-made structures (communication towers, wind turbines, etc.), particularly those constructed on or near ridge tops, are known to intercept large numbers of fall migrant songbirds. While this phenomenon has not been monitored in the mountains, information obtained in the Piedmont and coastal plain of North Carolina suggests that loss of migrants in the mountains is even higher, due to the elevation of the landscape and the extent of nocturnal songbird migration through the southern Appalachians. With the aggressive growth of wind energy generation projects



expected to occur in western North Carolina in the next decade, this situation requires diligence and oversight. Audubon North Carolina has been very active in the wind energy debate and will continue to participate.

Current conservation plans for the most part are not taking into consideration long-term issues such as fragmentation of the landscape, restoration of habitats, or the need for tracts of old-growth forest (minimum 275 years) and have focused mostly on single-species recovery efforts. While the symptoms of the problems such as decline of specific species are being addressed, the issues that drive these symptoms are not being corrected.

Other Influences and Issues for Management

The role of Native Americans in the region's landscape is not clear. We know that pre-Columbian peoples were responsible for the removal of much of the mammalian megafauna. This fauna included a wide variety of browsers and grazers that must have had a major impact on various plant communities. We also know that Native Americans used fire as a means of game management and this too must have altered the landscape. The colonial period and the American frontier preceded documentation of the bird life of the region so it is not clear what elements of the indigenous fauna remained or how it was distributed prior to forest clearing. The forests of the southern Appalachians were all but eliminated by the 1800s, with only fragments of what could be considered natural landscapes. It was in this fragmented landscape that we obtained our first glimpses of the ornithology of the region. Many of the present-day efforts directed toward conservation and management for our avian community are based on misconceptions from the postfrontier period.

The loss of grazing animals, for example, clearly affected understory composition and key habitats such as bogs and mountain balds. With the major browsing and grazing species removed by Native Americans, and secondary ones eliminated by Europeans, we can expect habitats were permanently altered. This in turn affected natural fire suppression. Land clearing probably buffered this shift for some community types, and subsequent grazing by domestic animals probably also played a key role in keeping the landscape open. This has now changed; livestock is now contained and occurs in far lower numbers than even half a century ago.

There are 11 endemic taxa of breeding birds in the southern Appalachians and many achieve their highest densities and broadest range of geographic occurrence in North Carolina's mountains. These endemics are mostly subspecies of wider

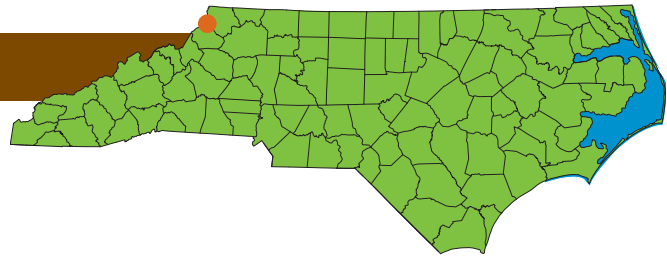
ranging "northern" birds. They include Appalachian Ruffed Grouse, Appalachian Black-capped Chickadee, Southern Brown Creeper, Appalachian Bewick's Wren, Southern Winter Wren, Mountain Blue-headed Vireo, Wayne's Black-throated Green Warbler (also with a disjunct population on the outer coastal plain), Cairn's Black-throated Blue Warbler, a sibling species of the Red Crossbill, Carolina Dark-eyed Junco, and a genetically distinct, but yet unnamed, population of the Northern Saw-whet Owl.

Our knowledge of the birds of the region is not complete. A number of species occur occasionally in the mountains of North Carolina that probably represent isolated breeding birds. Yet breeding is often not suspected and frequency of occurrence not documented. It took nearly two decades to document the breeding of hermit thrushes in our mountains despite numerous summer reports. Recent reports for breeding season records of Swainson's Thrush, Virginia Rail, Yellow-rumped Warbler, and others require further investigation and monitoring.

In addition to the breeding birds of the region the southern Appalachians is a major flyway for fall migrant landbirds, with the migrant waves often following ridge tops. Autumn hawk migration is also pronounced along the ridge tops, and because of their diurnal migration behavior hawk watching has become a popular pastime at a number of well-known mountain sites.

A number of conservation-oriented programs have been suggested. The most promising include the restoration of specific habitat types, such as spruce-fir forest, mountain bogs, and balds. Less impressive are single-species efforts where land management for certain birds would be at the expense of other indigenous species. For example, recent efforts to enhance populations of Golden-winged Warblers have suggested removal of forest to promote the early stages of succession required by this wood warbler. While this would be an interesting experiment in management, there is little indication that Golden-winged Warblers have decreased in the region (at least compared to the prelogging period) or that making saturated populations is a desirable or obtainable goal. More important, a majority of territories for this species currently occur on private lands. An effort to learn how to best maintain these private lands habitats for Golden-winged Warblers and other early-successional species that are underrepresented in the region would seem more appropriate than the removal of existing forest on public lands.

Amphibolite Mountains



Location: Ashe and Watauga Counties

Total Size: 36,647.3 ha (90,557.5 acres)

Site Description: The Amphibolites are a series of mountains composed of amphibolite gneiss; they include the Peak, Bluff, Rich and Snake Mountains, Mt. Jefferson, Phoenix Mountain, Three Top, and Elk Knob. Peak elevations are about 1,525 m (5,003 feet) for most of the mountain tops; Snake Mountain reaches 1,697 m (5,566 feet) at its highest point. The area also includes the State Significant Natural Area of Long Hope Valley, lying between Elk Knob and the Peak.

Habitats: Northern hardwood forest, xeric oak forest, mixed mesophytic forest, grassy balds, mountain bogs, spruce forest.

Land Use: Conservation, recreation, hunting, fishing, residential development, grazing, and Christmas tree production.

Primary Threats: Water quality, logging, and residential and commercial development on private lands, loss of early-successional habitats.

Protection Status: The site includes Mt. Jefferson State Natural Area, Elk Knob State Park, and tracts on Paddy and Bluff Mountains protected by The Nature Conservancy. The North Carolina Plant Conservation Network also has significant holdings in the range. A significant portion of the land is in private ownership (over 90 percent).

Conservation Issues: Loss of important habitats to residential or commercial development is a key issue. Reforestation of agricultural areas will result in declines of some high-priority species, such as Golden-winged Warbler.

Birds: This site supports significant populations of neotropical migrant songbirds, species of conservation concern, and watchlist species. The site supports the largest concentration of Vesper Sparrows in North Carolina. A remnant stand of spruce forest (*Picea rubens*) supports Northern Saw-whet Owl, Magnolia Warbler, Red-breasted Nuthatch, and Golden-crowned Kinglet and is an excellent example of this habitat type (Criterion NC4). Golden-winged Warblers and their hybrids (and a recent second breeding season record of Blue-winged Warbler) occur here in the western drainages of Watauga and Ashe Counties. This site was recently recognized as a Globally Significant Important Bird Area for Golden-winged Warblers.

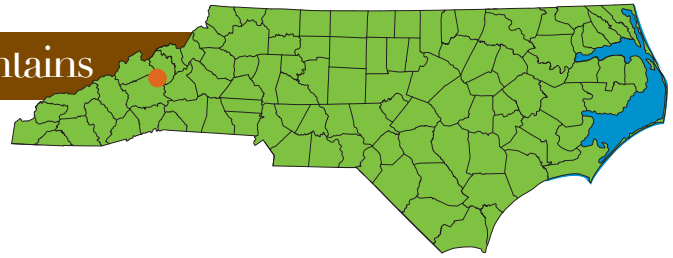
Monitoring and Research: Portions of this Important Bird Area fall in three Christmas Bird Count circles (Mt. Jefferson, New River, Grandfather Mountain). Data from Elk Knob State Park and Mount Jefferson State Natural Area are included in the North Carolina State Parks Natural Resource Inventory Database. Audubon North Carolina established point counts in 2005 and continues to expand the number of these permanent points, now including locations on Rich Mountain, Elk Knob, Snake Mountain, Long Hope Valley, and lowland portions of the Important Bird Area. A long-term research project on the Golden-winged Warbler is also continuing.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	B	20	2007
2a	Yellow-bellied Sapsucker	B	25	2006
3a	Least Flycatcher	B	27	2008
2b	Veery	B	55	2008
2a	Golden-winged Warbler	B	65	2009
2b	Chestnut-sided Warbler	B	93	2008
2a	Magnolia Warbler	B	10	2008
3a	Rose-breasted Grosbeak	B	35	2008
2b	Field Sparrow	B	58	2008
2a	Vesper Sparrow	B	38	2008

B = breeding

Black Mountains Great Craggy Mountains



Location: Buncombe and Yancey Counties

Total Size: 40,215.8 ha (99,375.3 acres)

Site Description: The Black and Great Craggy Mountains Important Bird Area is located northeast of Asheville. This site includes primarily high-elevation forests above 1,373 m (4,505 feet). The key feature in this Important Bird Area is Mt. Mitchell, which, at 2,039 m (6,690 feet), is the highest point in the eastern United States. Six peaks within the Black Mountains have elevations over 1,830 m (6,004 feet). The highest point in the Craggies is Craggy Dome at 1,856 m (6,089 feet). The site is one of the most significant examples of high-elevation forest and natural communities in the southern Appalachians.

Habitats: Northern hardwood forest, mountain bald, rich cove forest, hemlock forest, montane oak-hickory forest, mountain cliff, spruce-fir forest.

Land Use: Conservation, water supply, recreation and tourism, hunting, fishing.

Primary Threats: Air pollution, introduced disease and pests, deforestation and tree cutting, residential and commercial development on private lands.

Protection Status: Portions of the Important Bird Area are within the Pisgah National Forest, Pisgah Game Lands, Mt. Mitchell State Park, National Park Service (Blue Ridge Parkway), and private ownership. The state and federal lands are afforded at least some degree of protection.

Conservation Issues: Acid rain threatens many of the high-elevation spruce-fir forests (*Abies fraseri* and *Picea rubens*), weakening the trees and making them susceptible to disease and pests such as the balsam wooly adelgid (*Adelges piceae*). Air quality is also likely impacting calcium uptake as in other high-elevation areas. Changes in the forest caused by acid rain and insect infestation has resulted in the disappearance of species (Black-throated Green, e.g.) from some areas, and possibly increases in others (Hermit Thrush).

Birds: This site includes a great diversity of birds associated with high-elevation forests. Ninety-one species of nesting birds have been recorded. Yellow-bellied Sapsucker, Northern Saw-whet Owl, and Alder Flycatcher are significant species at the site. This is one of the few places where Hermit Thrushes occur during the breeding season. In 2007, multiple individual singing Swainson's Thrushes were discovered and were again present in 2008 and 2009. The high-elevation forests and balds are significant and represent a classic high-elevation assemblage of birds (Criterion NC4).

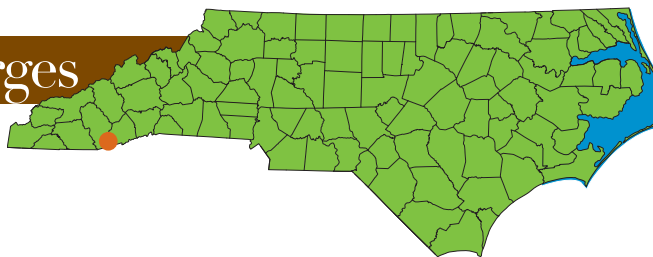
Monitoring and Research: An Adopt an Important Bird Area program is in place within this site, with point counts, spring bird counts, and other surveys conducted by the Elisha Mitchell Audubon Society and Carolina Field Birders beginning in 2006. Mt. Mitchell State Parks records are included in the State Parks Natural Resource Inventory Database.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	B	10	2007
3a	Blue-headed Vireo	B	96	2007
3a	Common Raven	all	15	2007
2a	Red-breasted Nuthatch	all	62	2007
2a	Brown Creeper	all	12	2006
2a	Winter Wren	B	66	2007
2a	Golden-crowned Kinglet	all	234	2007
3a	Swainson's Thrush	B	5	2007
2a	Hermit Thrush	B	19	2007
2b	Black-throated Blue Warbler	B	69	2007
2b	Blackburnian Warbler	B	49	2006
2a	Black-throated Green Warbler	B	98	2007
2b	Canada Warbler	B	76	2007
2a	Red Crossbill	B, W	18	2006
3f	raptors	FM	3,600–9,000	—

B = breeding; FM = fall migration; W = winter

Blue Ridge Escarpment Gorges



Location: Transylvania and Jackson Counties

Total Size: 7,627.9 ha (18,848.9 acres)

Site Description: This site extends from the Toxaway River to the Whitewater River and includes the Horsepasture River and the Thompson River east of Highlands. These rivers descend rapidly through steep gorges over a few miles, from an elevation of 915 to 366 m (3,002 to 1,201 feet). Like many other similar areas in the North Carolina mountains, much of the area was logged decades ago. Some xeric ridges contain pine stands, but most uplands are dominated by second-growth oak-hickory forests with dense understories of rhododendron and mountain laurel.

Habitats: Cove hardwood forests, oak forests, and coniferous forests, mixed forests.

Land Use: Recreation and tourism and conservation.

Primary Threats: Residential and commercial development on private lands, damming, poaching, erosion.

Conservation Issues: Off-road vehicle usage and disturbance of sensitive areas are primary concerns.

Protection Status: More than 4,000 ha (9,884 acres) of this Important Bird Area are in state and federal ownership. Portions are within the Nantahala National Forest, Pisgah National Forest, Nantahala Game Land, Toxaway Game Land, Gorges State Park, and land in private ownership. Efforts are under way to acquire additional private lands for conservation. More surveys of landbirds during breeding season, migration periods, and winter are needed.

Birds: The site probably supports the largest population of Swainson's Warblers in North Carolina and significant populations of Worm-eating, Black-throated Green, and Black-and-white Warblers. The cove hardwood forests support a significant diversity and abundance of birds associated with this habitat type (Criterion NC4).

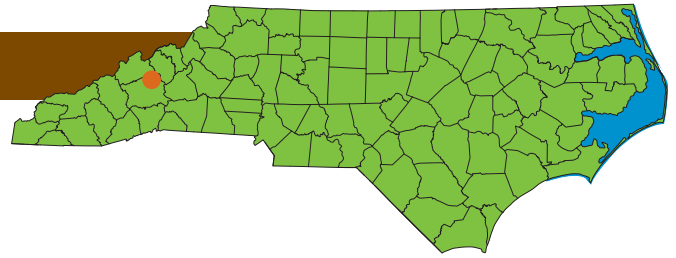
Monitoring and Research: Gorges State Park records are entered into the North Carolina Division of State Parks Natural Resource Inventory Database, including the 2000 initial survey by State Parks and the North Carolina Natural Heritage Program.

Key Bird Species

Criterion	Species	Season	Number	Year
2a	Black-throated Green Warbler	B	35+	2000
2b	Worm-eating Warbler	B	25+	2000
2b	Hooded Warbler	B	27+	2000

B = breeding

Bull Creek



Location: Buncombe County

Total Size: 2,025.2 ha (5,004.2 acres)

Site Description: This site includes an 8.4 km (5.2 mile) section of the Blue Ridge Parkway from about Lane Pinnacle Overlook (milepost 372.1) to Craven Gap (milepost 377.3). The elevation varies from about 945 m (3,100 feet) along the parkway to about 1,160 m (3,806 feet) on the upper slopes of Swan Mountain and Bull Mountain. Public access to the area is available along the parkway and one can stop at any of several overlooks. The Blue Ridge Parkway is one of the most popular National Parks in the United States with more than 3 million visitors annually.

Habitats: Mixed hardwoods dominated by tulip poplar (*Liriodendron tulipifera*), oak (*Quercus spp.*), hickory (*Carya spp.*), and locust (*Robinia pseudo-acacia*).

Land Use: Conservation, recreation.

Primary Threats: Logging, residential and commercial development on private lands.

Protection Status: The section of this site along the Blue Ridge Parkway is protected by the National Park Service. Private lands are also included in this Important Bird Area.

Conservation Issues: Loss of important habitats to logging and residential or commercial development is a primary threat and key issue. Permanent protection of tracts not currently protected should be a priority. Surveys for Cerulean Warblers should be continued and expanded away from the Blue Ridge Parkway to better determine the extent of habitat occupied by this population.

Birds: This site supports one of North Carolina's most significant populations of Cerulean Warblers. The species has been documented between Craven Gap and Lane Pinnacle Overlook along the Blue Ridge Parkway for at least 20 years. The first record of ceruleans at this site was published in *The Chat* in 1983 (vol. 48, p. 101). The population appears to be stable or increasing. Numerous other neotropical species breed here as well, including many priority neotropical species, and the site is especially good for Blackburnian Warbler.

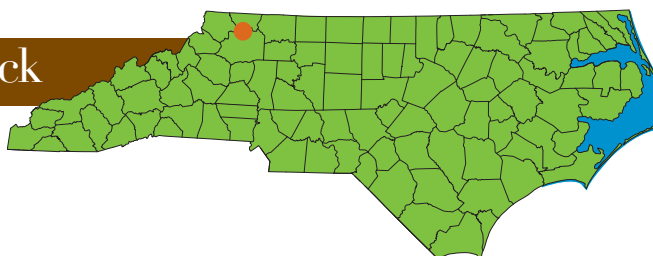
Monitoring and Research: An Adopt an Important Bird Area program is in place with Elisha Mitchell Audubon Society. A volunteer, Charlotte Goedsche, has been monitoring this population of Cerulean Warblers since 2000. In 2006, she began using individual recording and analysis to determine territory boundaries. Audubon North Carolina also established point count locations within the Important Bird Area in 2006. This area is included in a portion of a Breeding Bird Survey route and the Buncombe County Christmas Bird Count circle.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Cerulean Warbler	B	17	2007
2b	Blackburnian Warbler	B	20	2006
2b	Hooded Warbler	B	28	2007

B = breeding

Bullhead Mountain Mahogany Rock



Location: Alleghany and Wilkes Counties

Total Size: 1,472.1 ha (3,637.7 acres)

Site Description: The Bullhead Mountain–Mahogany Rock Important Bird Area runs along the Blue Ridge Parkway in Alleghany and Wilkes Counties. Elevations range from 425 to 1,190 m (1,394–3,904 feet). The highest point is the peak of Bullhead Mountain, which is one of the most prominent landscape features in this region of the state. The Mahogany Rock overlook on the Blue Ridge Parkway, located at milepost 234, has been one of North Carolina’s most popular hawk-watching sites for more than three decades.

Habitats: Hardwood forest, mixed forest, cove hardwood forest.

Land Use: Conservation, recreation and tourism, residential development.

Primary Threats: Residential and commercial development on private land.

Protection Status: Most of the site is in state or federal ownership and is protected. Bullhead Mountain was recently acquired and is now part of Stone Mountain State Park. The Mahogany Rock area is on the Blue Ridge Parkway and is protected and managed by the National Park Service.

Conservation Issues: Lower elevations remain in private ownership. Some have been cleared and replanted in pines. Cell-phone towers have been proposed in previous years, but were defeated due to local opposition. Surveys of landbirds during the breeding season, migration periods, and winter are needed.

Birds: The mountain ridges, beginning at Bullhead Mountain and continuing southwest, serve as a significant migration corridor for raptors. Spring and fall migration counts have been undertaken for more than a decade and will continue. A Kirtland’s Warbler was sighted on Bullhead Mountain in 1999 and a Northern Goshawk was observed in 2001, both of which are extremely rare in North Carolina.

Monitoring and Research: Annual spring and fall raptor migration counts are conducted at adjacent Mahogany Rock, with some spring counts occurring on Bullhead itself.

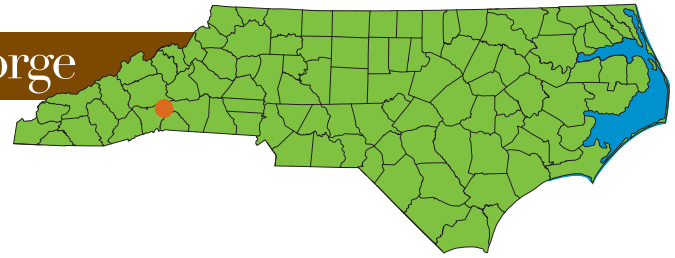
Key Bird Species

Criterion	Species	Season	Number
3f	migrating raptors	FM	2,943–6,531
	Turkey Vulture	FM	274–786
	Black Vulture	FM	104–245
	Broad-winged Hawk	FM	2,292–5,333
	Sharp-shinned Hawk	FM	85–203
	Cooper’s Hawk	FM	34–72

FM = fall migration

“Number” represents the range of annual totals for the period 2003–8, as reported at the Hawk Migration Association of North America web site (<http://hawkcount.org>).

Chimney Rock–Hickorynut Gorge



Location: Rutherford and Henderson Counties

Total Size: 5,873.2 ha (14,513.1 acres)

Site Description: Chimney Rock and Hickorynut Gorge are located about 40 km (25 miles) southeast of Asheville, near the village of Bat Cave. The site sits on the Blue Ridge Escarpment, which separates the foothills from the mountains. Key features of this site are Chimney Rock, a 92 m (302 feet) monolith that rises above the gorge. Hickorynut Gorge rises about 425 m (1,394 feet) above the Broad River. The mountain cliffs at Chimney Rock rise abruptly from an elevation of 305 m (1,001 feet) to nearly 915 m (3,002 feet).

Habitats: Northern hardwood forest, mixed forest, cove hardwood forest, rocky cliff, riparian, lake.

Land Use: Recreation and tourism, wildlife conservation, forestry, residential development.

Primary Threats: Residential and commercial development, recreational development and overuse, soil erosion and degradation, introduced plants.

Conservation Issues: Residential and commercial development on private land is the key issue that could result in the loss of habitat. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

Protection Status: Chimney Rock Park, a heavily visited tourist attraction, was acquired by the North Carolina State Park system in 2007. In addition, the World's Edge tract has recently been acquired by the state for inclusion in the park. The Nature Conservancy maintains Bat Cave as a preserve. The Broad River Watershed Protection Committee is working to secure buffer zones and conservation easements along the Broad River watershed. Much of the Pool Creek Area, although privately owned, is also maintained as a natural area.

Birds: The site supports a great diversity of mid-elevation forest birds. Eighteen species of warblers, including Cerulean Warbler, are known to breed within the site, and others are common during migration. This is one of the few places where Peregrine Falcons can be found nesting in North Carolina.

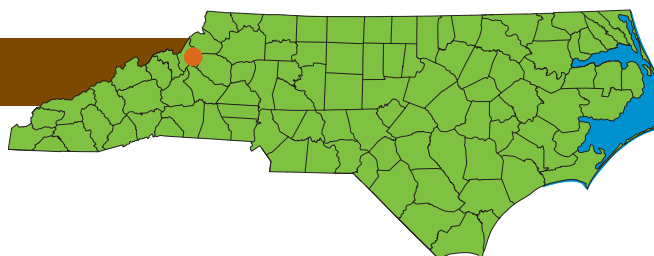
Monitoring and Research: Now that Chimney Rock is part of the North Carolina State Parks system, bird data will be entered into the State Parks Natural Resource Inventory Database. Original survey work with birds has been done by Simon Thompson, who produced a checklist (last updated in 2007). More quantitative surveys are needed on state lands as well as other portions of the Important Bird Area. Peregrine Falcon nesting is monitored by North Carolina Wildlife Resources Commission.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pr.	2009
2a	Black-throated Green Warbler	B	25	2007

B = breeding

Grandfather Mountain



Location: Avery, Caldwell, and Watauga Counties

Total Size: 5,130.9 ha (12,678.8 acres)

Site Description: The rugged peaks and profile of Grandfather Mountain are among the most recognized landmarks in western North Carolina. Located near the town of Blowing Rock, the ancient peaks of Grandfather are the highest in the Blue Ridge. Calloway Peak reaches an elevation of 1,819 m (5,968 feet) and several other prominences have elevations above 1,600 m (5,249 feet). The site has an exceptional diversity of habitats, from rocky cliffs and balds to spruce-fir and cove forests, which support 60 rare plants and animals.

Habitats: Spruce-fir forest, northern hardwood forests, cove hardwoods, balds, rocky cliff.

Land Use: Wildlife conservation, recreation and tourism, second-home development.

Primary Threats: Air pollution (acid and mercury deposition), introduced pests.

Protection Status: The core of the site is protected as a new State Park (2008). The Blue Ridge Parkway receives federal protection as a National Park, including Price Park and Moses H. Cone Memorial Park. The site is buffered to the south by the Wilson Creek–Linville Gorge Important Bird Area (Pisgah National Forest).

Conservation Issues: The key conservation issue is the loss of spruce-fir forest and hemlock cove forest due to invasive insect pests and acid rain.

Birds: The diversity of breeding birds at this site (coupled with surrounding lowlands) is probably the highest of any site in North Carolina and probably the second-highest in the United States. At least 118 breeding season species have been recorded and others are expected. The site is significant for species of conservation concern, such as Northern Saw-whet Owl, Peregrine Falcon, Golden-crowned Kinglet, Yellow-bellied Sapsucker, Red-breasted Nuthatch, and Brown Creeper. It is one of North Carolina's key sites for Northern Saw-whet Owl. Significant spruce-fir forest exists on Grandfather Mountain and supports the suite of species associated with this habitat type (Criterion NC4).

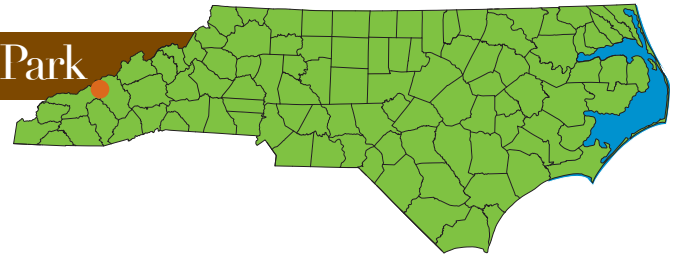
Monitoring and Research: Audubon North Carolina established point counts in 2004 and Grandfather Mountain staff conduct these on a regular basis. The National Park Service conducts Northern Saw-whet Owl surveys, and the Grandfather Mountain Stewardship Foundation checks Northern Saw-whet Owl nest boxes. The North Carolina Wildlife Resources Commission coordinates annual Peregrine Falcon nest monitoring. An intensive four-year study of Yellow-bellied Sapsucker ecology was conducted from 2003 until 2006 (North Carolina Museum of Natural Sciences and Audubon North Carolina). Portions of a Breeding Bird Survey Route (Linville) traverse this Important Bird Area, and the area is wholly contained within the Grandfather Mountain Christmas Bird Count circle.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pr.	2009
1	Northern Saw-whet Owl	all	4–8 prs.	2007
2a	Yellow-bellied Sapsucker	all	34 prs.	2009
2a	Red-breasted Nuthatch	all	19+	2007
2a	Winter Wren	B	18+	2007
2a	Golden-crowned Kinglet	all	33+	2007
2a	Hermit Thrush	B	6	2009
2a	Magnolia Warbler	B	3	2009

B = breeding

Great Smoky Mountains National Park



Location: Haywood and Swain Counties

Total Size: 118,625.5 ha (293,129.9 acres)

Site Description: Great Smoky Mountains National Park is located on the border of North Carolina and Tennessee. The park was established in 1934 and encompasses more than 200,000 ha (494,211 acres) of contiguous and relatively undisturbed forest in both states, making it the largest such forest in the eastern United States. Approximately one-fifth of the park comprises old-growth forest and represents the largest tract of old-growth forest in the southern Appalachians. The diverse and expansive forest is one of the world's most significant temperate deciduous forests and has been designated an International Biosphere Reserve and World Heritage Site. Peak elevation is 2,026 m (6,647 feet) on Clingman's Dome.

Habitats: Spruce-fir forest, mountain bald, cove hardwood forest, northern hardwood forest, mixed mesophytic forest.

Land Use: Conservation, recreation and tourism.

Primary Threats: Air pollution, natural pests and disease, introduced plants and animals, residential and commercial development (outside park), recreational development, and overuse.

Protection Status: The site is in federal ownership and is protected and managed by the National Park Service.

Conservation Issues: The combination of air pollution and exotic insect infestations threaten the spruce-fir forests. Introduced plants and animals have caused significant changes in habitat.

Birds: The park includes over 80 percent of the spruce-fir forest in the southern Appalachians and associated bird species (Criterion NC4). The site likely holds the largest concentration of Northern Saw-whet Owls in the Southeast and a majority of the Black-capped Chickadees breeding in the Blue Ridge.

Monitoring and Research: The Discover Life in America project has documented species and population estimates for the park across taxa. It should be noted that the numbers presented below are for the entire park and so include points outside North Carolina. Researchers are also looking at the effects of mercury and other air pollutants on bird species within the park. Bird monitoring also includes Monitoring Avian Productivity and Survivorship banding and other projects directed by the Appalachian Highlands Science and Learning Center at Purchase Knob. Nests of Peregrine Falcon are monitored in the park.

Key Bird Species

Criterion	Species	Season	Number	Criterion	Species	Season	Number
1	Peregrine Falcon	B	2	2a	Winter Wren	all	2,640
2b	Ruffed Grouse	all	61	2b	Northern Parula	B	1,280
2a	Black-billed Cuckoo	B	20	2b	Black-throated Blue Warbler	B	3,112
2b	Acadian Flycatcher	B	1,366	2b	Blackburnian Warbler	B	472
2a	Olive-sided Flycatcher	B	4	2a	Black-throated Green Warbler	B	6,907
3a	Blue-headed Vireo	B	3,126	2b	Worm-eating Warbler	B	1,096
2a	Black-capped Chickadee	all	839	2a	Swainson's Warbler	B	30
2a	Red-breasted Nuthatch	all	1,010	2b	Louisiana Waterthrush	B	147
2a	Golden-crowned Kinglet	all	1,378	2b	Canada Warbler	B	599
2a	Brown Creeper	B	634	2b	Hooded Warbler	B	3,131
2b	Wood Thrush	B	1,167	3a	Scarlet Tanager	B	2,899
2a	Hermit Thrush	B	32	2a	Red Crossbill	all	61

B = breeding

"Number" represents maximum number detected on over 4,000 point counts made from 1996 to 1999 as part of the Discover Life in America project and available online at www.dlia.org/atbi/species/Animalia/Chordata/Aves/survey.shtml.

Highlands Plateau

Location: Jackson and Macon Counties

Total Area: 38,099.7 ha (94,146.4 acres)

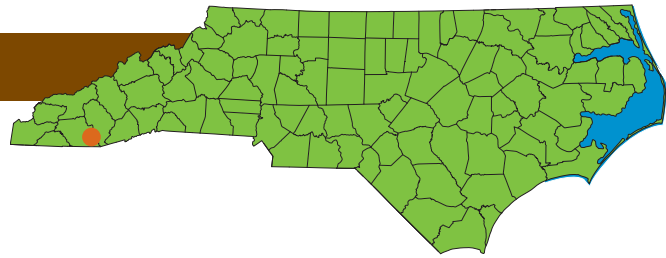
Site Description: The Highlands Plateau is situated at the southernmost end of the Blue Ridge Mountain Range and includes the towns of Highlands and Cashiers. The plateau covers an area with a range in altitude from 915 to 1,540 m (3,002–5,053 feet). Rivers to the west of the plateau, such as the Cullasaja, flow to the Mississippi River, while rivers to the south and east flow to the Savannah River. The old-growth and virgin hemlock forest that once was widespread throughout the area has largely disappeared, but the area continues to support a rich and diverse assemblage of birds.

Habitats: Mixed forest, deciduous forest, and coniferous forest, riparian, mountain cliff.

Land Use: Forestry, recreation and tourism, and suburban and undeveloped areas.

Primary Threats: Residential and commercial development, predation, invasive pests, air pollution, drought.

Protection Status: The site includes portions of the Nantahala National Forest, Nantahala Game Lands, Chattooga Wild and Scenic River, Ellicott Rock Wilderness, and significant private land holdings. Both The Nature Conservancy and the Highlands-Cashiers Land Trust have been active in acquiring land for conservation in the area.



Conservation Issues: Rapid growth is encroaching on natural areas, creating loss of habitat, fragmentation of forests, and introduction of edge species in formerly interior forests. In addition, air pollution, golf course run-off, and sedimentation of waterways are of concern.

Birds: The assemblage of bird species found here is more typical of northern forests and many species are at the southern limit of their range. The Highlands Plateau supports a significant diversity and abundance of migratory landbirds and is one of North Carolina's most important sites for species such as Blackburnian Warbler, Black-throated Blue Warbler, Canada Warbler, Brown Creeper, Golden-crowned Kinglet, and Rose-breasted Grosbeak (NC Criterion 4). Peregrine Falcons were reintroduced to the area and nest on the sheer cliffs of Whiteside Mountain.

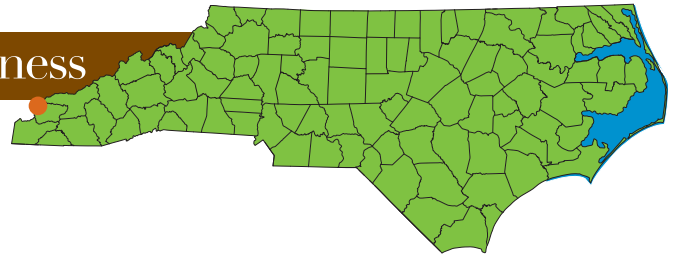
Monitoring and research: The site includes the Highlands Biological Station, where studies of birds and their habitats have been conducted since the 1940s. Repetitive plot studies have been conducted since the 1950s. The Highlands Plateau Audubon Society has adopted this Important Bird Area and conducts point counts established by Audubon North Carolina in 2006. The Highlands Christmas Bird Count circle and the Highlands Breeding Bird Survey route are located within this Important Bird Area. Point counts are conducted on Nantahala National Forest lands as part of the Region 8 bird-monitoring program. The North Carolina Wildlife Resources Commission coordinates annual Peregrine Falcon nest monitoring.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	1 pair	2009
2a	Red-breasted Nuthatch	all	41	2006
2a	Golden-crowned Kinglet	all	28	2006
2a	Black-throated Green Warbler	B	22	2009
2b	Hooded Warbler	B	21	2009
2a	Red Crossbill	all	25	2009

B = breeding

Joyce Kilmer–Slick Rock Wilderness



Location: Graham County

Total Size: 30,352.1 ha (75,001.5 acres)

Site Description: The Joyce Kilmer Memorial Forest is the largest single stand of virgin hardwood forest in the North Carolina mountains. The forest, which is surrounded by a wilderness area, includes yellow pine (*Pinus spp.*), hemlock (*Tsuga canadensis*), sycamore (*Platanus occidentalis*), basswood (*Tilia spp.*), dogwood (*Cornus florida*), beech (*Fagus grandifolia*), and oak (*Quercus spp.*). Much of the forest adjacent to Slickrock Creek and Little Santeelah Creek, while spectacular, was logged from 1915 to the early 1920s. Time and management have largely healed the scars from early logging.

Habitats: Old-growth cove hardwood forests, northern hardwood forests, mixed forests (mostly hemlock), and mountain balds.

Land Use: Conservation, recreation, and tourism.

Primary Threat: Air pollution.

Protection Status: The site is in federal ownership, managed by the United States Forest Service.

Conservation Issues: Long-term consequences of air quality decline need to be monitored.

Birds: The site supports a significant diversity and abundance of birds associated with cove and northern hardwood forest types (Criterion NC4). It is part of a large area of public lands that support an assemblage of birds typical of the southern Appalachians. In particular, it gives insight into what regional avian communities looked like in the pre-Columbian period. A number of “high-” and intermediate-elevation species occur at this site despite its modest elevation. At least 43 breeding species have been recorded. The site has a significant diversity of neotropical migrant landbirds.

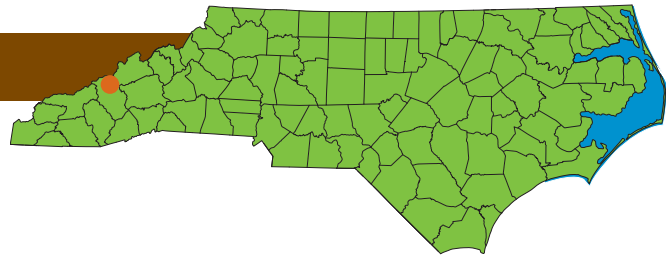
Monitoring and Research: Point counts are conducted within the National Forest portion of the Important Bird Area. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

Key Bird Species

Criterion	Species	Season	Number
2a	Ruffed Grouse	all	—
3a	Blue-headed Vireo	B	—
2a	Brown Creeper	B	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	B	—
2b	Wood Thrush	B	—
2b	Black-throated Blue Warbler	B	—
2a	Black-throated Green Warbler	B	—
2b	Worm-eating Warbler	B	—
3a	Rose-breasted Grosbeak	B	—
3a	Scarlet Tanager	B	—

B = breeding

Max Patch



Location: Haywood and Madison Counties

Total Size: 2,145.8 ha (5,302.5 acres)

Site Description: The Max Patch region includes the Harmon Den and Hurricane Mountain roadless areas (just east of Interstate 40). Several grassy balds extend from Max Patch northward to the Bald Mountains roadless areas. Mixed forest, potential old-growth areas within the roadless areas and extensive early-succession habitats make this a diverse site. The Southern Appalachian Forest Coalition includes the area in its Bald Mountains Conservation Region.

Habitats: Northern hardwood forest, mixed forest, grassy balds, and early-succession agricultural areas

Land Use: Cattle grazing, recreation, forestry, and second-home development.

Primary Threats: Reforestation, residential and commercial development on private lands.

Protection Status: Much of the area is included in Pisgah National Forest. The Appalachian Trail passes through the area and across Max Patch Mountain itself. The lower sections, where most of the Golden-winged Warbler population is found, is in private ownership.

Conservation Issues: As with most Golden-winged Warbler habitat, forest regeneration is a primary threat to the site. Housing has begun to develop in the private areas and the eventual decline of cattle grazing may allow reversion to forest over time. The United States Forest Service also actively manages the high-elevation areas with fire. More information is needed on burning schedules, extent and other factors to gauge the impacts to the birds in this Important Bird Area.

Birds: This area is little known for its birds, except for the large numbers of Golden-wings that nest on the approach to the Max Patch area. Most of the large numbers of Golden-wings are found on the slightly lower Hurricane and Meadow Fork Mountains to the south of Max Patch proper. Naked Place Mountain (an extension of Hurricane Mountain) is the center of this population. Surveys in 2002 and again in 2009 suggest a total population of 50 or more pairs, but much more study is needed to determine densities in the area. Other early-successional species are present as well, including Field Sparrow, Least Flycatcher, Alder Flycatcher, and Chestnut-sided Warbler.

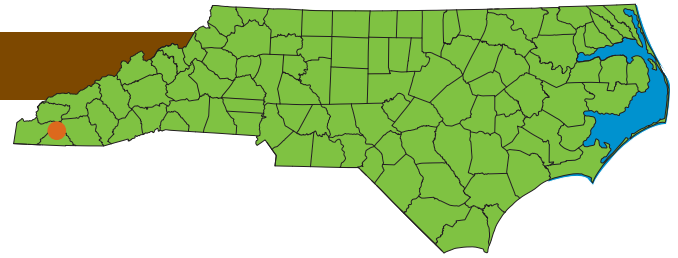
Monitoring and Research: Members of the Carolina Field Birders (a local bird club), as well as some members of the Elisha Mitchell Audubon Society, conduct annual spring counts in the area and specifically track Golden-winged Warbler numbers. Their data is being entered into the eBird system. Point counts are also conducted in the area managed by the United States Forest Service. Audubon North Carolina has also conducted Golden-winged Warbler surveys in the area as part of the larger Golden-winged Warbler Atlas Project coordinated by the Cornell Laboratory of Ornithology.

Key Bird Species

Criterion	Species	Season	Number
2a	Alder Flycatcher	B	—
3a	Least Flycatcher	B	—
2a	Golden-winged Warbler	B	25 prs. (2009)
2b	Chestnut-sided Warbler	B	—
2b	Black-throated Blue Warbler	B	—
2a	Swainson's Warbler	B	—
3a	Ovenbird	B	—
2b	Field Sparrow	B	—
2a	Vesper Sparrow	B	—

B = breeding

Nantahala Mountains



Location: Macon, Clay, and Cherokee Counties

Total Size: 54,621.2 ha (134,971.9 acres)

Site Description: The Nantahala Mountains Important Bird Area extends from the Georgia–North Carolina line northward to the northern boundary of Macon County and west to the Valley River Mountain–Tusquitee Mountain area. Many peaks exceed 1,525 m (5,003 feet) in elevation.

Habitats: Cove forest, mountain bald, and northern hardwood forest.

Land Use: Conservation, hunting, and fishing.

Primary Threats: Logging, recreational and commercial development on private lands.

Protection Status: The Important Bird Area includes portions of Nantahala Game Lands, Nantahala National Forest, and privately owned land.

Conservation Issues: Much of the Nantahala National Forest in this Important Bird Area has been logged in the past. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

Birds: This is an excellent site for mid- to high-elevation birds and probably one of the most important nesting areas for Yellow-bellied Sapsuckers in the Southern Appalachians. Cove forests and northern hardwood forests are extensive and support bird assemblages typical of these habitats (Criterion NC4). Other species that are common in the area include Ruffed Grouse, Black-throated Blue Warbler, Rose-breasted Grosbeak, Red-breasted Nuthatch, Winter Wren, Ovenbird, Golden-crowned Kinglet, and Golden-winged Warbler.

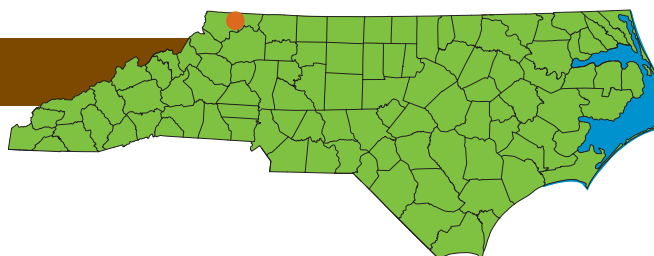
Monitoring and Research: Point counts are conducted annually within the Nantahala National Forest.

Key Bird Species

Criterion	Species	Season	Number
2a	Yellow-bellied Sapsucker	B	—
2a	Red-breasted Nuthatch	all	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	all	—
2b	Wood Thrush	B	—
2a	Golden-winged Warbler	B	—
2b	Black-throated Blue Warbler	B	—
3a	Ovenbird	B	—
2b	Louisiana Waterthrush	B	—
3a	Rose-breasted Grosbeak	B	—

B = breeding

New River Corridor



Location: Ashe and Alleghany Counties

Total Size: 12,806.0 ha (31,644.2 acres)

Site Description: The New River Corridor Important Bird Area includes a relatively narrow floodplain and adjacent slopes along the lower portions of the South Fork and North Fork of the New River in northwestern North Carolina. It is thought to be the oldest river system in North America and one of the oldest in the world. Much of the area along the river is highly modified by humans and has been converted to agricultural fields in the past. Residential housing is quite common. A narrow fringe of shrubs and trees between the river and farmland or housing remains, however, and this is the area of primary significance for birds.

Habitats: Riparian, agricultural, mixed forest, and river.

Land Use: Conservation, recreation and tourism, agriculture, and residential development.

Primary Threats: Agriculture and conversion, recreational development, residential and commercial development.

Protection Status: Portions of the site are protected and managed by the State of North Carolina as part of New River State Park and North Carolina Wildlife Resources Commission game lands. The South Fork of the New River has been designated a National Wild and Scenic River and a State Wild and Scenic River.

Conservation Issues: The clearing of vegetation down to the stream bank for pasture, Christmas tree plantations, and croplands are significant concerns. Residential and

commercial development on and in close proximity to the stream bank threaten habitat. The site has become very popular among recreationists, which has led to concern for streamside habitats.

Birds: It supports a significant portion of the state populations of breeding Warbling Vireos and Baltimore Orioles. The riparian zone supports a significant number of Willow Flycatchers and Yellow Warblers. The state's first breeding record for Tree Swallow was found along the river around 1980. Orchard Oriole and Yellow-throated Vireo are found on the site, as well as Golden-winged Warbler, Blue-winged Warbler, and Chestnut-sided Warbler. In all, over 100 breeding species are present along the river, making it one of the most diverse Important Bird Areas in the state. This area was recently recognized as a globally significant site for Golden-winged Warblers.

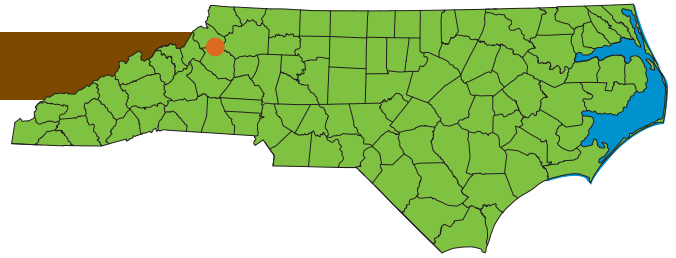
Monitoring and Research: Audubon North Carolina established permanent point count locations along both the North and South Forks beginning in 2005 that are being continued by Adopt an Important Bird Area volunteers from the Audubon Society of Forsyth County, including counts within New River State Park. These data are entered into the State Parks Natural Resource Inventory Database. In addition, Audubon North Carolina conducts regular monitoring of the known Golden-winged Warbler locations.

Key Bird Species

Criterion	Species	Season	Number	Year
3a	Willow Flycatcher	B	21	2005-6
3a	Eastern Kingbird	B	58	2005-6
2a	Warbling Vireo	B	2	2005-6
2b	Yellow-throated Vireo	B	45	2005-6
3a	Tree Swallow	B	80	2005-6
2b	Wood Thrush	B	38	2005-6
2b	Northern Parula	B	46	2005-6
2a	Golden-winged Warbler	B	27	2009
3a	Yellow Warbler	B	64	2005-6
2b	Hooded Warbler	B	42	2005-6
2b	Field Sparrow	B	50	2005-6
2a	Bobolink	B	8	2005-6
3a	Baltimore Oriole	B	68	2005-6

B = breeding

Northern Escarpment



Location: Wilkes, Watauga, and Caldwell Counties

Total Size: 63,958.8 hectares (158,045.6 acres)

Site Description: This site lies along the steep escarpment areas that comprise the eastern edge of the Blue Ridge. Ranging in elevation from about 1,220 m (4,003 feet) to as low as 305 m (1,001 feet) in upper Wilkes County, this diverse area supports piedmont and mountain species. Most of the area is densely wooded. The area is under tremendous development pressure as there is little public land in the area, with the exception of fragments of the Pisgah National Forest in the community of Globe, N.C.

Habitats: Dry oak forest, cove hardwood forest, xeric pine, xeric hardwood, residential development, and agricultural lands (mostly grazing).

Land Use: Hunting and fishing, recreation, forestry, second-home development, agriculture.

Primary Threats: Second-home development, resort development, timbering, water pollution, invasive species.

Protection Status: Much of this Important Bird Area is privately held. The southern end of the Important Bird Area is composed of small patches of Pisgah National Forest lands and some North Carolina Wildlife Resources Commission game land tracts (Mingo tract, Buffalo Cove, Big Ivy). Some development projects are placing significant tracts into conservation easement.

Conservation Issues: Since a large portion of this Important Bird Area is privately owned, it has been under tremendous development pressure, with several large development projects

that exceed 1,200 ha (2,965 acres). Some of them have experienced significant declines in sales with the economic conditions at the time of this writing. Residential development, apart from direct habitat change, is also adversely affecting water quality. The area hosts many N.C. Outstanding Resource Waters. The hemlock adelgid is another threat to these watersheds, as is the spread of invasive plants following logging and development. Other issues include continuing timber harvesting as these areas reach marketable age, which can lead to erosion in this high-relief terrain.

Birds: Most of the area is forested and, given the range of elevations, supports a diverse array of forest interior species, including Cerulean, Swainson's, Worm-eating, Kentucky, Hooded, and Blackburnian Warblers and Northern Parula. It also contains habitat for Yellow-bellied Sapsuckers, Red Crossbills, and populations of Dark-eyed Juncos and Red-breasted Nuthatches at lower-than-normal elevations (670 m [2,198 feet]). The base of the escarpment is also an important area for Whip-poor-wills and other nightjar species.

Monitoring and Research: Audubon North Carolina and its partners conducted point count surveys at several locations throughout the Important Bird Area from 2004 to 2008. Audubon North Carolina conducts annual monitoring of the primary Cerulean Warbler site on the Blue Ridge Parkway.

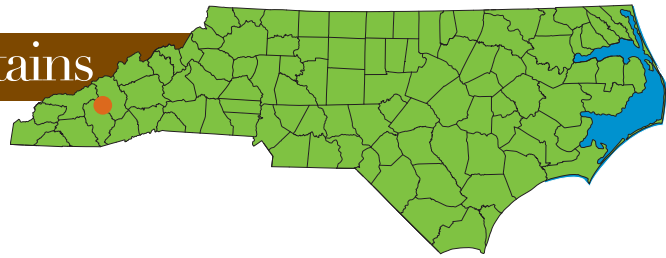
Key Bird Species

Criterion	Species	Season	Number
2b	Whip-poor-will	B	44
2b	Acadian Flycatcher	B	21
2b	Wood Thrush	B	61
2b	Black-throated Blue Warbler	B	21
2a	Black-throated Green Warbler	B	73
2b	Worm-eating Warbler	B	26
3a	Black-and-white Warbler	B	49
3a	Ovenbird	B	90
2b	Hooded Warbler	B	57
3a	Scarlet Tanager	B	42

B = breeding

"Number" represents maximum singing males detected on point counts made from 2004 to 2008.

Plott and Great Balsam Mountains



Location: Transylvania, Haywood, Jackson, Henderson, and Buncombe Counties

Total Size: 49,246.2 ha (121,690.0 acres)

Site Description: The Plott and Great Balsam Mountains stretch along the Blue Ridge Parkway near the towns of Sylva, Brevard, and Waynesville. The site is significant for high-elevation birds, including several Special Concern and watchlist species. The Important Bird Area consists of spruce-fir and mixed spruce forests above 1,370 m (4,495 feet). Maximum elevation is 1,955 m (6,414 feet), at Richland Balsam. Additional features include steep and rugged slopes, bogs, and balds.

Habitats: Northern hardwood forest, cove hardwood forest, spruce-fir forest, heath balds, bogs.

Land Use: Conservation, recreation, and privately owned lands.

Primary Threats: Air pollution, logging, introduced pests, and residential and commercial development on private lands.

Protection Status: Portions of the Important Bird Area are within the Nantahala National Forest, Pisgah National Forest, Nantahala Game Lands, Pisgah Game Lands, and National Park Service areas, and include the Shining Rock

and Middle Prong Wilderness areas. The site also includes lands in private ownership.

Conservation Issues: Much of the lower-elevation forest has been logged. Acid rain threatens many of the high-elevation spruce-fir forests, weakening the trees and making them susceptible to the balsam wooly adelgid and disease.

Birds: The northern hardwoods and cove hardwoods provide excellent habitat for high-elevation species (Criterion NC4). The site is a key area for species such as Northern Saw-whet Owl, Red Crossbill, Black-throated Blue Warbler, and Brown Creeper. It is also among the state's most important sites for Alder Flycatcher, Black-capped Chickadee, Common Raven, and Red-breasted Nuthatch.

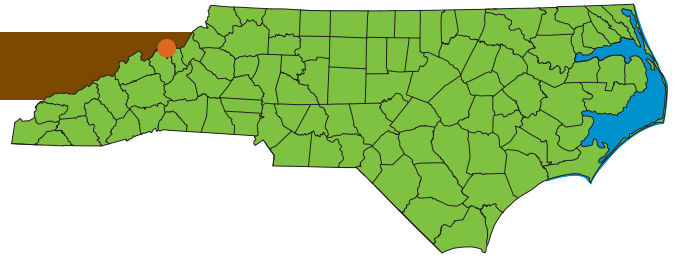
Monitoring and Research: Spring counts are conducted by Adopt an Important Bird Area participants, with the Elisha Mitchell Audubon Society and Carolina Field Birders. The National Park Service conducts regular Northern Saw-whet Owl surveys.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Northern Saw-whet Owl	all	1	2009
1	Peregrine Falcon	B	5	2007
2a	Yellow-bellied Sapsucker	B	30	2005
2a	Alder Flycatcher	B	14	2009
2a	Black-capped Chickadee	all	27	2007
2a	Red-breasted Nuthatch	all	31	2007
2a	Brown Creeper	B	31	2008
2a	Winter Wren	B	34	2006
2a	Golden-crowned Kinglet	all	163	2006
2b	Wood Thrush	B	20	2008
2b	Veery	B	118	2009
2a	Hermit Thrush	B	5	2008
2b	Northern Parula	B	27	2006
2b	Black-throated Blue Warbler	B	141	2006
2b	Blackburnian Warbler	B	36	2006
2a	Black-throated Green Warbler	B	100	2006
2b	Canada Warbler	B	105	2006
2b	Hooded Warbler	B	36	2008
3a	Rose-breasted Grosbeak	B	47	2008

B = breeding

Roan Mountain



Location: Mitchell County

Total Size: 8,449.2 ha (20,878.4 acres)

Site Description: Roan Mountain is located in Mitchell County, near the Tennessee border. The peak of Roan rises 1,917 m (6,289 feet) above sea level at Roan High Knob. Roan is probably most recognized for its balds (high-elevation grassy meadows) and for its rhododendron (*Rhododendron catawbiense*) “gardens,” but the site also includes significant stands of northern hardwoods and spruce-fir forests. Roan Mountain’s aesthetic value was recognized as early as 1836 by Elisha Mitchell, who called it “the most beautiful of all the high mountains,” and in 1841 by the pioneer botanist Asa Gray, who called it “without doubt, the most beautiful mountain east of the Rockies.”

Habitats: Grassy balds, rhododendron thickets, northern hardwood forest, and spruce-fir forest.

Land Use: Conservation, forestry, and recreation

Primary Threats: Invasive pests, air pollution, reforestation and loss of bald habitats, and residential development.

Protection Status: Much of Roan Mountain is within the Pisgah National Forest in North Carolina and, on the Tennessee side, Cherokee National Forest and Roan Mountain State Park. Additional land has been purchased by The Nature Conservancy and the Southern Appalachians Highlands Conservancy and transferred to the United States Forest Service. Recently, North Carolina State Parks has added the Little Yellow Mountain State Natural Area to its holdings. The site also includes private lands.

Conservation Issues: Efforts are under way to maintain the balds through direct management to prevent these areas from being overtaken by trees and shrubs. The Southern Appalachian Highlands Conservancy, The Nature Conservancy, and North Carolina State Parks are all actively acquiring land in the Important Bird Area. A location in the southwestern corner of the Roan Mountain area is under study for commercial-scale wind energy development, near the town of Spruce Pine.

Birds: Roan Mountain has among the greatest diversity of birds of any site in the North Carolina mountains. It is one of North Carolina’s most important sites for Northern Saw-whet Owls and one of the most significant sites in the southern Appalachians for Magnolia Warbler. The site supports a significant diversity and abundance of birds associated with spruce-fir forest, northern hardwood forest, and mountain bald habitats (Criterion NC4). This Important Bird Area was recently designated a globally significant site for Golden-winged Warbler.

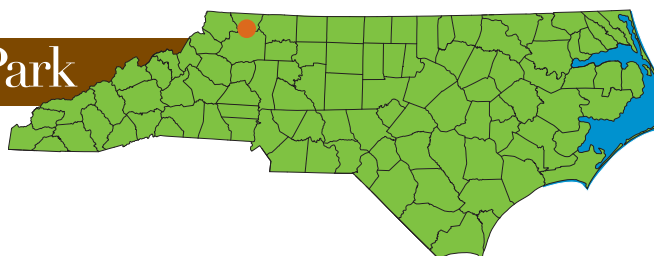
Monitoring and Research: A migration banding station is established at Carver’s Gap. The Southern Appalachian Highlands Conservancy regularly monitors the site. They are also working with Audubon North Carolina on restoration of Golden-winged Warblers and their habitats. Surveys for Yellow-bellied Sapsucker and Golden-winged Warbler continue to be conducted.

Key Bird Species

Criterion	Species	Season	Number
1	Northern Saw-whet Owl	all	—
2a	Alder Flycatcher	B	—
2a	Brown Creeper	all	—
2a	Winter Wren	B	—
2a	Golden-crowned Kinglet	all	—
2a	Golden-winged Warbler	B	26
2b	Chestnut-sided Warbler	B	—
2a	Magnolia Warbler	B	—
2b	Worm-eating Warbler	B	—
3a	Ovenbird	B	—
2b	Canada Warbler	B	—
2b	Hooded Warbler	B	—
2a	Red Crossbill	all	—

B = breeding

Stone Mountain–Doughton Park



Location: Alleghany and Wilkes Counties

Total Size: 16,623.6 ha (41,077.7 acres)

Site Description: The site runs along the Blue Ridge Parkway in Alleghany and Wilkes Counties. Elevations range from 425 to 1,190 m (1,394–3,904 feet) along this part of the escarpment. From the Blue Ridge Parkway it continues east to Stone Mountain and southwest to the southern boundary of Thurman-Chatham Game Lands. The area includes deep cove forests, streams, cleared fields, habitats, and birds that are typical of mid-elevation hardwood forests.

Habitats: Hardwood forest, mixed forest, steep and rocky outcrops, hardwood cove forest, and numerous small streams.

Land Use: Conservation, recreation and tourism, hunting, fishing.

Primary Threats: Invasive species, residential and commercial development, timbering.

Protection Status: Doughton Park is protected and managed by the National Park Service. North Carolina State Parks manages Stone Mountain, and the North Carolina Wildlife Resources Commission manages the Thurmond-Chatham Game Lands. Isolated tracts within this Important Bird Area are privately owned and are not afforded protection.

Conservation Issues: Privately owned tracts should be acquired for conservation. Additional surveys of landbirds during breeding season, migration periods, and winter are needed.

Birds: The site supports species typical of mid-elevation forests, including several watchlist species, and a significant concentration and diversity of landbirds. Much of the area is unbroken hardwood and cove forests and supports the suite of species typically associated with these habitats (Criterion NC4).

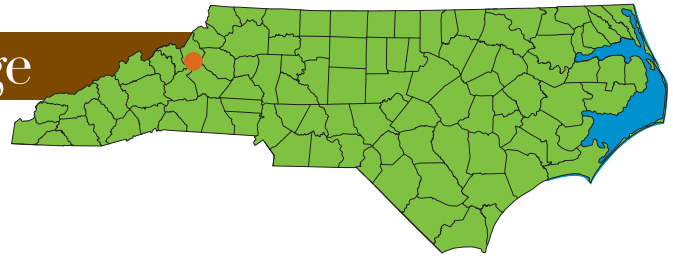
Monitoring and Research: Bird data from Stone Mountain State Park are entered into the State Parks Natural Resource Inventory Database. The Thurman-Chatham Game Lands are monitored by the North Carolina Wildlife Resources Commission using a series of permanent point counts.

Key Bird Species

Criterion	Species	Season	Number
2a	American Woodcock	B	—
2b	Ruffed Grouse	all	—
2b	Whip-poor-will	B	—
2b	Acadian Flycatcher	B	—
3a	Blue-headed Vireo	B	—
2b	Wood Thrush	B	—
2b	Northern Parula	B	—
2b	Black-throated Blue Warbler	B	—
2a	Black-throated Green Warbler	B	—
2b	Worm-eating Warbler	B	—
2a	Swainson's Warbler	B	—
2b	Louisiana Waterthrush	B	—
3a	Scarlet Tanager	B	—
2a	Red Crossbill	all	—

B = breeding

Wilson Creek–Linville Gorge



Location: Avery, Caldwell, and Burke Counties

Total Size: 43,442.8 hectares (107,349.4 acres)

Site Description: Bordered by Grandfather Mountain on the north and the Black Mountains (including Mt. Mitchell) on the west, these steep, high-relief gorge areas support a diverse assemblage of breeding birds. The Linville Gorge area is a designated Wilderness Area. Three roadless areas (Wilson Creek, Lost Cove Cliffs, and Harpers Creek), include over 12,140 ha (29,999 acres) of intact forest. Abundant water resources add to the diversity of the area, and many Outstanding Resource Waters are contained in this IBA, as well as several North Carolina Natural Heritage Program Significant Natural Areas.

Habitats: Mixed mesophytic forest, cove hardwood, hemlock cove, and xeric oak-pine forests, with smaller components of cliff face, heath bald, bottomland forest (riverine), grassland, and other early successional habitats.

Land use: Wildlife management, timbering, and recreation (including off-road vehicle areas).

Primary Threats: Invasive species, disturbance to birds (Peregrine Falcon), and water pollution.

Protection Status: Most of this Important Bird Area is in federal ownership as part of the Pisgah National Forest. Some inholdings occur, especially along Wilson Creek, from the community of Edgemont to Mortimer, and along the ridge between Wilson Creek Gorge and Linville Gorge (the east rim) that includes the community of Jonas Ridge. Much of the Wilson Creek and Linville Gorge area is also managed as

North Carolina Wildlife Resources Commission Game Lands, especially the Daniel Boone Bear Sanctuary area in Wilson Creek Gorge.

Conservation Issues: While the area is largely under public ownership, concerns remain over multiple use, invasive plant species (especially following fire), and permanent protection for wilderness study and designated roadless areas.

Birds: This area supports a variety of high priority species. Its proximity to Grandfather Mountain also makes it key for seasonal movements of other higher-elevation species (for example Northern Saw-whet Owls). Point count surveys of the breeding birds in 2002 found more than 80 breeding-season species. Several species occur in higher relative numbers in Wilson Creek than in the mountain region overall (Criterion NC4). Most of these are woodland species, as would be expected: Broad-winged Hawk, several woodpecker species, Black-throated Green Warbler, Ovenbird, Hooded Warbler, Worm-eating Warbler, Swainson's Warbler, Scarlet Tanager, and others.

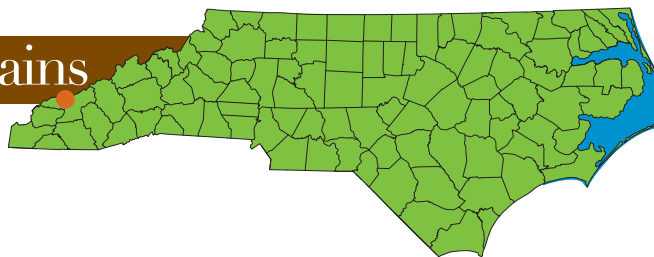
Monitoring and Research: Audubon North Carolina conducted the first comprehensive bird surveys in the region, and these continue to be monitored by Adopt an Important Bird Area volunteers from the High Country Audubon Society. The North Carolina Wildlife Resources Commission conducts annual monitoring of Peregrine Falcons.

Key Bird Species

Criterion	Species	Season	Number	Year
1	Peregrine Falcon	B	2 prs.	2009
2b	Acadian Flycatcher	B	20	2003
2b	Wood Thrush	B	44	2003
2b	Northern Parula	B	12	2003
2b	Black-throated Blue Warbler	B	53	2003
2a	Black-throated Green Warbler	B	147	2003
2b	Worm-eating Warbler	B	34	2003
2b	Canada Warbler	B	16	2003
2b	Hooded Warbler	B	58	2003
2a	Red Crossbill	B	10	2003

B = breeding

Yellow Creek–Cheoah Mountains



Location: Swain County

Total Size: 35,015.6 hectares (86,525.3 acres)

Site Description: This rugged area of the Nantahala National Forest includes deep coves and valleys and mid- to high-elevation areas just east of Fontana Lake. The area boasts some of the best birding spots in the region, including the well-known Stecoah Gap. A history of forest management, coupled with private agricultural inholdings, has created a mosaic of habitats that have supported populations of both Golden-winged Warblers and Cerulean Warblers. Recreational opportunities include motorbiking, hiking the Appalachian Trail, and visiting popular nearby areas (such as Joyce Kilmer Memorial Forest, Fontana Village, and Great Smoky Mountains National Park).

Habitats: Mixed forest, cove hardwood forest, early successional lands, and agricultural lands.

Land Use: Recreation, timbering, agriculture, and residential development.

Primary Threats: Invasive pests, invasive plant species, residential development.

Protection Status: River and creek valleys tend to be in private ownership. The Talulla Wetlands laboratory of Western Carolina University is located here. Much of the area is within the Nantahala National Forest.

Conservation Issues: The area has become popular with motorcyclists from all over the country, who come to ride the winding roads around Fontana Lake. This impact on birds has not been measured, but the traffic would likely affect

roadside nesters, which in some areas include Cerulean Warblers. The decrease in cutting on National Forest lands also likely reduces available Golden-winged Warbler habitat. The area around Stecoah Gap will be impacted by road-widening projects in the near future (Corridor K). The road construction may create additional Golden-winged Warbler habitat, but possibly to the detriment of forest interior species. The hemlock woolly adelgid (*Adelges tsugae*) is severely damaging riparian and cove forests in the area.

Birds: This area of rich forest, high-relief topography, and active forest management creates a diversity of forest types. This mix of high-density areas suits both early-successional species like Golden-winged Warbler, and Kentucky Warbler, as well as forest interior species like Cerulean Warbler, Swainson's Warbler, and Northern Parula. During point counts in 2005–6, 59 breeding species were encountered. An additional 15 species were recorded outside of point counts and some other priority species including Ruffed Grouse and Red Crossbill were noted. Although not a priority species, Great Blue Herons were found to be nesting along an impoundment of the Little Tennessee River in this area.

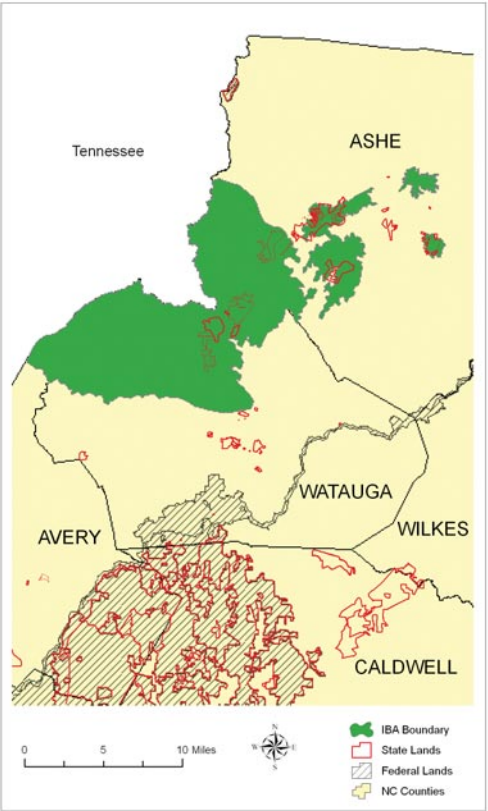
Monitoring and Research: Research on Golden-winged Warblers and Golden-winged Warbler Atlas Project surveys has been conducted. Point counts are conducted within the Nantahala National Forest. In 2005 and 2009, the Nantahala National Forest undertook Cerulean Warbler surveys.

Key Bird Species

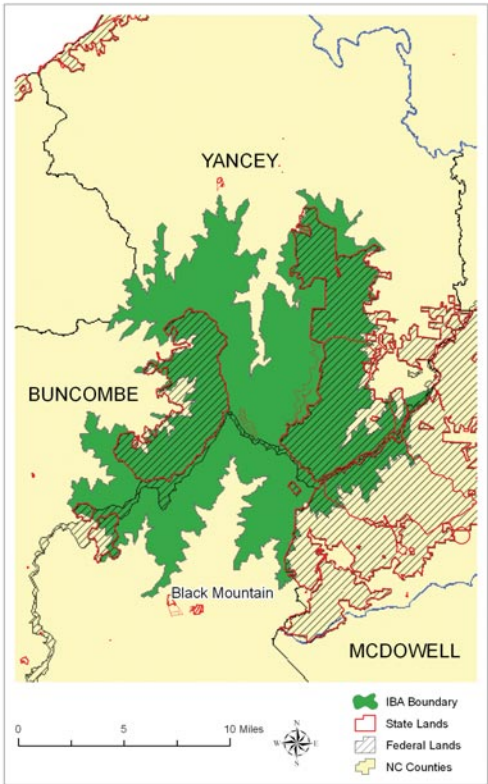
Criterion	Species	Season	Number	Year
1	Cerulean Warbler	B	30	2005
2a	Golden-winged Warbler	B	15	2007
2a	Black-throated Green Warbler	B	36	2007

B = breeding

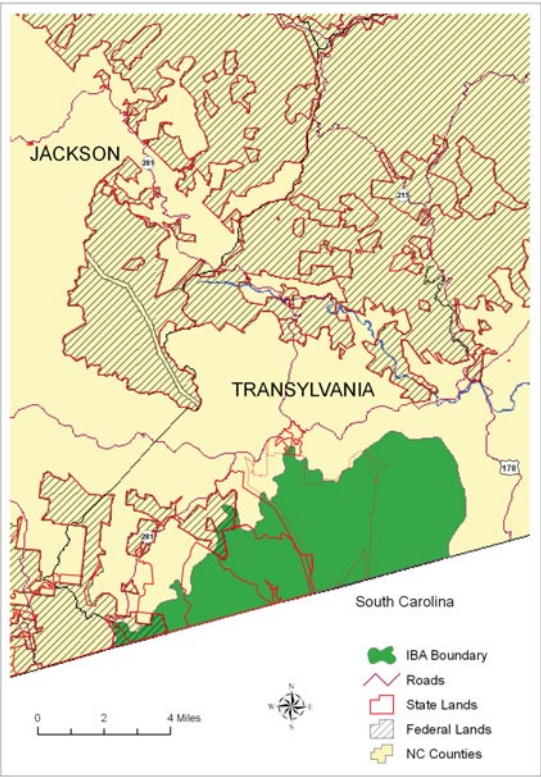
Amphibolite Mountains



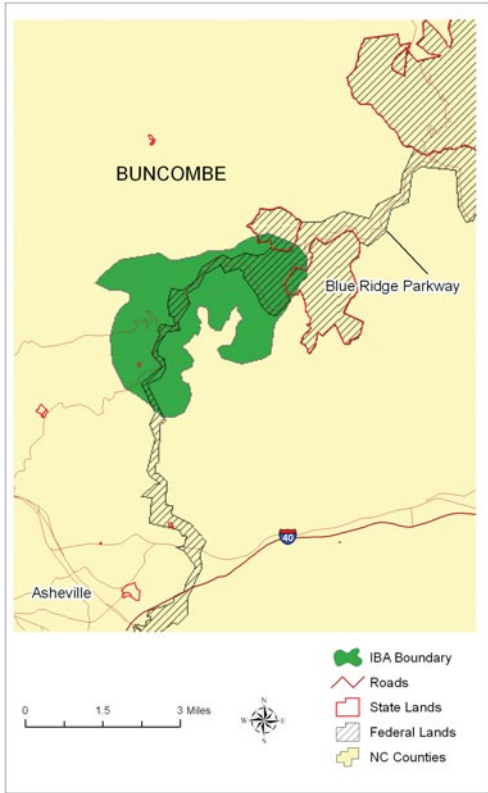
Black Mountains–Great Craggy Mountains



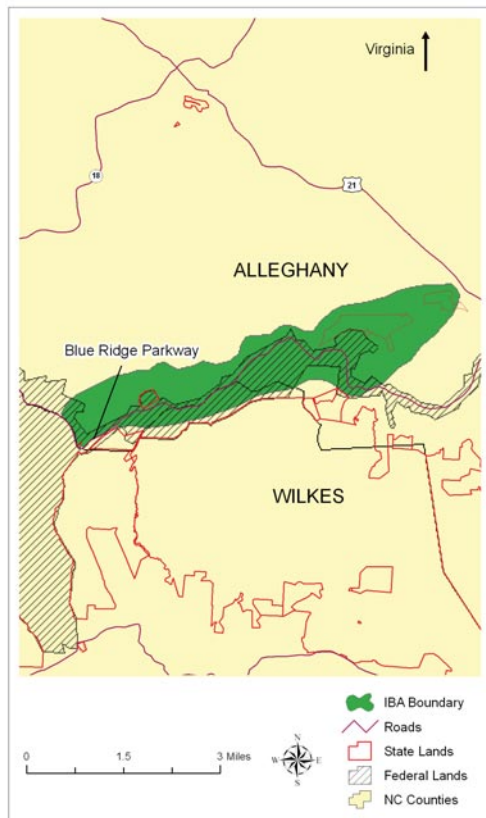
Blue Ridge Escarpment Gorges



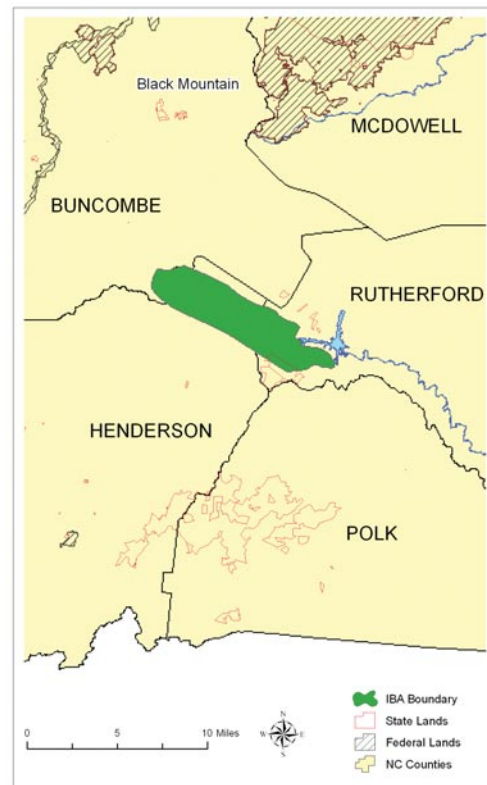
Bull Creek



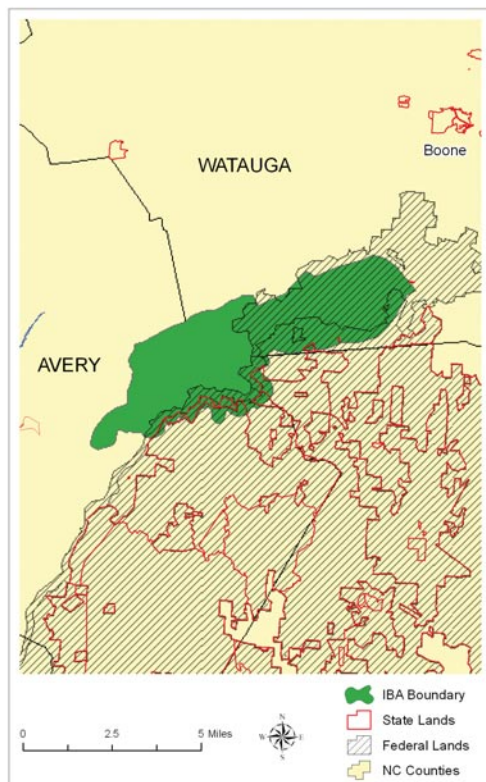
Bullhead Mountain–Mahogany Rock



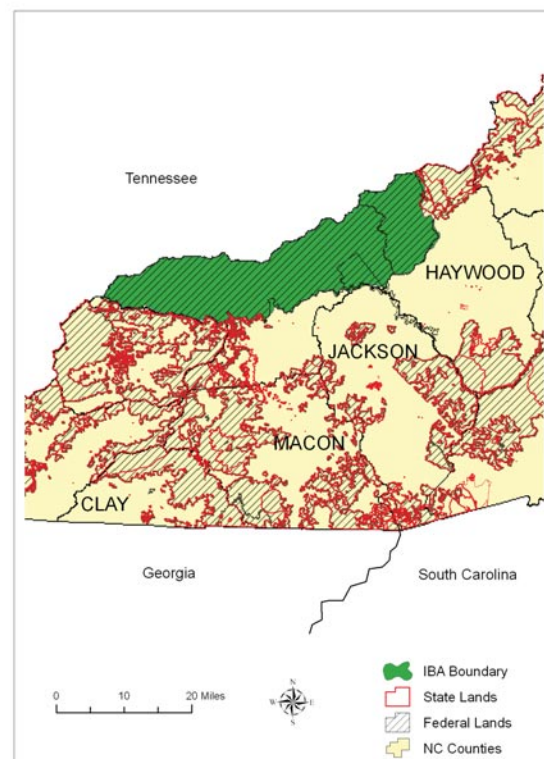
Chimney Rock–Hickorynut Gorge



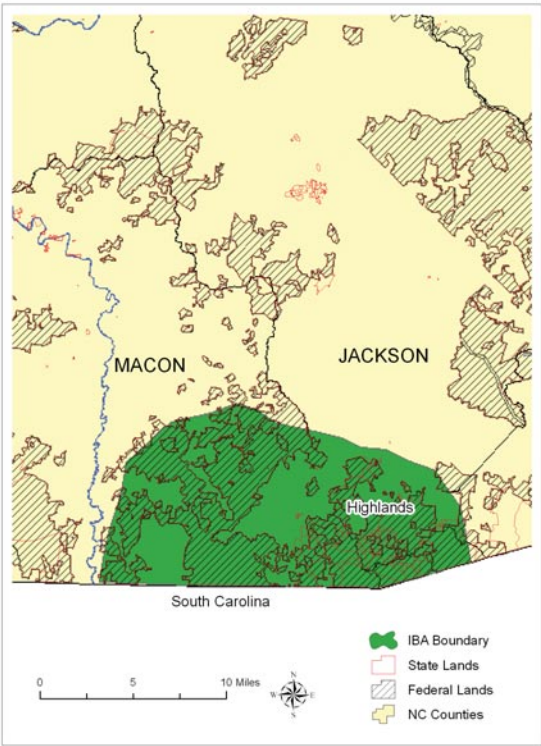
Grandfather Mountain



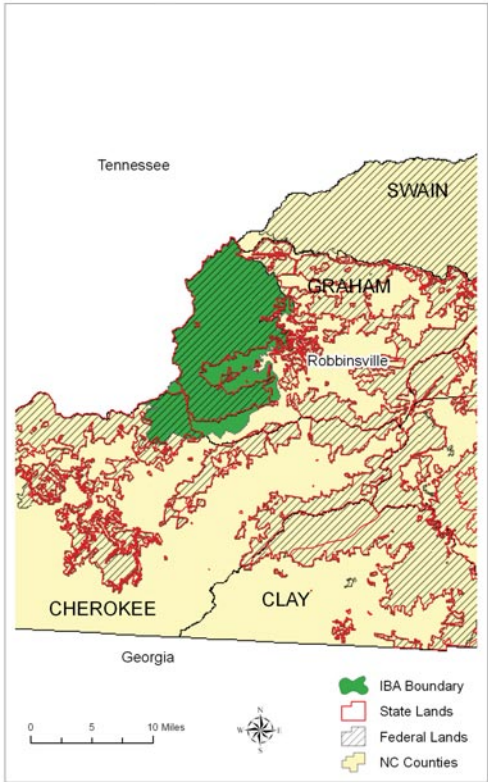
Great Smoky Mountains National Park



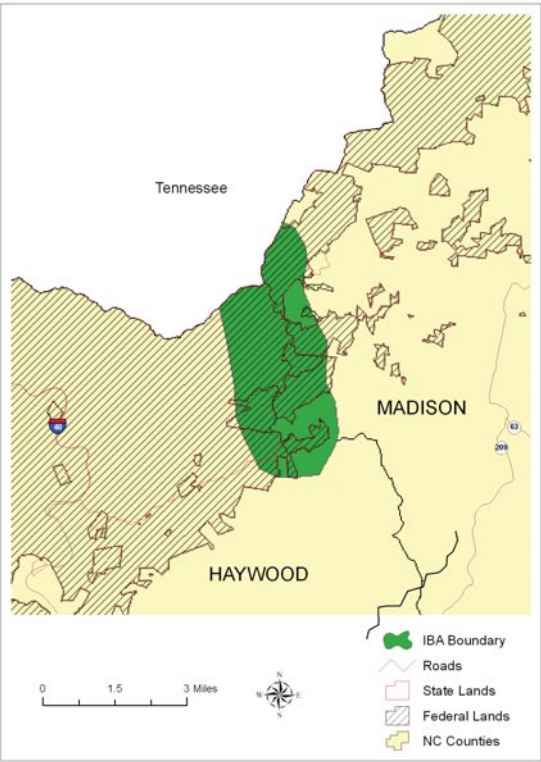
Highlands Plateau



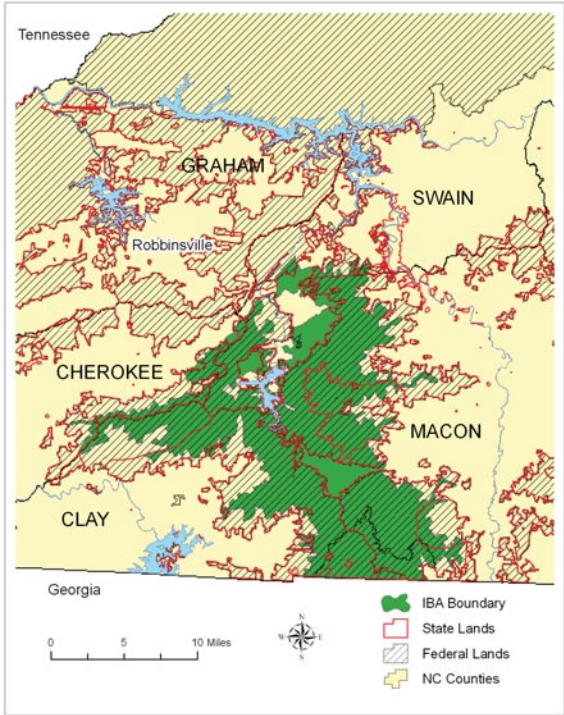
Joyce Kilmer–Slick Rock Wilderness



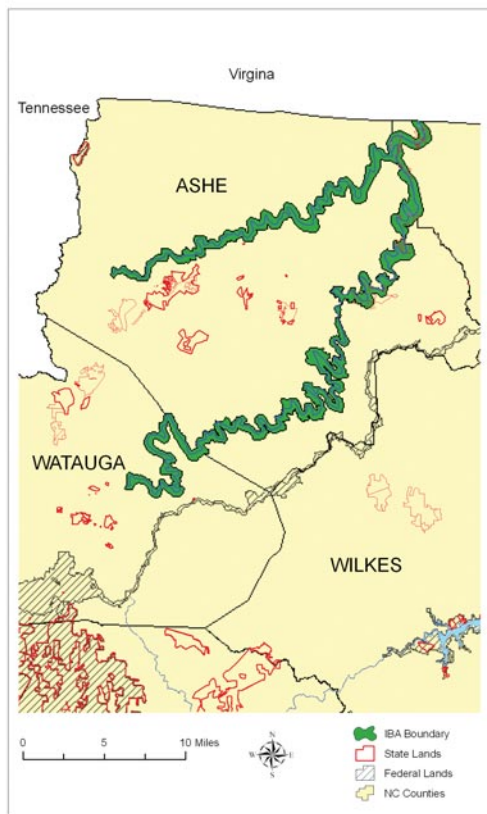
Max Patch



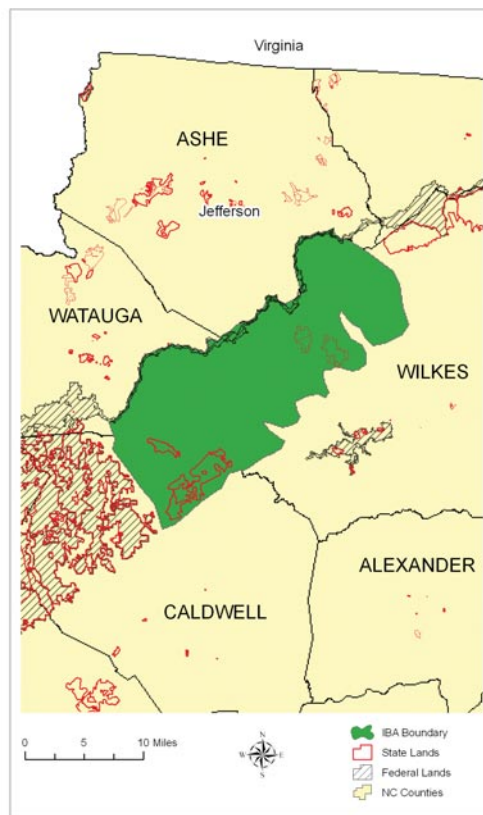
Nantahala Mountains



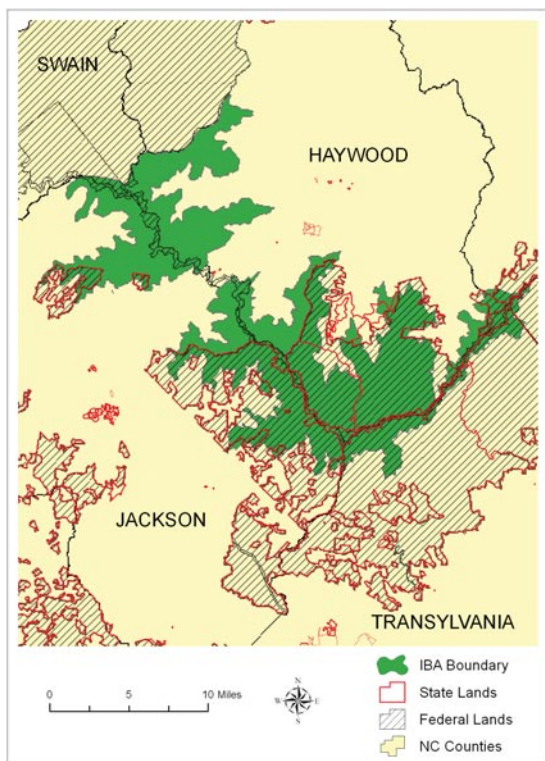
New River Corridor



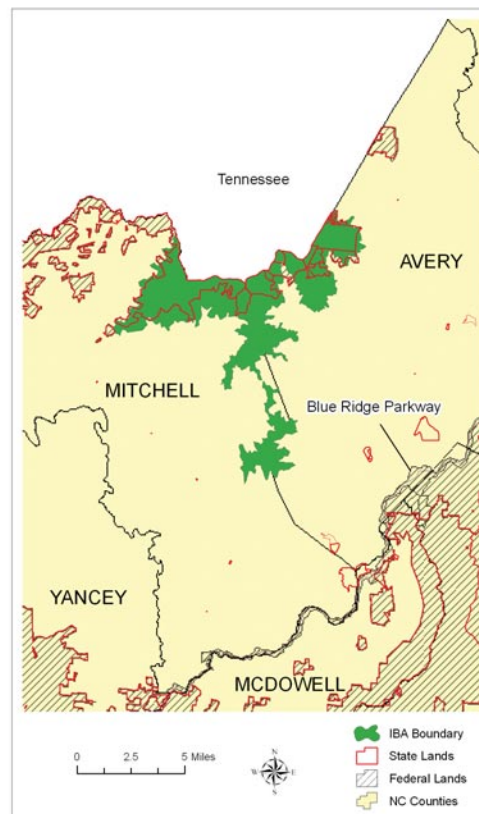
Northern Escarpment



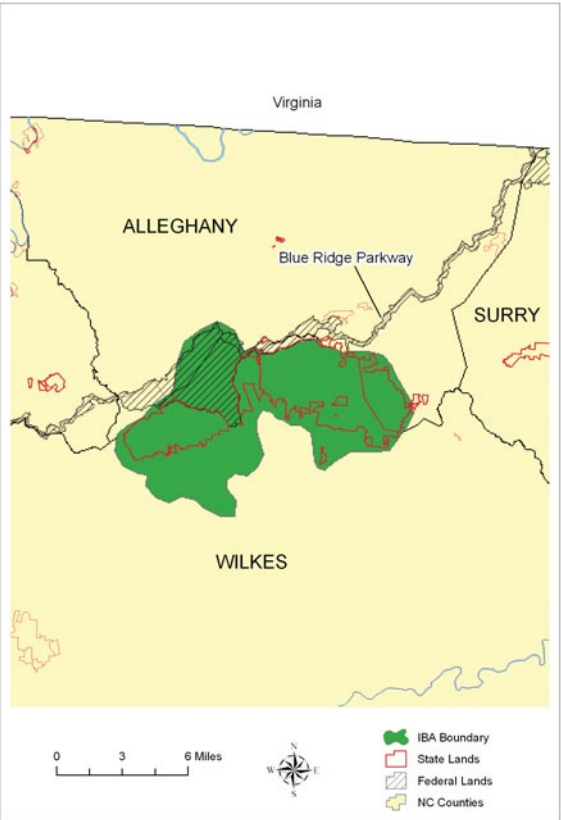
Plott and Great Balsam Mountains



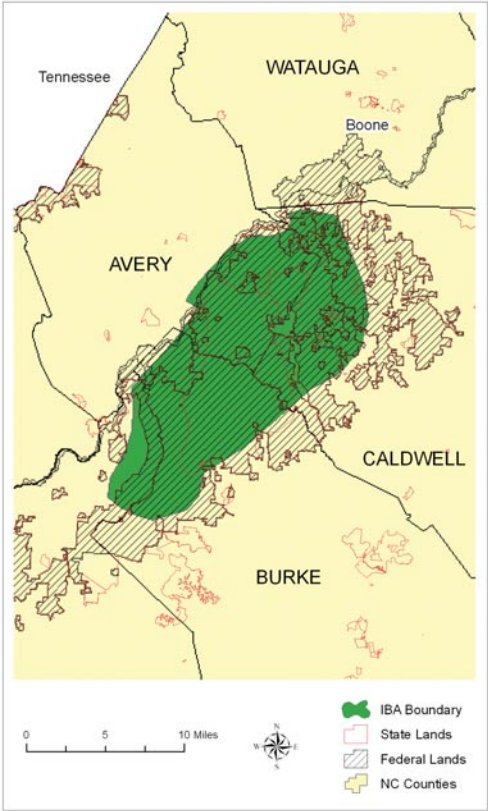
Roan Mountain



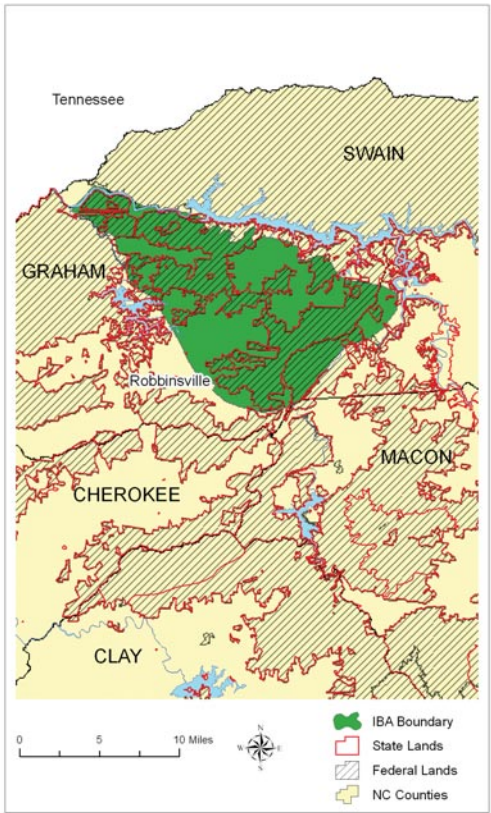
Stone Mountain–Doughton Park



Wilson Creek–Linville Gorge



Yellow Creek–Cheoah Mountains



Scientific Name	Common Name	NatureServeGlobally Threatened Species (Rank 1-4)	NC1: IUCN Critical	NC1: IUCN Endangered	NC1: IUCN Vulnerable	NC 2a: IUCN Near Threatened	NC 1: Federally Listed Species (T&E)	NC 2a: Audubon Watchlist - Red	NC 2a: PIF Watchlist - Extremely High Priority	NC 2b: Audubon Watchlist - Yellow	NC 2b: PIF Watchlist - High Priority	FWS Birds of Conservation Concern	NC 1: NC Endangered	NC 1: NC Threatened	NC 2a: NC Species of Special Concern	NC 2a: NC Listed Significantly Rare	Notes	Dispersion Pattern (Breeding, Migration, Winter) D= Dispersed, A= Aggregated, X = Not occurring
<i>Empidonax virens</i>	Acadian Flycatcher										X						Breeding only	DDX
<i>Empidonax aliorum</i>	Alder Flycatcher										X						Breeding only	DDX
<i>Recurvirostra americana</i>	American Avocet	4									X						Non-breeding	XXA
<i>Botaurus lentiginosus</i>	American Bittern																Winter	XDD
<i>Anas rubripes</i>	American Black Duck									X	X						Transient	DAA
<i>Pluvialis dominica</i>	American Golden-Plover																Breeding only	XDA
<i>Falco sparverius</i>	American Kestrel								X								DDX	DDA
<i>Haematopus palliatus</i>	American Oystercatcher							X	X		X						Non-breeding	DDA
<i>Scolopax minor</i>	American Woodcock									X	X						DDX	DDD
<i>Puffinus lherminieri</i>	Audubon's Shearwater																Non-breeding	XDD
<i>Aimophila aestivalis</i>	Bachman's Sparrow	3							X								Extinct??	DDD
<i>Vermivora bachmani</i>	Bachman's Warbler	1	X				E										Non-breeding	DDX
<i>Haliaeetus leucocephalus</i>	Bald Eagle	4									X						Non-breeding	DAA
<i>Oceanodroma castro</i>	Band-rumped Storm-Petrel	4		X													Breeding only	XXA
<i>Riparia riparia</i>	Bank Swallow																Transient	AAAX
<i>Tyto alba</i>	Barn Owl										X						DDX	DDD
<i>Dendroica castanea</i>	Bay-breasted Warbler									X	X						Transient	DDD
<i>Pterodroma cahow</i>	Bermuda Petrel	1		X			E	X	X								Non-breeding	XXD
<i>Thryomanes bewickii</i>	Bewick's Wren							X	X								Appalachian subspecies	DDD
<i>Lateralus jamaicensis</i>	Black Rail	4						X	X								Transient	DDD
<i>Rynchops niger</i>	Black Skimmer							X	X	X	X						Transient	AAA
<i>Chlidonias niger</i>	Black Tern	4									X						Transient	XDX
<i>Coragyps atratus</i>	Black Vulture																Breeding only	AAA
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo																DDX	DDX
<i>Dendroica fusca</i>	Blackburnian Warbler																Breeding only	DDX
<i>Mniotilta varia</i>	Black-and-white Warbler										X						Breeding only	DDD
<i>Poecile atricapillus</i>	Black-capped Chickadee								X								S. Appalachian populations	DDD
<i>Pterodroma harrisi</i>	Black-capped Petrel	1						X	X								Non-breeding	XDD
<i>Himantopus mexicanus</i>	Black-necked Stilt																Breeding only	DXX
<i>Dendroica caerulescens</i>	Black-throated Blue Warbler										X						Wayne's subspecies	DDX
<i>Dendroica virens</i>	Black-throated Green Warbler							X									Breeding only	DDX
<i>Vermivora pinus</i>	Blue-winged Warbler										X						Breeding only	DDX
<i>Dolichonyx oryzivorus</i>	Bobolink																Winter	AAAX
<i>Branta bernicla</i>	Brant										X						S. Appalachian populations	XDA
<i>Certhia americana</i>	Brown Creeper								X								DDX	AAA
<i>Pelecanus occidentalis</i>	Brown Pelican	4									X						DDX	AAA
<i>Sitta pusilla</i>	Brown-headed Nuthatch																DDX	DAA
<i>Wilsonia canadensis</i>	Canada Warbler									X							Breeding only	DDX
<i>Hydroprogne caspia</i>	Caspian Tern																AXX	AXX
<i>Dendroica cerulea</i>	Cerulean Warbler	4							X	X							Breeding only	DDX
<i>Dendroica pensilvanica</i>	Chestnut-sided Warbler										X						DDX	DDX
<i>Rallus longirostris</i>	Clapper Rail									X							Breeding only	DAD
<i>Columbina passerina</i>	Common Ground-Dove																AXX	AXX
<i>Sterna hirundo</i>	Common Tern																Breeding only	AXX
<i>Calonectris diomedea</i>	Cory's Shearwater									X							Non-breeding	XDD
<i>Phalacrocorax auritus</i>	Double-crested Cormorant																Breeding only	AAA
<i>Contopus virens</i>	Eastern Wood-Pewee																DDX	DDX
<i>Spizella pusilla</i>	Field Sparrow										X						DDX	DDD
<i>Phagaditis leucinellus</i>	Glossy Ibis																ADD	ADD
<i>Regulus satrapa</i>	Golden-crowned Kinglet								X								S. Appalachian populations	DDD
<i>Vermivora chrysopetra</i>	Golden-winged Warbler	4						X	X								DDX	DDX
<i>Puffinus gravis</i>	Greater Shearwater									X							XDD	XDD
<i>Geleochelidon nilotica</i>	Gull-billed Tern																ADD	ADD
<i>Anmodramus henrici</i>	Henslow's Sparrow	4						X	X								Breeding only	DDD
<i>Catharus guttatus</i>	Hermit Thrush							X									DDX	DDX
<i>Wilsonia citrina</i>	Hooded Warbler										X						DDX	DDX

	NC 1: Endangered or Threatened Species	NC 2: Declining or Vulnerable Species	NC 2a: Special Concern, Rare, NAS Watchlist-Red, PIF Watchlist-EH	NC 2b: NAS Watchlist-Yellow, PIF Watchlist-H	NC 3: Significant concentrations of 1 or more species	NC 3a: Single Species, 1% or more of NC population	NC 3b: Waterfowl (1,000)	NC 3c: Pelagic Seabirds (2,000)	NC 3d: Shorebirds (1,000)	NC 3e: Waterbirds	NC 3ei: Pelicans, waders, terns, skimmers, marsh birds (25pr/500)	NC 3eii: Gulls (750 pr./ 4,000 non-breeding)	NC3eiii: Gannets (750)	NC 3eiv: Double-crested Cormorants, non-breeding (10,000)	NC 3f: Raptors (2,500)	NC 3g: Migratory landbirds	NC 4: Species associated with threatened, rare or rep. habitat	A1: Global Significant Site Designation	Top 25 Priority IBAs	Area (hectares)	Area (acres)

North Carolina Important Bird Areas

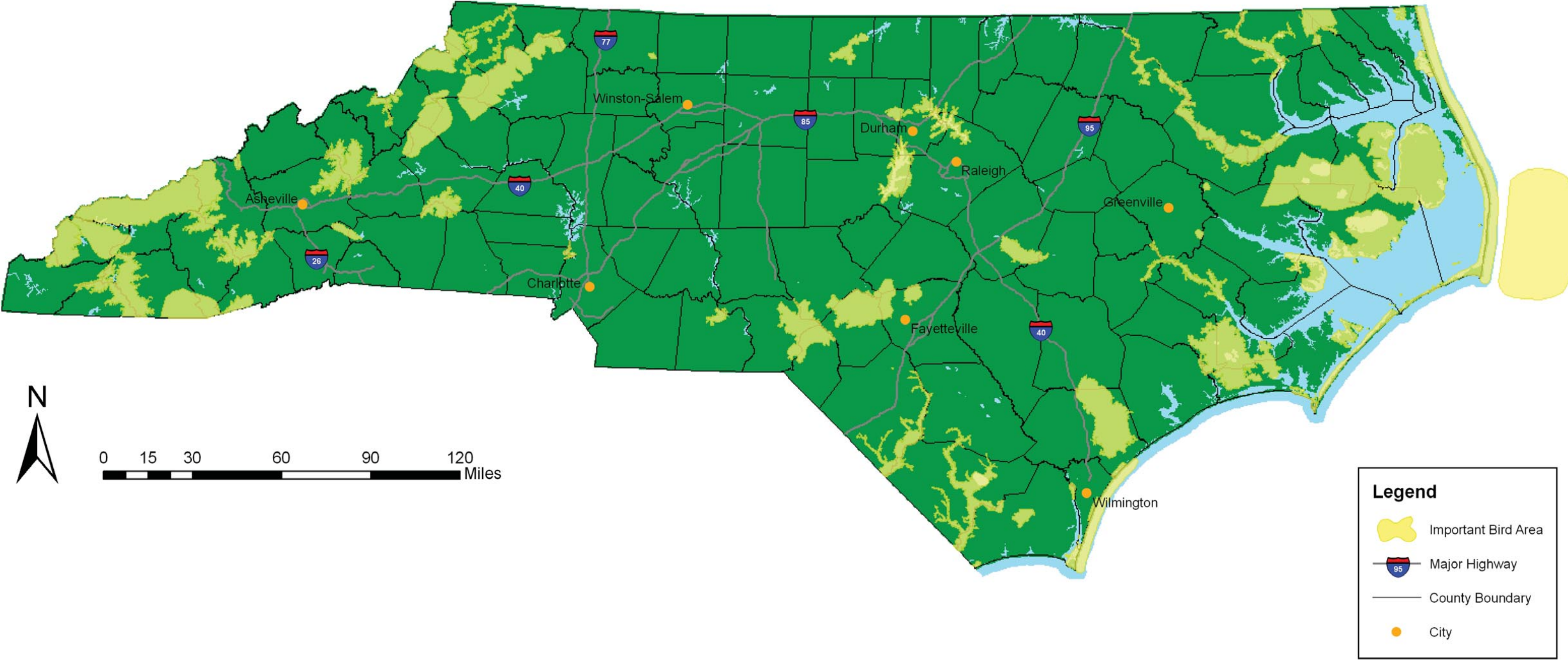


Photo credits

Many thanks to Todd Arcos, John Ennis, Jeff Lewis, Donald Mullaney, and Matthew P. Rowe for their photo contributions.

Front cover

Prothonotary Warbler by Walker Golder

Savannah Sparrow by Curtis Smalling

Golden-winged Warbler nest by Curtis Smalling

Black Skimmer by Walker Golder

p. 8 – Golden-winged Warbler by Curtis Smalling

p. 9 – Pine Island marsh by Mark Buckler

p. 10 – Birders by Ida Phillips

p. 11 – Northern Escarpment by Curtis Smalling

p. 12 – Semipalmated Plover by Mark Buckler

p. 13 – Long Hope Valley by Curtis Smalling

p. 14 – White Ibis by Walker Golder

p. 15 – Snake Mountain by Curtis Smalling

p. 16 – Big Yellow Mountain by Curtis Smalling

p. 17 – Lea-Hutaff Island by Walker Golder

p. 18 – Longleaf Pine Savannah by Walker Golder

p. 19 – Royal Tern colony by Walker Golder

p. 20 – Eno River State Park by Ida Phillips

p. 21 – American Oystercatcher by Walker Golder

p. 23 – Clapper Rail by John Ennis

p. 24 – Prothonotary Warbler by Walker Golder

p. 25 – Piping Plover by Walker Golder

p. 107 – Blue-gray Gnatcatcher by Donald Mullaney

p. 108 – Prairie Warbler by Jeff Lewis

p. 108 – Green Heron by Curtis Smalling

p. 109 – Indigo Bunting by Jeff Lewis

p. 109 – Yellow-billed Cuckoo by Jeff Lewis

p. 121 – Watauga River at Grandfather Mountain by Donald Mullaney

p. 123 – Northern Saw-whet Owl by Matthew P. Rowe

p. 124 – Hooded Warbler by Walker Golder

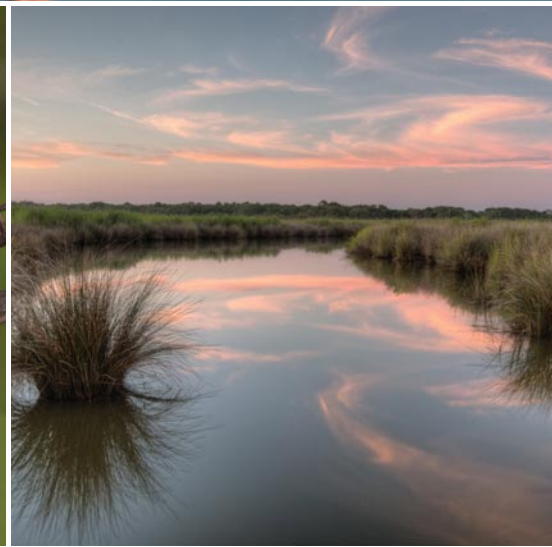
Back cover

White Ibis by Walker Golder

Big Yellow Mountain by Curtis Smalling

Cerulean Warbler by Todd Arcos

Pine Island marsh by Mark Buckler



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