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A note from Joe Bearden, Chairman,
Audubon NC Board of Trustees

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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, May 2010

*Vice President for Gulf of Mexico Conservation and Restoration,
National Audubon Society
(Former Executive Director/Vice President,
Audubon North Carolina)*



As 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 in our state—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 Bierregard, Dave Lee, Mark Johns, Harry LeGrand, and Ted Simons for their invaluable input and assistance.

The Audubon staff are fortunate to have the opportunity to work with nine local Audubon chapters across the state through our Adopt an IBA program. North Carolina now has ten chapters located in all geographic regions of the state. 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 of our 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, including Cape Hatteras National Seashore.

Audubon North Carolina is fortunate to work with a strong core of state and federal agency staff who provide vital partnerships in our conservation initiatives, including our formal agreement with the North Carolina Division of Parks and Recreation. About 30 of our IBAs include or encompass state parks. 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 division's director, Lewis Ledford, and his staff are truly dedicated conservationists. Our heartfelt thanks to him and the many fine people at State Parks, including Ed Corey, Brian Strong, Carol Tingley, Tom Howard, Sean Higgins, Charlie Peek, and all of the superintendents, rangers, and staff at individual parks.

The North Carolina Wildlife Resources Commission is also a vital partner of the IBA program. Through their work with the Colonial Waterbird Atlas project, Dave Allen, Sue Cameron (former), and others provide us with reliable data for a number of our priority species. Chris McGrath, director of the commission's Biodiversity Program, is a steadfast partner, and his staff in the Piedmont and mountains area, including Jeff Marcus, Kendrick Weeks, and Chris Kelly, are a big help with our program. Mark Johns, who for years steered the Partners in Flight Program in North Carolina, has been a great advocate for the IBA program. We especially thank Gordon Warburton and others within the Wildlife Resources Commission for their effective management of thousands of acres across the state in a way that benefits birds.

Audubon North Carolina would also like to thank all of the staff of the North Carolina Natural Heritage Program (particularly Steve Hall, Linda Pearsall, and Harry LeGrand) for their work protecting our last best places, and for their willingness to incorporate the IBA program into the statewide Comprehensive Conservation Planning process. The North Carolina Museum of Natural Sciences is also an integral part of the IBA effort, especially John Gerwin and Becky Desjardins. We have benefited from the work of interns from the Nicholas School for the Environment and the UNC-Chapel Hill Institute for the Environment—thank you to Jamie Brown, Andrew Chin, and others.

Other land protection entities are critical to the long-term survival of our birds and our IBAs. We thank The Nature Conservancy staff for their work to protect lands in several of our IBAs, especially Fred Annand, Merrill Lynch, and Sam Pearsall (in his time with the Conservancy). The Conservation Trust for North Carolina, the Highlands-Cashiers Land Trust, Coastal Federation, Coastal Land Trust, and the Blue Ridge Forever coalition all deserve much credit for preserving and protecting IBAs. Thanks especially to the late James Coman with Blue Ridge Rural Land Trust. His legacy lives on with the recent merger of the Blue Ridge Rural Land Trust and High Country Conservancy into Blue Ridge Conservancy.

And of course as we move full steam ahead into conserving and protecting these IBAs, the entire North Carolina Audubon staff are engaged in the IBA program. Thanks go to our former executive director, Chris Canfield, for his vision of integrating IBAs into all of our work, and to Walker Golder for the amazing depth and breadth of knowledge that he brings to this process, especially for his guidance in creating such a strong program. Gathering data and physically protecting and monitoring birds falls to a great coastal staff including Nicole Loft, and former employees Angela Mangiameli, Sidney Maddock, and Adriane Michaelis, who have moved on to other conservation adventures. All of these folks face day-to-day challenges with the public, the environment, and the things Mother Nature can throw at you

in the natural world. A very special thanks to Angela for her help with GIS and mapping assistance. Large efforts like this need administrative support; thanks go to the capable hands and minds of Margaret Scott and Anne G. Brown, who continue to set a high standard for accountability and organization. Karen Fernandez has done a great job of helping raise important funds to carry out this work, and Ida Phillips serves a vital role as communications director for Audubon North Carolina. Andy Wood is the education and outreach voice of Audubon North Carolina, integrating IBAs into much of his work.

The National Audubon Society administers the United States Important Bird Areas program, and I 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, International Monetary Fund, The Cornell Laboratory of Ornithology, Seaworld-Busch Gardens Conservation Fund, and many individual gifts both large and small. Special thanks to Juanita Roushdy for her support of our work in Nicaragua. 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 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.

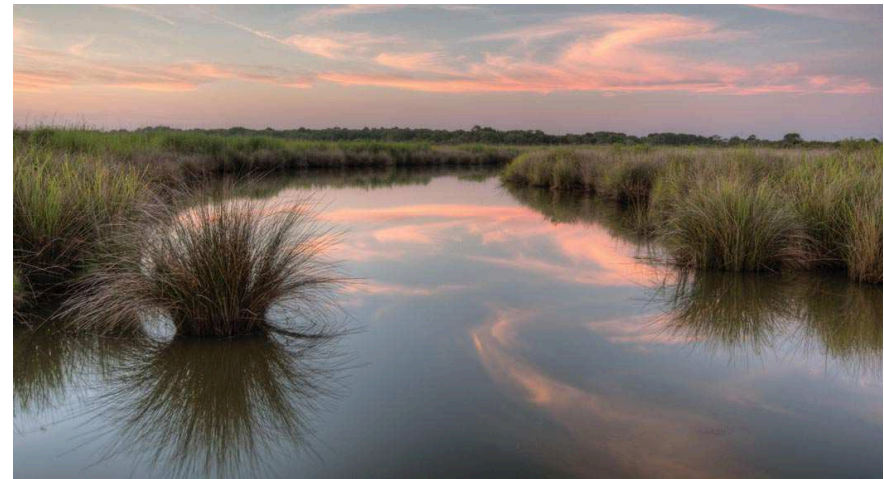
A key step for conserving bird habitats is to identify those places that provide the greatest habitat value for birds and support the most significant populations of birds. These areas may hold either large concentrations or an exceptional diversity of birds, harbor rare and endangered species, or harbor 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.



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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 is 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:



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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)
N.C. Museum of Natural Sciences

Harry LeGrand, Ph.D.
Zoologist
N.C. Natural Heritage Program

Mark Johns
Naturalist
Town of Cary

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 designator of BirdLife International.

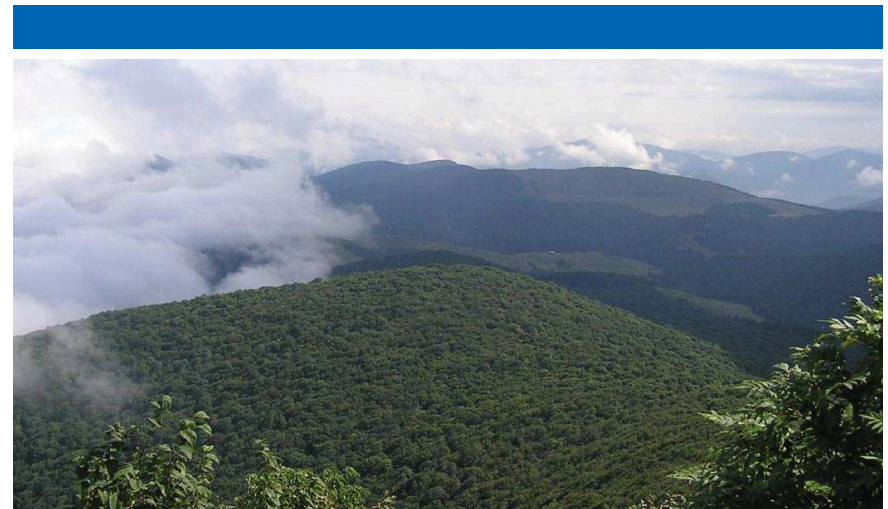
Criteria Used to Identify Sites

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 NC 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

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NC3eii: Gulls

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

NC3eiii: Gannets

Threshold: 2,000 individuals

NC3eiv: Double-crested Cormorants

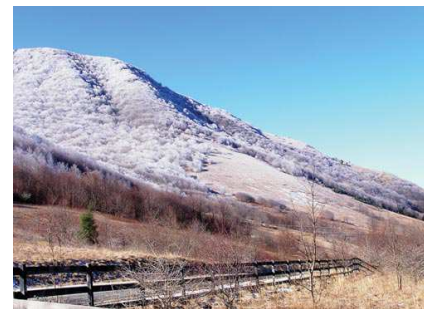
Threshold: 10,000 individuals

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 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 an 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.

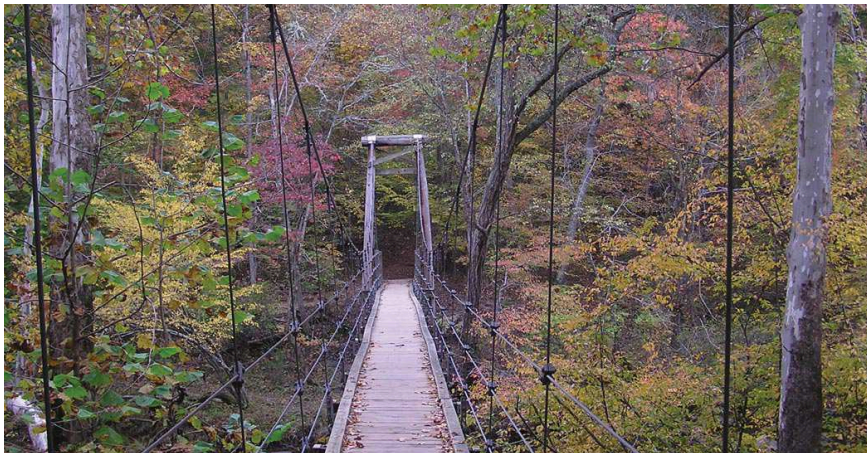
Maps are included in many site accounts. In most cases, boundaries were determined based on the habitat necessary to support the species or population of birds for which the site was approved, regardless of ownership. The boundaries presented on these maps are approximate and could change in the future 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 to the sources listed below, data was gleaned from published

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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/.

