

VI. STRATEGIES TO ACHIEVE GOALS AND OBJECTIVES

A. Landscape/Regional Conservation

1) Important Bird Areas (IBA's)

The Important Bird Areas (IBA) Program began in Europe in 1985 with Birdlife International. The IBA program has been implemented in the U.S. by two groups, the National Audubon Society and the American Bird Conservancy. The programs differ by organization and within each organization are implemented at the state level. These IBA programs are designed to identify sites of high importance for bird life. This designation places no restrictions on a site and does not entail any regulatory measures it simply recognizes sites of significance.

An Important Bird Area can be defined as a site that has been documented to support significant populations of particular species or a significant diversity of species. Being designated an Important Bird Area usually signifies an area that is managed and maintained for the benefit of ecological health and diversity. Although this is frequently the case, it is not always the standard, birds may frequent places that are not protected or managed for conservation purposes. Often the public confuses the IBA program as being an instrument for choosing good birding sites. The sites are not chosen for their worthiness as public birding places but for their species conservation value, which may result in many places being designated that are not available to the average birder.

It is important to note that the two Important Bird Area programs have the same origin but have developed into separate and unique programs within each agency. The National Audubon Society and the American Bird Conservancy each have distinct qualities they are looking for in a potential IBA site. Within each state, some sites may be on both IBA lists while some states may have radically different IBA site listings.

Within the context of the SAMBI Plan, IBAs can be seen as a useful tool for identifying potential target sites for protection and habitat management. The IBA designation has a certain public value that may aids in the mobilization of resources for the conservation of bird species. It also signifies areas, particularly state or federal lands, where land managers have achieved conservation success. Within the SAMBI planning area boundary there are currently 146 National Audubon Society Important Bird Areas and 31 American Bird Conservancy IBA sites.

Digital coverage of IBA's for each state within the SAMBI Planning area is available.

Table 7. Important Bird Areas of the National Audubon Society and the American Bird Conservancy by State

NAME	NAS	ABC	MAPPED
Virginia			
Great Dismal Swamp NWR	x	x	Y

Piney Grove Preserve	x	x	Y
North Carolina			
Alligator River NWR	x	x	Y
Bald Head/Smith Is.	x		Y
Battery Island	x		Y
Beacon island	x		Y
Big Foot Island	x		Y
Big Swan Island	x		Y
Caper Hatteras NS	x	x	Y
Cape Lookout NS	x	x	Y
Cat Island	x		Y
Cedar Island Marshes	x		Y
Chainshot Island	x		Y
Chowan River Bottomlands	x		Y
Clam Shoal	x		Y
Croatan NF	x	x	Y
DOT Island	x		Y
Dunahoe Bay	x		Y
Eagle Island	x		Y
Ferry Slip Island	x		Y
Fort Bragg/ Sandhills West		x	Y
Great Dismal Swamp	x	x	Y
Great Island	x		Y
Green Swamp	x		Y
Gulf Island	x		Y
Henslow's Fields	x		Y
Hobucken Marshes	x		Y
Hog Island	x		Y
Holly Shelter-Angola Bay	x		Y
Old House Channel, Island C	x		Y
Roanoke Sound, Island G	x		Y
Old House Channel, Island L	x		Y
Old House Channel, Island MN	x		Y
Judith Island Point	x		Y
Lake Mattamuskeet/ Swanquarter NWR	x	x	Y
Lea-Hutaff Island	x		Y
Lumber River Bottomlands	x		Y
Mackay Island NWR	x		Y
Masonboro Island	x		Y
Middle Marshes	x		Y
Monkey Island	x		Y
Morgan Island	x		Y
Nags Head Woods	x	x	N
Upper Neuse River Bottomlands	x		Y
Lower Neuse River Bottomlands	x		Y
New Dump Island	x		Y

New Stump Point	x		Y
North Pelican Island	x		Y
North River Bottomlands	x		Y
North Rock Island	x		Y
Old DOT Island	x		Y
Onslow Bay	x		Y
Oregon Inlet Shoals	x		Y
Outer Banks, Inshore Ocean	x		Y
Outer Continental Shelf, CH	x	x	N
Outer Green Island	x		Y
Palmetto-Peartree Reserve	x		Y
Pea Island NWR	x	x	Y
Pine Island/Currituck Marshes	x		Y
Pocosin Lakes/Pungo NWR	x	x	Y
Racoon Island	x		Y
Carrot Island-Bird Shoal	x		Y
Rawls Island	x		Y
Roanoke River Bottomlands	x	x	Y
Roanoke NWR		x	N
Roos Point	x		Y
Sand Bag Island	x		Y
Sandhills East	x		Y
Sandhills West	x		Y
Sheep Island	x		Y
South Pelican Island	x		Y
Striking Island	x		Y
Town Creek Bottomlands	x		Y
Bird Island-Twin Lakes	x		Y
Waccamaw River Bottomlands	x		Y
Wainwright Island	x		Y
West Bank of the Cape Fear	x		Y
Georgia			
Altamaha WMA	x		Y
Altamaha River Delta	x	x	N
Andrews Island	x		N
Augusta Levee	x		N
Big Duke's Pond	x		Y
Big Hammock WMA	x		Y
Blackwater Plantation	x		N
Bond Swamp NWR	x		Y
Bullard Creek WMA	x		Y
Cumberland Island	x	x	Y
Cypress Lake Plantation	x		N
Eufala NWR	x		Y
Fort Benning	x	x	Y
Fort Stewart	x	x	Y

Garden Lakes	x		N
Grand Bay/Banks Lake	x		Y
Harris Neck NWR	x		Y
Jekyll Island	x		Y
Joe Kurz WMA	x		Y
King's Bay Naval Station	x		Y
Lake Seminole WMA	x		Y
Little Tybee Island	x		Y
Okefenokee Swamp	x	x	Y
Ossabaw Island	x		Y
Paradise Public Fishing Area	x		Y
Phinizy Swamp	x		N
Savannah NWR	x		Y
Southlands Forest	x		N
St. Catherine's Island	x		Y
Swamp of TOA	x		N
Wassaw Island NWR	x		Y
Yuchi WMA	x		Y
Florida			
Apalachicola & Tates Hell For.	x	x	Y
Alachua Lakes	x		N
Big Bend Ecosystem	x		Y
Camp Blanding-Jennings	x		Y
Dog Island-Lanark Reef	x	x	N
Duval & Nassau Tidal Marshes	x		N
Fort George and Talbot Islands	x		Y
Greater Apalachicola Bay	x		Y
Guana River	x		Y
Hugenot Park-Nassau Sound	x		Y
Lake Lafayette	x		N
Ichetucknee Springs State Pk.	x		Y
Kanapaha Prairie	x		Y
Lake Disston	x		N
North Atlantic Migrant Stopover	x		N
Osceola NF-Okee. and Pinhook	x	x	Y
Red Hills Ecosystem	x		N
St. Marks NWR	x	x	Y
Wakulla Springs	x		Y
South Carolina			
Brosnan Forest	x		Y
Cape Romain NWR	x	x	Y
Congaree Swamp National Pk.	x	x	Y
Donnelley WMA	x		Y
Francis Beidler Forest	x	x	Y
Francis Marion NF	x	x	Y
Pinckney Island NWR	x		Y

Sandy Island	x		Y
Santee Coastal Reserve/Washo		x	Y
Savannah NWR	x		Y
Sea Pines Forest Preserve	x		Y
Silver Bluff	x		Y
Webb Wildlife Center	x		Y
Westvaco's Central Area	x		N
ACE Basin NWR	x	x	Y
Yawkey Wildlife Center	x	x	Y
Hobcaw Barony	x		Y
Bear Island WMA	x	x	Y
Dungannon Pltn. Heritage Pres.	x		Y
Crab Bank	x		Y
Deveaux Bank	x		Y

Source: Important Bird Areas listed were gathered from state representatives of Audubon and American Bird Conservancy's IBA programs. Some states had lists available on their websites (American Bird Conservancy: www.abcbirds.org and National Audubon Society: www.Audubon.org). Lists are updated frequently so for complete accuracy please check with the state components of each organization.

Note: Some areas are not mapped due to unavailability of data, and IBA's that fall outside of SAMBI's planning area are not included.

The following maps (Figures 12-16) were created to demonstrate the location of protected lands and IBA sites for each state. Depending upon availability of data, certain sites may not appear on their respective state maps. Accuracy of the protected lands data is variable.

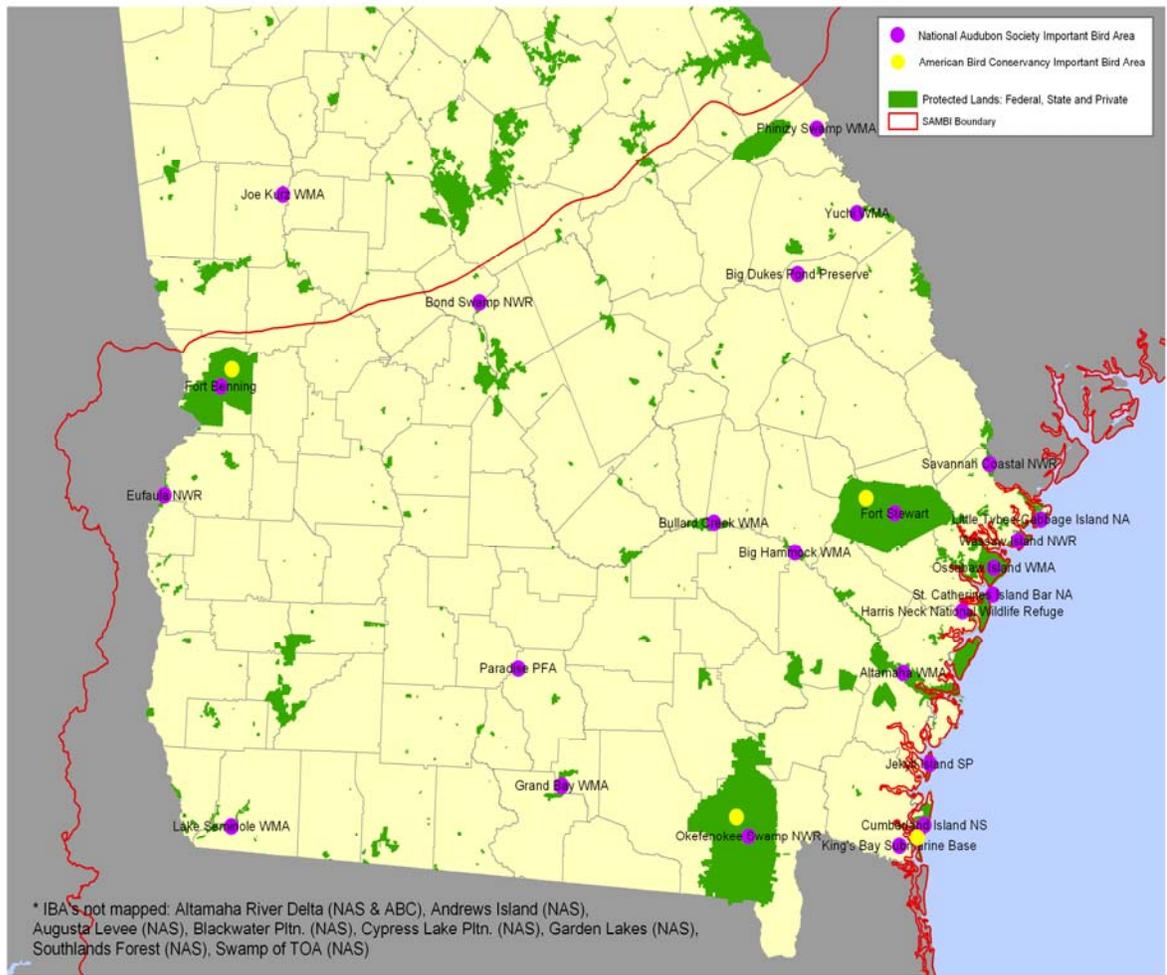


Figure 12. Important Bird Areas of the National Audubon Society (NAS) and the American Bird Conservancy (ABC) within the Florida Planning Region of the SAMBI.

Figure 13. Important Bird Areas of the National Audubon Society (NAS) and the American Bird Conservancy (ABC) within the Georgia Planning Region of the SAMBI.

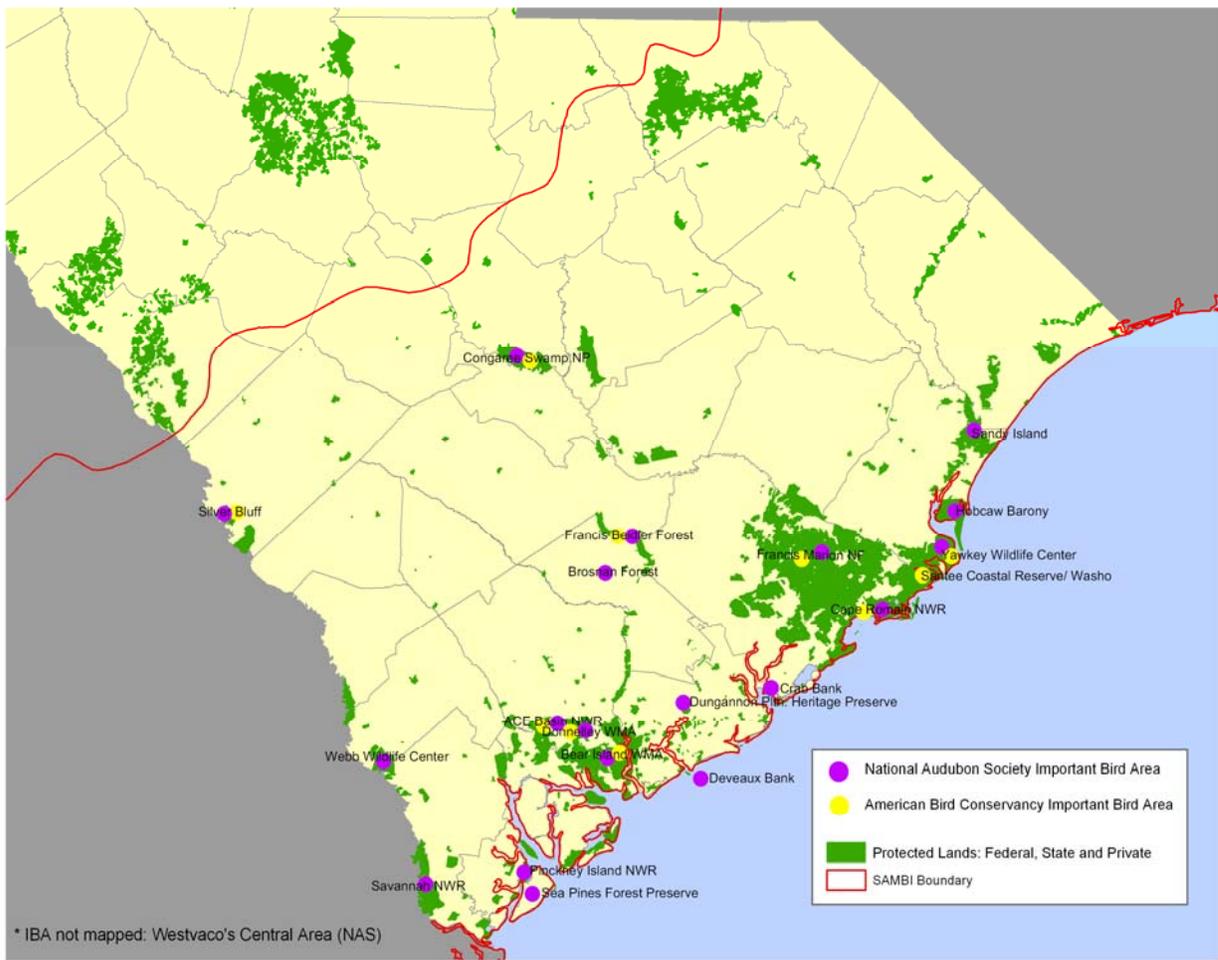


Figure 14. Important Bird Areas of the National Audubon Society (NAS) and the American Bird Conservancy (ABC) within the South Carolina Planning Region of the SAMBI.

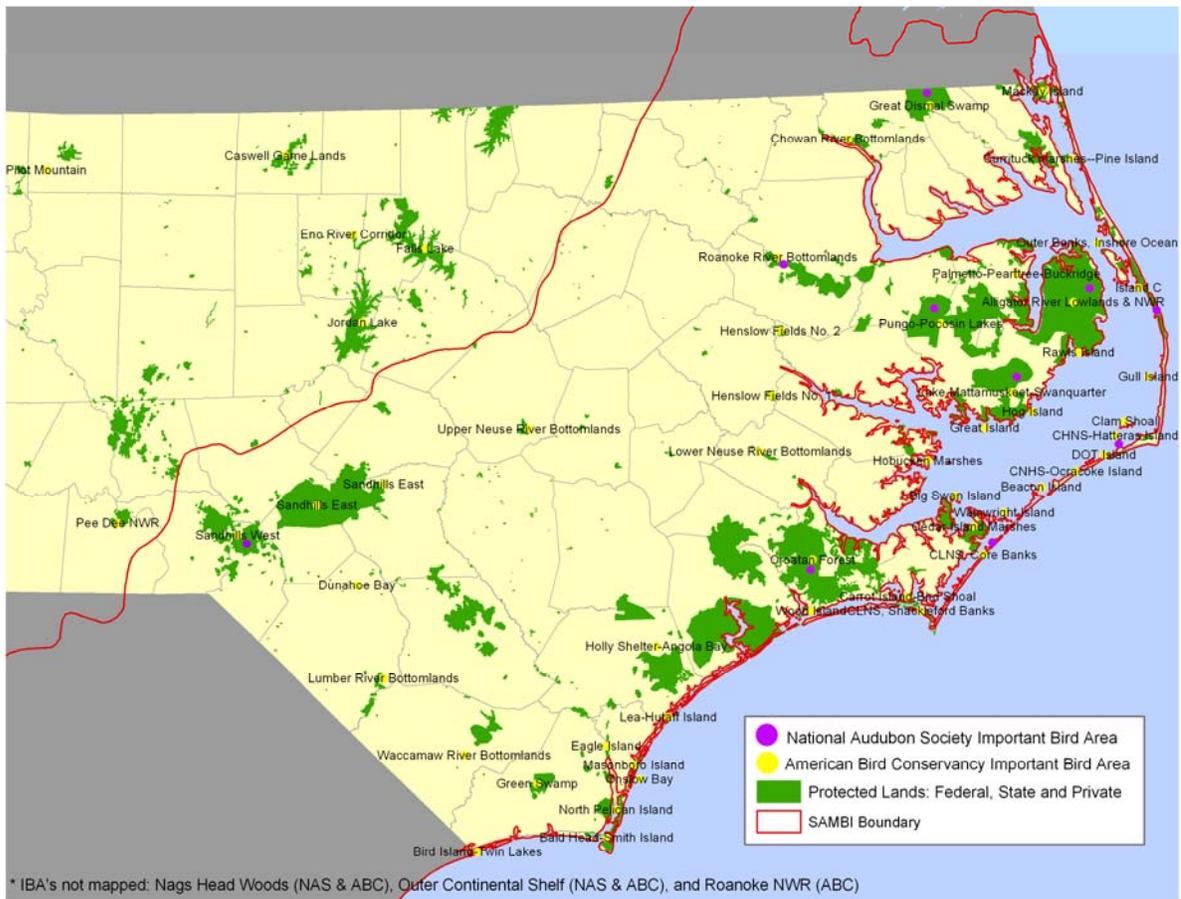


Figure 15. Important Bird Areas of the National Audubon Society (NAS) and the American Bird Conservancy (ABC) within the North Carolina Planning Region of the SAMBI.

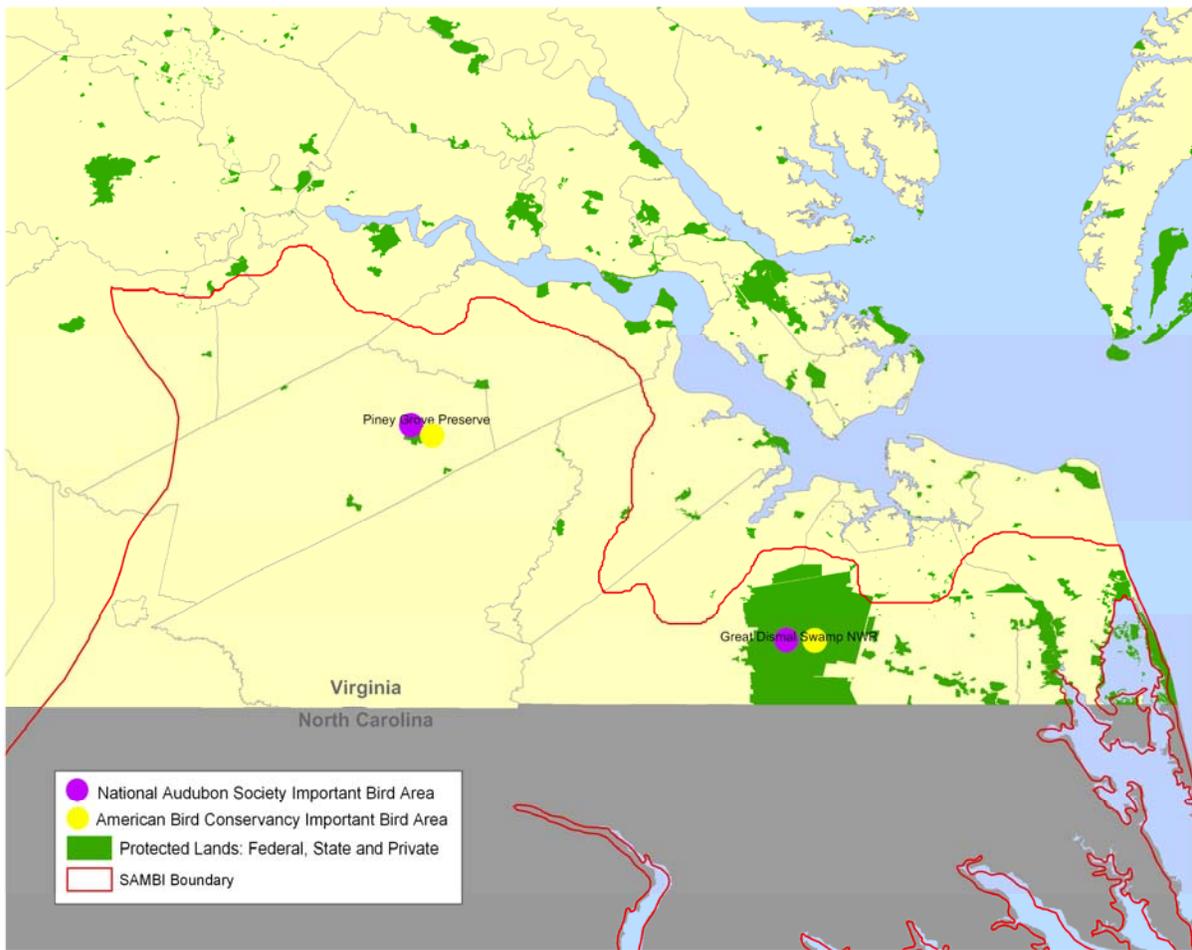


Figure 16. Important Bird Areas of the National Audubon Society (NAS) and the American Bird Conservancy (ABC) within the Virginia Planning Region of the SAMBI.

2) Protected Lands Coverage

Lands that are in public ownership (primarily federal and state), lands protected through non-governmental agencies, and private lands protected through conservation easements have been mapped for each state for the SAMBI planning region. These maps have previously been depicted in the previous section discussing IBAs for all five states. This coverage can be broken out by state, and can be used by State Working Groups to help direct conservation efforts. Availability of digital coverage for protected lands within each state varies. Generally, coverage for public lands is readily available; however, digital coverage for privately protected lands may require special permission to use. A protected lands coverage for the entire SAMBI area is presented in [Figure 4](#).

3) All Bird Focus Areas

Focus areas for waterbirds, shorebirds, landbird, waterfowl, and early successional/grassland species have been delineated for each state within the SAMBI area. These composite maps can be used with protected land coverage to help State Working Groups direct their conservation efforts. Digital coverage for each of these focus areas for each bird group for each state is available.

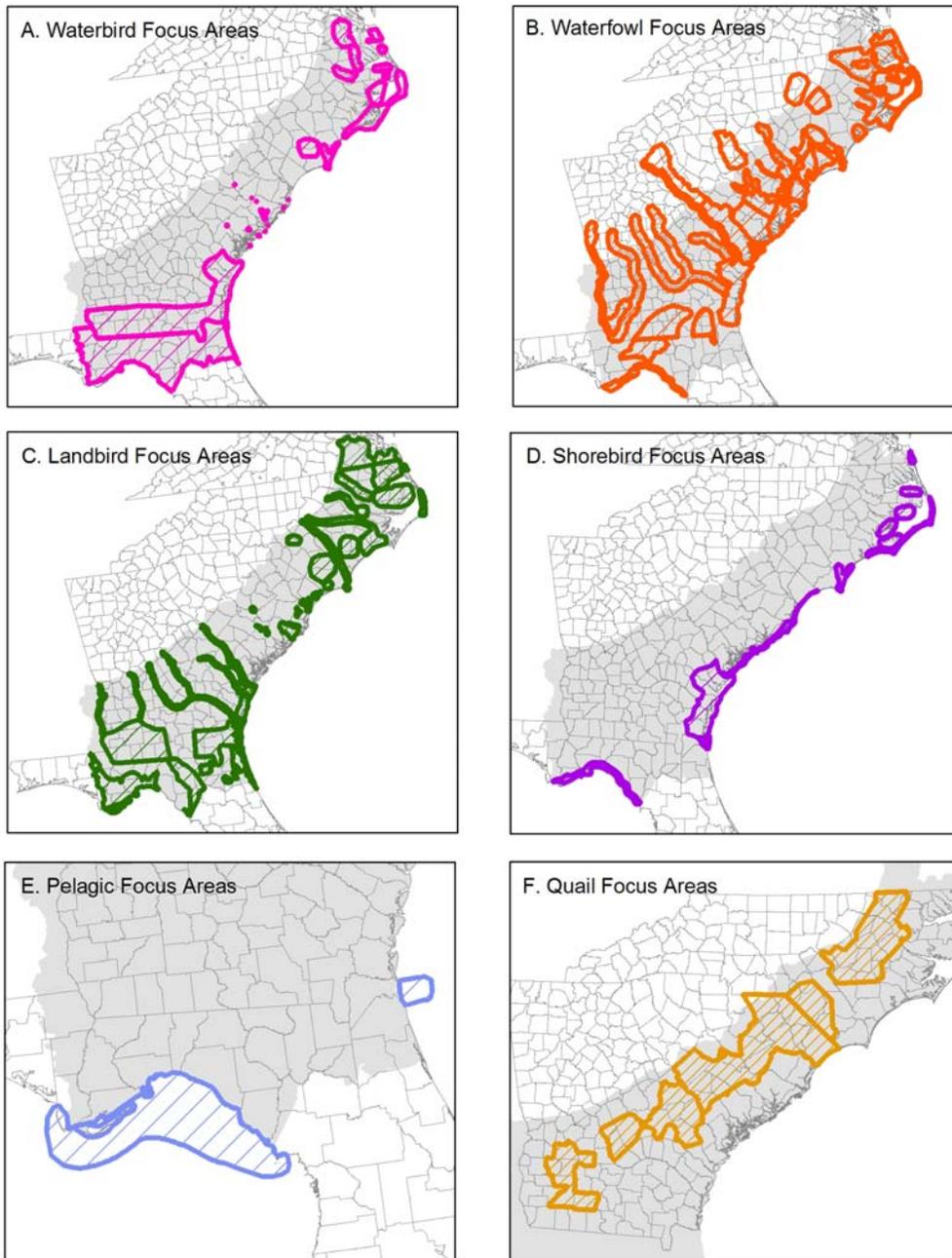


Figure 17. Focus Areas for SAMBI, clockwise from top left: waterbirds, waterfowl, landbirds, shorebirds, pelagic, and early successional/grassland birds (map needs to be revised for South Carolina landbirds).

4) Land Cover Maps

A land cover map for the SAMBI planning area is available and has been previously presented ([Figure 5](#)). Land cover maps are also available for each state. Digital data for

landcover for the SAMBI planning and each state addressed in this plan are also available.

5) Where to Implement Conservation

Utilizing land cover maps, locations of protected lands, locations of IBAs, and the individual focus areas for each bird group in each state, State Working Groups can begin to develop strategies for conservation within their state for the conservation of high priority species and habitats. All of these digital coverages (protected lands, IBAs, land cover, focus areas) are generally available and can be manipulated at the regional, state, or local level to help direct conservation at the local, regional, and national level.

A key part of the biological foundation needed by the Atlantic Coast Joint Venture for decision-making about priority bird conservation actions is an assessment of the capacity of the joint venture and specific regions and states within the joint venture to support breeding, wintering and migrating bird populations. Specifically, there is a need for resources that guide partners at the BCR and state level in determining where to deliver needed habitat conservation and what management actions are necessary to most effectively restore and sustain bird populations and achieve stated population goals.

The ACJV has laid out an overall approach for developing a habitat conservation design to meet these resource needs, including what questions should be answered, the specific resources needed to answer the questions, and steps to take to develop these resources. The following items are taken from the ACJV's vision and approach to landscape scale conservation.

Some of the major questions that need to be answered through a conservation design are:

Overview Question

1. On what specific lands within the SAMBI area and the states should the conservation community implement priority habitat conservation actions to most effectively achieve bird conservation objectives?

Bird Distribution and Abundance Questions

1. What is the distribution and abundance of priority bird species in within a state, the SAMBI area, throughout the joint venture, or at other scales?

2. Where are the sites with the highest abundance of priority species within states, the SAMBI area or the joint venture?

3. Where are the sites with the highest species richness of priority species?

4. How do the distribution of these sites relate to conserved and managed lands?

General Habitat Questions

1. What is the distribution of habitats that encompass groups of birds (habitats supporting groups of birds such as grasslands)?
2. What are the landscape attributes that are important for bird species (e.g. habitat patch size and shape) and where on the landscape are the habitat patches that best meet a species need?
3. What are the finer scale habitat attributes that are important for habitat quality for bird species including biological factors (e.g. structure and age of vegetation) and non-biological factors (e.g. slope, aspect, geology, hydroperiod).

General Habitat Capacity Questions

1. What is the capacity of the region to support a species population target?
2. How many hectares of habitat are necessary to support a species population target within a region?
3. Where on the landscape is this capacity or where can conservation partners/land managers direct their conservation and management efforts to create the necessary capacity?
4. How will conserving habitat for priority birds contribute to the conservation of other trust resources (listed species, interjurisdictional fish, etc...) and biological diversity?

General Management Questions

1. How do particular management regimes or expected changes in the amount and configuration of habitats via habitat loss and fragmentation impact the capacity of the region to support a population?
2. What are the trade-offs of implementing various management regimes on priority species with different habitat needs?

Some of the tools and resources that are needed to answer these questions are:

1. Compiling and Mapping of Existing Information

- Coarse-scale Habitat Maps/GIS Data – Consistent, seamless, coarse-scale map of current amounts and configurations of habitat classes based on widely available coverages including NLCD land cover (most recent

available), NWI wetlands, hydrography, bathymetry, elevation, and other important habitat attributes.

- Coarse-scale Managed Lands Map/GIS Data – Consistent seamless, map of managed land polygons, including ownership and management.
- Maps of Focus Areas and Other Recognized Areas – Digital maps of polygons of focus areas identified by the bird initiatives and SAMBI, as well as Important Bird Areas, WHSRN sites, Large Marine Ecosystems, and other recognized bird conservation areas.
- Maps of Bird Distribution and Abundance based on Survey/Atlas results – Maps of locations of birds based on survey or atlas results, especially for rare, patchily distributed or concentrated species. Examples include the American Oystercatcher winter survey, Golden-Winged Warbler Atlas, New England Grassland Bird Survey, Atlantic Coast Colonial Waterbird Survey, SAMBI Shorebird and Waterfowl Surveys (Christmas Bird Count data?)
- Breeding Bird Survey Predicted Abundance/Trend Maps – Maps of predicted abundance and trends for fairly common or common species well-surveyed by the Breeding Bird Survey based on BBS models that extrapolate the BBS results to larger geographic areas such as counties or “Sepik blocks” but not tied to specific habitat attributes.
 - Information available through BBS website and analyses completed by John Sauer for NWRs

2. Habitat Maps and Models of Presence/Absence and Relative Abundance

- Coarse-scale Habitat Analyses – Digital maps utilizing NLCD and other coarse habitat information described above that has been analyzed to show distribution of habitats with certain attributes such as deciduous forest patches above a certain size.
 - Forest block analysis conducted by The Nature Conservancy for ecoregional planning
- Habitat Models Using Breeding Bird Survey Data – Models that predict presence/absence and/or relative abundance of priority species based on the relationship between BBS data and coarse level habitat attributes, for species well-sampled by the Breeding Bird Survey.
 - Presence/Absence models developed for state and regional GAP Analyses
 - Relative abundance spatial models (such as those developed by Throgmartin et al. for select BCRs and species)

- Habitat Models Using Other Survey Results – Models that predict abundance of priority species based on the relationship between survey data and coarse-level habitat attributes.
 - Relative abundance spatial models for woodcock singing ground surveys
 - Waterfowl, shorebird and grassland bird models in Prairie Pothole Region by HAPET offices based on waterfowl production and other surveys
 - Ducks Unlimited HEN models

3. Models that Predict Present or Future Capacity

- Landcover Models with NLCD and Supplementary Information – By using supplementary information such as the Forest Inventory Analysis data it may be possible to better model present habitat quality with NLCD landcover and predict the capacity of a given area to support populations. Alternatively, through the use of a valid statistical frame, it may be possible to conduct a more detailed vegetation analysis for a subsample of an area that can be extrapolated to the larger geographic area.
- Probabilistic Modeling – Models that predict the probability of a geographic area supporting a certain number of a species based on the amount of habitat available.
 - Probabilistic models such as those developed by Minnesota Forest Bird Initiative using LANDIS (future forest composition) models, point count and stand level vegetation surveys.

4. Additional Surveys and Modeling

- Under-surveyed species – Additional surveys for species missed by ongoing traditional monitoring programs like the BBS, such as secretive marsh birds and night-jars.
- Surveys to Validate Models – Additional surveys of priority species, vegetation, and other habitat-defining attributes, in locations to allow for refinement and validation of models.

Some tasks identified to develop these tools and resources are:

Refining Questions and Designing Approaches

- Work with ACJV Integrated bird Conservation Committee, Patuxent ACJV Science Team, the SAMBI State Working Groups, and others to refine flyway-wide questions and strategies for conservation design.

- Develop working groups within SAMBI to develop specific questions and strategies for conservation/landscape design.
- Work with Center for Conservation Biology under the IAFWA grant (if funded) to examine habitat mapping and modeling efforts from around the country to assess the best overall strategy for “implementing optimal landscape designs for bird conservation” in BCRs in the ACJV.
- Work with other FWS programs to assess strategies for conservation design to meet their needs consistent with the NEAT Team approach and present recommendations to the Regional Director. Develop a NEAT Team Science Support proposal for conservation design in Region 4 and with U. S. Geological Survey (USGS) staff at Patuxent and other locations. A current Science Support Proposal has been submitted with the SAMBI Planning region as the target region, with the Roanoke-Tar-Neuse-Cape Fear Ecosystem area targeted specifically for initial analyses.
- Discuss overall approach for conservation design with USGS BRD senior staff and develop collaborative approaches.
- Look to non-traditional sources, such as NASA’s Earth Science Division, for input on mechanisms to accomplish conservation design.

Compiling Existing Information

- Work with USGS, USFWS and other partners to complete the compiling and mapping of basic existing species and habitat information for the joint venture area including the most recent NLCD data. Organize information by BCR, State, and JV. Utilize SAIN contract to compile this information for BCR 28 and same staff person to assist with larger effort. Utilize relationship with regional NBII node and NBII bird conservation node to make the information available to partners through a Web site.
- Collaborative effort of FWS programs to compile habitat information of mutual interest consistent with NEAT Team approach.
- Work with USGS NBII regional bird conservation node to develop a database of bird conservation information from the State Comprehensive Wildlife Conservation Strategies.

Completing and Assessing Ongoing Modeling Efforts

- Assess validity/utility of bird distribution modeling as is being done in the Atlantic Northern Forest and the need for a similar approach in the SAMBI area.

- Work with the Southeastern Regional GAP to provide abundance maps for priority species in BCR 27. Assess northeastern Regional GAP efforts.
- Assess the usefulness of models being developed by the USGS Upper Midwest Environmental Science Center for BCR 13 and BCR 28 and the opportunities and need to expand this approach to other species and to other BCRs.

Developing Additional Models

- Work with USGS to develop spatial models of avian abundance for selected priority species in SAMBI and in the ACJV (possibly as part of a Science Support grant). These models could utilize NLCD and BBS data and would be supplemented when possible by other datasets such as Forest Inventory Analysis data.
- Develop probabilistic models to predict the capacity of regions to support bird populations. Work with USGS, USFS and others to develop models (possibly as part of a Science Support grant).
- Work with Center for Conservation Biology under the IAFWA grant (if funded) to design and fully implement a mapping and modeling approach for Bird Conservation in BCR 30. Utilize a similar approach in other BCRs as appropriate.

Collecting Additional Habitat, Landscape Attribute and Species Information

- Work with FWS NEAT Team partner programs and other partners to develop a strategy for collecting additional habitat and landscape attribute information. Work with USGS on a statistical approach for extrapolating to larger geographic areas.
- Develop strategy to conduct additional surveys that will both allow for validation of models and for the development of long-term database for future modeling efforts. Work with USFWS MBMO, states and others to develop and implement additional surveys for under surveyed species, priority species, and priority geographic areas. Work with partners involved in Multi-state monitoring grant (if funded).
- Expand SAMBI shorebird, waterfowl and waterbird surveys to the entire ACJV.

6) Designing Sustainable Landscapes for Bird Populations in the Eastern United States

With the tools, concepts, and needs identified from the previous section on where to best deliver habitat conservation in the SAMBI area, staff of the Atlantic Coast Joint Venture in collaboration with USGS Coop Units at North Carolina State University and Auburn University, a multi-year multi-state proposal was submitted in 2007 to the Association of Fish & Wildlife Agencies as a National Conservation Need entitled “Designing Sustainable Landscapes for Bird Populations in the Eastern United States”. This project was fully funded and work has begun with regional workshops seeking information from SAMBI partners from each of the five states in the SAMBI area. The overall objective of this proposal is to develop a consistent methodology and to enhance the capacity of states, joint ventures and other partners to assess and design and manage sustainable landscapes for birds and other wildlife in the eastern United States. Specifically, this project would develop and implement a framework and tools to 1) assess the current capability of habitats in ecoregions in the eastern United States to support sustainable bird populations; 2) predict the impacts of landscape-level changes (e.g., from urban growth, conservation programs, climate change) on the future capability of these habitats to support bird populations; 3) target conservation programs to effectively and efficiently achieve objectives in State Wildlife Action Plans and bird conservation plans and evaluate progress under these plans; and 4) enhance coordination among partners during the planning, implementation and evaluation of habitat conservation through conservation design.

This project will build on several regional efforts that are currently developing or have recently completed spatial data. Most notable is the Gap Analysis Program (GAP) which will be delivering a southeast regional land cover map based on Ecological Systems (www.natureserve.org/publications/usEcologicalsystems.jsp). This will be the most detailed land cover map to date at this resolution. Furthermore, GAP is expanding their efforts to include the Northeastern U.S. and will begin delivering interim mapping products to cooperators by 2009 and will have a consistent, seamless land cover product by 2011 for the entire Eastern United States. Ecological Systems has quickly become a defacto standard for habitat classification for both remote sensors and habitat modelers. The importance of this consistent approach cannot be overstated given the myriad of habitat classification systems and descriptions across multiple states, NGO’s and federal agencies. In addition to land cover, GAP products include terrestrial vertebrate species predicted habitat models. While these models are limited in that they only predict presence/absence, they do provide a solid foundation for further refinement and development of abundance/population models through the supporting ancillary data sets and extensive habitat relationship database used in their development (www.basic.ncsu.edu/segap). Furthermore, GAP is supporting research into extending species-habitat models beyond presence/absence to include habitat suitability indices as well as predictions of population densities.

Several other regional spatial analysis efforts that will be integral to the completion of this project include the Longleaf Decision Support Tool (DST) being developed by the East Gulf Coastal Plain Joint Venture and the Northeast Habitat Classification and Mapping project by the Northeast Association of Fish and Wildlife Agencies (NEAFWA). This project will build upon the single habitat Longleaf DST by

integrating the needs of priority species across the suite of habitats they use; thereby incorporating the needs of species such as Northern Bobwhite that use a variety of habitats often occurring as mosaics in the landscape. The Northeast Habitat Classification and Mapping project is developing an Ecological Systems based habitat classification that crosswalks habitats mentioned in all State Wildlife Action Plans in the Northeast and the Ecological Systems occurring in the Northeast.