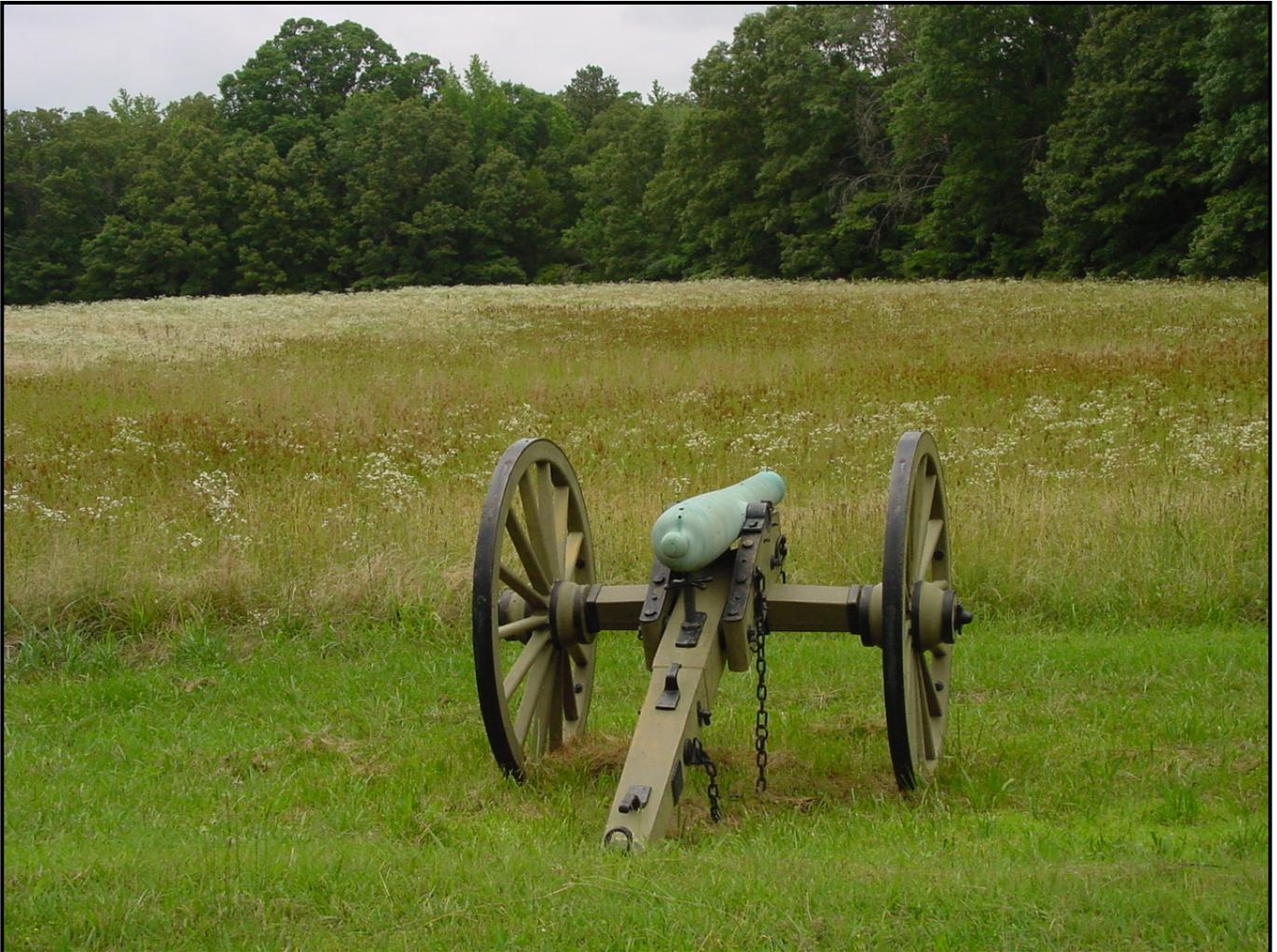


FINAL DRAFT

Avian Conservation Implementation Plan
Shiloh National Military Park

National Park Service
Southeast Region



Compiled by J. Keith Watson
U.S. Fish and Wildlife Service
In cooperation with

SHIL Resource Management Staff, National Park Service
And Bird Conservation Partners
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Introduction

This Avian Conservation Implementation Plan (ACIP) is provided to the staff at Shiloh National Military Park (SHIL) to help identify and prioritize bird conservation opportunities, and to provide information and guidance for the successful implementation of needed conservation activities. This plan may identify goals, strategies, partnerships, and perhaps specific projects allowing the park to participate in existing bird conservation planning and implementation efforts associated with the North American Bird Conservation Initiative (NABCI). Under the auspice of NABCI, appropriate bird and habitat conservation goals may be recommended as identified in the appropriate existing national or regional bird conservation efforts aligned with this initiative: Partners In Flight (PIF), North American Waterfowl Management Plan (NAWMP), US Shorebird Conservation Plan (USSCP), and Waterbird Conservation for the Americas (WCA). For example, parks in the East Gulf Coastal Plain, including SHIL, will have few if any high priority waterbird conservation issues at a regional landscape or greater scale. As such, little information regarding waterbird conservation will be presented in the ACIP, unless there is an identified park need for this species group, or other mandates, such as federal laws. Similarly, because most of the parks in the East Gulf Coastal Plain are located in and are primarily upland forested landscapes, recommendations will be provided in the ACIP for landbird and habitat conservation and will be derived from the appropriate PIF bird conservation plans, PIF being largely a landbird conservation initiative. However, all high priority bird conservation issues for SHIL will be discussed and integrated as appropriate.

Information and data presented in the ACIP have been obtained from several sources: 1) interviews with SHIL staff, 2) SHIL bird conservation partners, 3) the PIF East Gulf Coastal Plain Bird Conservation Plan, Version 1.0 (USFWS 2002), 4) NPS databases, 5) peer reviewed bird conservation and management literature, and 6) personal communications with bird conservation specialists throughout North America, especially in the southeastern United States. This plan has been reviewed by SHIL resource management staff and managers, Cumberland Piedmont Network Inventory and Monitoring (CUPN I&M) staff, and bird conservation partners and approved by SHIL management. Optimally, this plan will be incorporated into the park's Resource Management Plan (USDI NPS 1990) and updated annually to reflect completed projects, newly identified needs, and shifts in bird conservation priorities in the region.

SHIL is not obligated to undertake any of the proposed actions in this plan. The plan is provided to offer guidance to SHIL to voluntarily support important park, regional, and perhaps national and international bird conservation projects for which SHIL is a primary participant in the proposed actions.

Background

During the past thirty years, monitoring programs across North America have documented declines of certain bird species populations and their habitats, often severe

(Sauer et al. 2000). The decline has caused great concern among scientists, biologists, biodiversity proponents, ecologists, land managers, etc., and the bird conservation community in general. Birds are recognized as critical components of local and global genetic, species, and population diversity, providing important and often critical ecological, social, economic, and cultural values. Their overall decline has stimulated a worldwide focus on conservation efforts, and North American interest in bird conservation is rapidly becoming a focus of government, non-government, industry, and private interests and expenditures. Many state, federal, and non-governmental wildlife agencies and non-governmental organizations (NGO's) have recognized this alarming bird decline trend and have joined forces in several extensive partnerships to address the conservation needs of various bird groups and their habitats. The primary initiatives are:

- North American Waterfowl Management Plan
- Partners in Flight
- U.S. Shorebird Conservation Plan
- Waterbird Conservation for the Americas

The North American Bird Conservation Initiative: While efforts associated with these plans have generated some successes, it has been increasingly recognized that the overlapping conservation interests of these initiatives can be better served through more integrated planning and delivery of bird conservation. The *North American Bird Conservation Initiative (NABCI; <http://www.nabci-us.org/main2.html>)* arose out of this realization. The vision of NABCI is simply to see ***“populations and habitats of North America’s birds protected, restored and enhanced through coordinated efforts at international, national, regional, state and local levels, guided by sound science and effective management.”*** NABCI seeks to accomplish this vision through (1) broadening bird conservation partnerships, (2) working to increase the financial resources available for bird conservation in the U.S., and (3) enhancing the effectiveness of those resources and partnerships by facilitating integrated bird conservation (U.S. NABCI Committee 2000). The four bird conservation initiatives mentioned above, as well as several other local and regional partnerships, work collectively to pursue this vision.

NABCI is guided by a set of principles that establish an operational framework within which the Initiative and its partners may conduct integrated bird conservation in the U.S. These will articulate a common understanding of the relationship among NABCI, the individual bird conservation initiatives, and all partner entities to ensure recognition of existing federal legislative and international treaty obligations, state authorities, and respect for the identity and autonomy of each initiative. The fundamental components of the conservation approach to be used by NABCI are expressed within its goal:

To deliver the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships.

The Southeastern Bird Conservation Initiative: National Park Service: In 1999, the Southeast Region of the National Park Service (NPS) recognized the importance of coordinating existing bird conservation goals into planning and operations of national park units in the southeast, that is, integration of NABCI. In support of this recognition, the Southeast Regional Office NPS approved and allocated eighty-eight thousand dollars, cost sharing 1:1 with the US Fish and Wildlife Service (FWS) Region 4 (Southeast) to hire a biologist to conduct this two-year project (Interagency Agreement FS028 01 0368). This project is unique in the NPS, and perhaps the nation, and represents a potential model for better coordinating regional bird conservation programs and activities within and outside the NPS. It further represents a progressive action toward institutionalizing bird conservation as a programmatic priority in the Southeast Region of NPS and potentially the nation.

As envisioned, the integration of NABCI into the Southeastern NPS involves:

- 1) Development and delivery of Avian Conservation Implementation Plans,
- 2) Coordination with NPS Inventory and Monitoring Program,
- 3) Development of a web-based project site,
- 4) Establishment or enhancement of bird conservation partnerships,
- 5) Identification and exploration of potential funding opportunities, and
- 6) Technical guidance and assistance as needed or requested.

This ACIP fulfills one aspect of the plan outlined above and serves as a basis for future bird conservation actions in SHIL and with adjacent partners or landowners.

Concurrently, the development of a Memorandum of Understanding (MOU) between the FWS and the NPS to implement Presidential Executive Order (EO) 13186 (US Government 2000), Responsibilities of Federal Agencies to Protect Migratory Birds, calls for integration of programs and recommendations of existing bird conservation efforts into park planning and operations. Complementing each other, the MOU and the Southeastern Bird Conservation Initiative will advance bird conservation in the Southeast Region of the NPS beyond current regional NPS efforts.

Role of NPS in Avian Conservation

The interagency agreement that facilitates this partnership supports both FWS and NPS management policies. Specifically for the NPS, the agreement supports and advances the Strategy for Collaboration, a visionary document developed and signed by the Southeast Natural Resource Leaders Advisory Group (SENRLAG 2000), a consortium of 13 land and resource management agencies in the Southeastern United States whose vision is to encourage and support cooperation in planning and managing the region's natural resources. Furthermore, the agreement is aligned with and implements a variety of NPS Management Polices (2001) including, but not limited to, External Threats and Opportunities, Environmental Leadership, Cooperative Planning, Land Protection, and especially Natural Resource Management that details policy and management guidelines which apply to bird conservation. Important policies in the Natural Resource Management chapter include:

- Planning for Natural Resource Management
- Partnerships
- Restoration of Natural Systems
- Studies and Collection
- General Principles for Managing Biological Resources
- Plant and Animal Population Management Principles
- Management of Native Plants and Animals
- Management of Endangered Plants and Animals
- Management of Natural Landscapes
- Management of Exotic Species
- Pest Management
- Fire Management and
- Water Resource Management

The NPS is the fourth largest landowner in the United States, consisting of over 380 national park units covering 83 million acres of land and water with associated biotic resources (www.nps.gov). The 64 units in the Southeast Region of the NPS represent 16% of the total number of park units in the national park system and cover approximately 5% of the total land base in the entire system. Park units in the Southeast Region include national seashores (Canaveral National Seashore, Cape Hatteras National Seashore), national parks (Great Smoky Mountains National Park, Everglades National Park), national recreation areas (Big South Fork National River and Recreation Area), national preserves (Big Cypress National Preserve), national battlefields (Cowpens National Battlefield, Fort Donelson National Battlefield), national monuments (Fort Matanzas National Monument, Ocmulgee National Monument), and others such as the Blue Ridge Parkway, Obed Wild and Scenic River, and Timicuan Ecological and Historic Preserve.

Southeast NPS units provide habitat for over 400 species of migrating, breeding, and wintering birds and include a wide range of Federal and State listed threatened and endangered species. Likewise, these units also provide nest, migration, and winter habitat for most of the eastern species identified in the national bird conservation plans in need of conservation attention.

Additionally, the NPS attracts over 280 million visitors to the parks each year, 120 million of these in the Southeast Region, affording excellent recreational bird watching and opportunities to strengthen bird conservation interpretation, outreach, and education programs. These opportunities, the NPS mission, policies, and organization all lead to the conclusion that the NPS is an extremely valuable partner and contributor to bird conservation in the region.

Nationally, the status of birds in national parks is largely unknown, although many parks have adequate knowledge regarding bird occurrence in the parks (<http://www.npwrc.usgs.gov/resource/othrdata/chekbird/chekbird.htm>). Parks often play a role in ongoing regional bird conservation efforts. Indeed many of these parks

are often important to regional, national, or international bird conservation, and many have been designated as Important Bird Areas (IBA's) by the National Audubon Society. To date, there are approximately 64 NPS units that are designated IBA's, 35 of which are considered of global importance (<http://abcbirds.org/iba/aboutiba.htm>). In the Southeast Region, the NPS has 13 global IBA's.

The **NPS Inventory and Monitoring (I&M) Program** has been developed to provide management driven scientific information to national park managers so that resources can be adequately protected within national parks. One of the first phases of this program is to inventory vertebrates, including birds, within the 260 national park units in the program. Once completed, data from the inventories will provide an account of the occurrence and abundance of birds in all the national parks in the program. These records will be stored in the NPS I&M NPSpecies database (<http://www.nature.nps.gov/im/apps/npspp/>). Coordination with I&M network staff is important to developing long-term bird monitoring programs that fulfill both park and NABCI objectives.

Park Flight is a NPS international partnership initiative that directs funding toward a variety of NPS programs that involve conservation of Neotropical migratory birds whose life history range covers a US national park and a Latin American protected area. A relatively new program, Park Flight offers parks the opportunity to partner with a Latin American national park or protected area to cooperate on developing bird conservation and education projects (NPS 2002).

Recent increases in NPS base funded programs such as inventory and monitoring, exotic species management, habitat restoration, and fire management all indicate that national park managers recognize that park lands are increasingly subject to a variety of threats and conditions that must be improved to provide the quality of national park experience articulated in the NPS Organic Act (1916). Programmatic funding in these areas will increase the ability of national parks to provide quality habitat and conditions for increased wildlife conservation, including birds. Furthermore, private interests and non-profit conservation organizations have initiated programs, including grant programs, to provide much needed funding to national parks to meet backlogs of identified yet unfunded needs.

Park Description

The first major battle of the Civil War's Western theatre occurred at Shiloh in 1862. It was a two-day battle resulting in nearly 24,000 casualties and a decisive victory for Union forces, which later went on to seize control of the Confederate railway system in Corinth, Mississippi. The Park was established in 1894 to preserve the battle scene and is approximately 1,607 ha (432 acres). SHIL contains not only the fields where the major portion of the battle was fought, but also alluvial floodplains, mixed bottomland and swamp forests, steep river bluffs, and rock outcrops. Water resources in the Park include Bloody Pond, natural springs, the Tennessee River, and Owl Creek. Uplands

are predominantly mixed oak forests and old-fields. Hardwoods dominate the river bluff slopes and ravines.

Avian Resources of East Gulf Coastal Plain

The East Gulf Coastal Plain is approximately 245,200 km² and occupies portions of Florida, Alabama, Mississippi, Louisiana, Tennessee, Kentucky, and Illinois (see PIF and NPS location maps below). Nearly 30% of the land use in the area is classified as loblolly-shortleaf pine or longleaf pine forests, and another 30% is classified as corn or soybeans. Oak-hickory and oak-pine forests occupy about 25% of the remaining land.

The East Gulf Coastal Plain is characterized by a diversity of bird habitats, including coastal dunes and marshes, pine flatwoods and savannas, and expansive upland and bottomland hardwood forests. The typical vegetation types can be characterized broadly as southern mixed forest, oak-hickory-pine, and southern yellow pine, mixed with intervening floodplain forests. Live oak forests and coastal dune habitats occur along the coast. Ecological forces include disturbances such as fire, ice storms, wind storms, tornados, and flooding. Elevation ranges from 0 to 650 feet above sea level. Annual precipitation ranges from 40 to 60 inches generally, and 52 to 64 inches on the Florida coast.

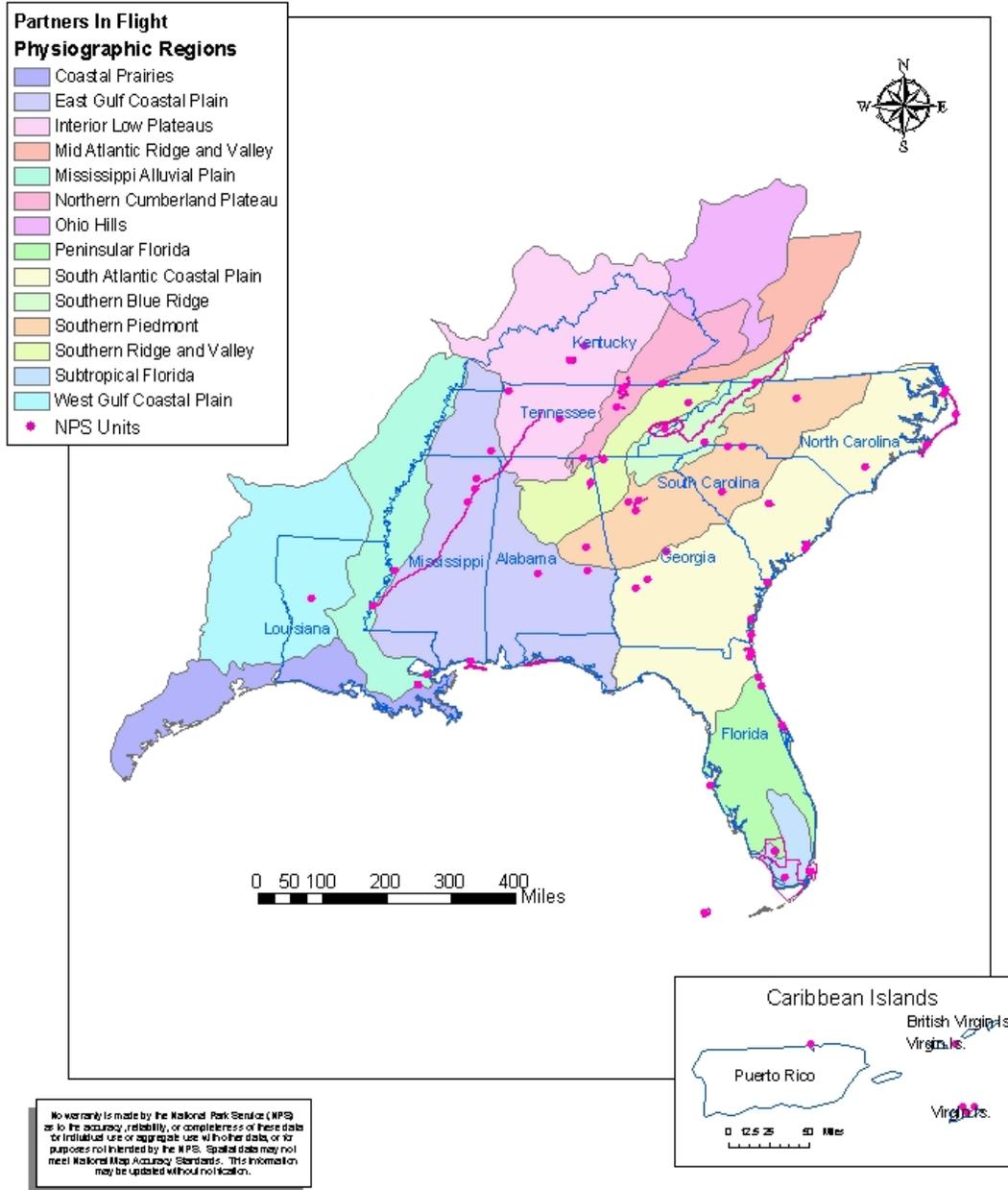
For ecological planning, the East Gulf Coastal Plain is divided into the lower, middle, and upper units; these units correspond roughly to the ecological units described by. The lower unit includes the barrier islands and coast to about 200 km inland and stretches from panhandle Florida to south Louisiana. The lower unit is characterized by predominantly flat, weakly dissected alluvial plains, and active coastlines. Quaternary geology and soils are typically Pliocene-Pleistocene sandy clay residuum. Predominant upland vegetation is slash and longleaf pine forest (including longleaf pine-turkey oak stands). Sand pine is the dominant canopy species in the xeric and deep sand areas of panhandle Florida and south Alabama.

The middle unit is delineated by a line which runs roughly east-west from approximately 20 km south of Jackson, Mississippi to near Birmingham, Alabama and extends north to the Mississippi-Tennessee state line. The middle unit is characterized by moderately dissected, irregular plains. Quaternary geology and soils are typically Quaternary, Cenozoic sand, chert or clay deposits. Primary vegetation types include expanses of oak-hickory-pine in a variety of successional stages, the open grasslands of the Black Belt and Jackson Prairie, and floodplain forests. Major rivers include tributaries to the Mississippi River, such as the Pearl and Yazoo Rivers, and other rivers such as the Alabama and Tombigbee in Alabama. Oak-hickory-pine forest is the most prevalent forest type through the middle unit of the East Gulf Coastal Plain; most pine forests consist of loblolly-shortleaf.

Partners in Flight (PIF) Regions

Southeast Region (SER)

National Park Service
U.S. Department of the Interior



Partners in Flight (PIF) Regions and NPS Locations

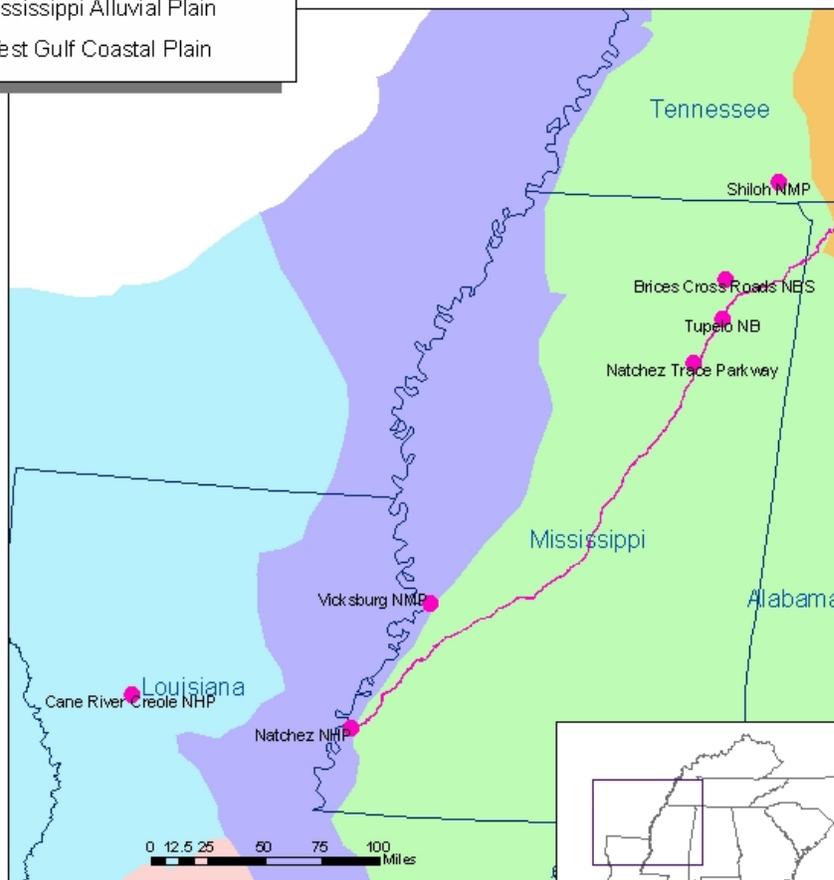
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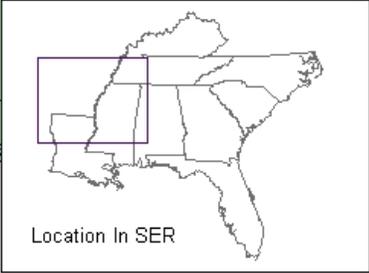
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PIF Physiographic Regions

- Coastal Prairies
- East Gulf Coastal Plain
- Interior Low Plateaus
- Mississippi Alluvial Plain
- West Gulf Coastal Plain



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The upper unit roughly coincides with the Mississippi-Tennessee state and includes west Tennessee, west Kentucky, and parts of Illinois. The upper unit is characterized by flat to gently rolling uplands dissected by broad alluvial floodplains. Quaternary geology and soils are generally Wisconsin, Illinois loess and loessal alluvium. Primary vegetation was typically upland oak-hickory forests dissected by broad floodplain forests and patches of open grasslands. Major river systems are tributaries to the Mississippi River and include the Wolf, Hatchie, Forked Deer, and Obion Rivers. Oak-hickory forests dominate the forest cover in the upland areas of the upper unit of the East Gulf Coastal Plain.

Management of landscapes for bird conservation priorities may include three strategies:

- 1) manage and maintain existing habitats identified as being of value to bird populations
- 2) restore or consolidate important habitats and
- 3) provide a combination of these two strategies.

For the East Gulf Coastal Plain, a combination of strategies will be required to increase and sustain breeding bird populations.

Over 300 bird species occur annually in the East Gulf Coastal Plain as nesting species, post nesting dispersal species, transients, and/or wintering residents. Over 180 of these nest in the physiographic area. Representative nesting species include Eastern Meadowlark, Field Sparrow, Eastern Towhee, Prothonotary Warbler, Red-bellied Woodpecker, Yellow-breasted Chat, Red-winged Blackbird, Indigo Bunting, and Great Crested Flycatcher. Breeding bird species richness varies across typical rural landscapes in the East Gulf Coastal Plain. In the upper unit of the East Gulf Coastal Plain, approximately 100 breeding bird species occur in a county. In the middle unit, approximately 100 breeding bird species occur in a county. In the lower unit along the coast, approximately 120 breeding bird species occur in a county.

Avian Conservation in SHIL

Avian Biodiversity: SHIL is currently conducting an inventory of birds under the auspice of the NPS Inventory and Monitoring Program. No checklist is currently available; however, upon completion of the inventory a checklist is expected to be published for the park. Stedman and Stedman (2004) have documented 120 species throughout the park, over 50 of which are likely breeders (<http://iweb.tntech.edu/sstedman/NPSBirdInventoryShiloh.htm>).

Verified records of birds in SHIL have been entered into the NPS I&M program's database, NPSpecies, and may be viewed via the internet at <http://www.nature.nps.gov/im/app/npspp> with a user identification and password combination authorized by the NPS for NPS personnel and NPS cooperators. Many other avian observational data need to be verified and entered into the database.

Park Priorities: Park staff and consultants have not identified any species of particular management concern or high priority for conservation.

Inventory: Bird inventory data provide important information for park management, particularly when inventories are conducted within the framework of the NPS I&M Program. SHIL is one of several parks in the NPS Cumberland/Piedmont I&M Network for which a plan to conduct high priority inventory projects has been prepared (Nichols et al. 2000). A request for proposals to complete the inventory was released in March of 2003 and inventory effort is expected to begin in spring of 2003 and conclude in 2005. Dr. Stephen Stedman, Tennessee Technological University, and Ms. Barbara Stedman are presently conducting avian inventory throughout SHIL in conjunction with the I&M plan. Current inventory efforts include:

- Breeding bird surveys using point counts, transects, and nest searches in all habitats
- Winter bird survey focused on grassland habitats
- Migration monitoring in all habitats

Threatened and Endangered Species: No Federally listed threatened or endangered avian species are known to occur in SHIL.

Several **Tracked in Tennessee** species occur in the park (Appendix C) including Sharp-shinned Hawk, Lark Sparrow, Bewick's Wren, and Yellow-bellied Sapsucker.

Several high priority PIF species for the Interior Low Plateaus occur in SHIL (see below and Appendixes A and B). Prominent among these species are: Bewick's Wren, Prairie Warbler, Wood Thrush, Kentucky Warbler, Yellow-billed Cuckoo, Chimney Swift, Eastern Wood-Pewee, Field Sparrow, Red-headed Woodpecker, Northern Bobwhite, White-eyed Vireo, Yellow-breasted Chat, Black-and-White Warbler, Grasshopper Sparrow, Eastern Towhee, Eastern Meadowlark, Orchard Oriole, and Chuck-will's-widow. Many of these species are associated with the oak-hickory, riparian, grassland, and glades habitats in the park.

A unique feature of this park is that Eastern Bluebirds nest in most of the cannon.

Monitoring: Currently, no monitoring is being conducted at SHIL.

Research: Scientific research is permitted within the park, but no active avian research is ongoing.

Outreach: No educational and outreach programs related to birds are undertaken in the park.

Management: In cooperation with the Tennessee Wildlife Resources Association (TWRA), the park has reintroduced between 75 and 100 Wild Turkey.

Park Identified Needs for Avian Conservation

SHIL has identified one major objective at this time that would increase the avian knowledge of the park:

Inventory: The highest priority is to **complete the breeding bird inventory as identified in the I&M plan.**

Coordination with Regional Conservation Initiatives

North American Bird Conservation Initiative: NABCI bird conservation planning units, referred to as Bird Conservation Regions (BCR), are often larger than other planning units associated with other plans, such as Partners In Flight. For example, SHIL is within the NABCI Central Hardwoods BCR that extends over a large portion of the lower Midwest (see BCR Map below) and encompasses several PIF physiographic areas (the planning unit for PIF)(compare to PIF and NPS Location Maps).

Several NABCI BCR's have coordinators whose primary responsibility is to coordinate all bird conservation planning in the BCR, across all agencies and organizations. Currently, the Central Hardwoods BCR has a designated coordinator (J. Fitzgerald, see contacts below) and can provide valuable assistance to SHIL with implementation of aspects of this ACIP.

North American Waterfowl Management Plan (NAWMP): The NAWMP (<http://northamerican.fws.gov/NAWMP/nawmphp.htm>) is completed and has been revised several times, incorporating updated goals and strategies based on new information. This plan is one of the most successful bird conservation delivery programs in the United States, being monetarily supported by the North American Wetlands Conservation Act (NAWCA).

Partners In Flight: Goals and strategies for the Interior Low Plateaus can be found in the draft bird conservation plan, previously submitted to the park. The current plan identifies priority bird and habitat conservation goals that must be implemented in order to achieve bird conservation success in this region. SHIL being largely a landbird park will utilize this plan more than any other plan to participate in NABCI implementation.

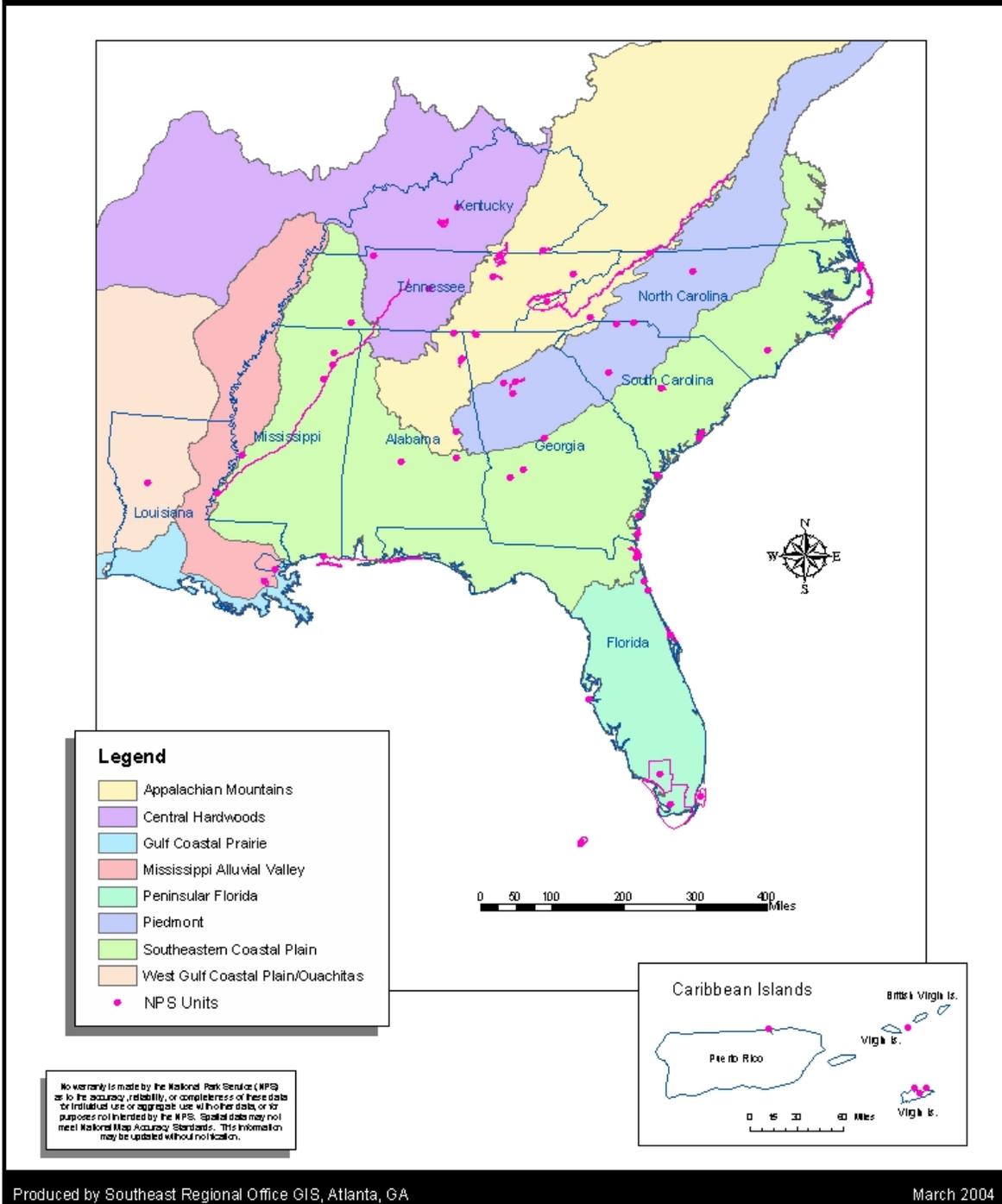
Similar to NABCI BCR's, PIF physiographic areas often do not have designated coordinators. However, state level non-game agencies with investment in PIF will establish key personnel to develop partnerships among cooperators in the physiographic area. The State of Tennessee has a state ornithologist (M. Roedel, see contacts below) who will be instrumental in assisting SHIL to implement recommendations identified in this ACIP and projects important to bird conservation relative to Tennessee's role in implementation of the Interior Low Plateaus PIF plan.

United States Shorebird Conservation Plan (USSCP): The USSCP has been completed and is available on the World Wide Web (<http://shorebirdplan.fws.gov/>). A

Bird Conservation Regions

Southeast Region (SER)

National Park Service
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regional step down plan is in preparation by FWS personnel and should be available in 2004. Since SHIL has little habitat of regional importance to shorebird conservation, recommendations for shorebird conservation are not presented.

Waterbird Conservation for the Americas (WCA): The WCA plan has been completed and is available on the World Wide Web or can be ordered from the US Fish and Wildlife Service National Conservation Training Center (<http://www.waterbirdconservation.org/>). Few waterbird conservation priorities exist on the Interior Low Plateaus and none are presented here for SHIL.

Integration of NABCI Goals and Objectives into Park Planning and Operations

NABCI Implementation Recommendations

To successfully achieve park established goals and actively participate in NABCI, the park could implement a variety of projects in different NPS programs. Most of these projects would require some level of participation by many existing park programs and could either be achieved through NPS funding, or more likely, through establishing or improving partnerships with agencies and organizations that already have the necessary expertise to provide guidance, funding, and execution of these programs. Programmatic areas where bird conservation actions are likely to be focused are:

- Inventory
- Monitoring
- Habitat Restoration
- Threat Management (includes exotic species, air quality, water quality, etc.)
- Research
- Compliance
- Outreach
- Partnerships

To the extent appropriate, each of these program areas will be discussed separately and within each, specific opportunities identified that, when implemented, will enable to park to meet its mandates (current and expected), as well as integrate NABCI into its planning and operations. With emphasis added; the park is not expected to implement any of these recommendations or be obligated to pursue any opportunity other than those the park is required to do by law or NPS program or policy. In other words, participation in this effort is currently voluntary. However, implementation of EO 13186 (US Government 2000), Responsibilities of Federal Agencies to Protect Migratory Birds, will require NPS to incorporate a wide range of bird conservation programs into planning and operations. The development of the MOU between the FWS and the NPS will establish a formal agreement to promote bird conservation within the agency by

incorporating goals and strategies of existing bird conservation initiatives, plans, and goals into park planning and operations.

Should the park decide to implement any of these projects, further consultation with bird conservation contacts is encouraged to obtain updated information on the relevance of these opportunities in regional bird conservation.

High priority projects are identified in **bold** print. Priorities that the park is encouraged to seek NPS funding for are marked with an asterisk (*). These projects are those that are critical to the stabilization or improvement of a bird population in the planning region.

Inventory: The park is in the process of completing an avian inventory. Once the inventory is completed, additional data on avian abundance and distribution will be needed to fully understand the status of birds in the park so that conservation actions for birds can be implemented (Nichols et al. 2000). Information regarding the status of high priority species (as identified in the Interior Low Plateaus bird conservation plan, the Tennessee Natural Heritage Program's Threatened and Endangered Species list, and the USFWS Species of Conservation Concern) is needed to effectively structure park management for the continued preservation and enhancement of the park's avifauna.

The current inventory effort is expected to provide a comprehensive account of the presence of birds at SHIL. Additional inventory needs will be identified following the completion of the ongoing inventory. However, it is important that:

- **abundance and distributional data be gathered for high priority forest, grassland, and glades species (see above) and especially Bewick's Wren**

Additionally, SHIL is encouraged to:

- **verify other avian observational data collected in the park and enter into the appropriate database (NPSpecies, National Point Count Database, Tennessee Wildlife Resources Agency (TWRA), ebird (Cornell University 2002))**
- **standardize inventory and monitoring methodology to conform to NPS and/or FWS recommended standards (Fancy and Sauer 2000; Hunter 2000)**

Monitoring: The park has not yet identified major avian monitoring needs. Preliminary results of the inventory indicate several high priority species nest in the park and are associated with grassland, glade, and old field habitats. The park is encouraged to consider establishing permanent monitoring stations in main habitat types to systematically collect data on the distribution and relative abundances of priority species. This information will be useful for documented potential changes in park avifauna resulting from habitat change or management activities. Links to literature

detailing inventory and monitoring methodologies for various avian groups (e.g. songbirds, shorebirds, raptors, etc.) can be found at: <http://biology.dbs.umt.edu/landbird/mbcg/groups.htm>. Efforts should be made to identify appropriate monitoring programs for high priority species and habitats at the conclusion of the inventory. Close coordination with adjacent BCR coordinators and the Tennessee ornithologist is needed to identify and implement high priority projects on park lands and to ensure that park efforts contribute to park or regional bird conservation rather than undertake an action or actions that are not needed or are better conducted in other areas. Specific recommendations are to:

- **establish a monitoring to measure abundance and population trends for high priority species in a variety of habitats**
- **standardize monitoring methodology to conform to NPS and/or FWS recommended standards (Fancy and Sauer 2000, Hunter 2000)**

Habitat Restoration: Landscape conditions in the Southeastern US have changed dramatically since early European explorers began documenting the area, its habitats, and its inhabitants. Historic landscapes were influenced by Native American burning, wildfire, bison, beaver, and elk, as well as by insect outbreaks and weather events (Hunter et al. 2001, Williams 2002), thus resulting in a landscape mosaic that supported a rich and diverse bird fauna in the Southeast (Barden 1997; Brawn et al. 2001). The arrival of Europeans and the subsequent change in landscape has dramatically effected bird habitat and bird populations. Bird conservationists have long recognized that habitat restoration is critical to restoration of bird populations, stabilizing or reversing bird declines, and removing birds from both State and Federal Threatened and Endangered Species lists.

Recently, habitat restoration efforts have increased on NPS lands due to the increased restoration emphasis of the Management Policies (NPS 2001). Parks may use a wide range of management tools to restore wetland, grassland, woodland, and other habitats. Restoration tools include, but are not limited to, forest management practices (e.g. silviculture), prescribed fire, exotic species management, and public use and recreation management. In addition, parks can coordinate infrastructure development (e.g. roads and buildings) with restoration activities to mitigate potential adverse impacts.

Due to the protected nature of SHIL lands, and generally those in the national park system, the condition of habitats for bird use may be of higher quality than other natural, developed, agricultural, or forest lands under other management regimes. However, national park lands can be greatly improved for wildlife, and particularly bird use, by restoring processes important for habitat formation, succession, and structural development. Largely, these processes have not been managed historically in the national park system, but current policy allows for active management of species, populations, and lands to provide for long-term conservation of park resources.

Protection, restoration, and enhancement of habitats in SHIL can greatly contribute to established habitat goals identified in the Interior Low Plateaus bird conservation plan.

The park is characterized by upland hardwood forests and successional communities dominated by eastern red cedar. Habitats include rock outcrops, hay fields, numerous limestone cedar glades containing endemic plant species, and a small tract of oak-hickory woods. West Fork Stones River, and its tributary Lytle Creek, have associated limestone bluffs, floodplains, and springs (Nichols et al. 2000). Much of this habitat provides suitable area and vegetative cover for nesting landbirds, but could be improved through use of prescribed fire and other management practices to restore the structural and spatial complexity of the landscape in SHIL that are required for many of the high priority bird species that occur there. Specific recommendations are to:

- **restore native warm season grasses to extensive fescue fields over as large an area as possible***
- **restore landscape to battlefield conditions where savannah type conditions occurred***
- **evaluate existing agricultural special use permits to adopt alternative methods of farming practices or eliminating some leases for conversion to grassland habitat***
- **consider phasing out agricultural leases to restore native grasslands or appropriate habitat (unless this habitat type is identified to be managed for in the park's enabling legislation)***
- **create some shrub scrub habitats intermixed with grassland and forested habitats to provide for breeding and cover areas ***
- **continue to restore native cane to riparian areas along Stones River**
- **manage remaining forests toward old growth conditions or maintain old growth conditions where present**
- **protect existing snag trees, where not identified as a safety hazard, as important to cavity nesting birds**
- **permit recolonization by beavers except where they interfere with park objectives**
- **document all major habitat management activities, including the location (e.g. UTM coordinates) and a description of methods and of pre- and post-management habitat conditions. This information, when coupled with bird**

distribution and abundance data, is useful for assessing and replicating conservation actions

- assess historic landscape cover and determine feasibility of restoring landscape within the context of the park's enabling legislation

Threat Management: Due to the urban nature of SHIL's setting, the greatest threats to birds and their habitats are a result of adjacent developments causing habitat fragmentation around the park, invasion of exotic plants species, impacts associated with visitor use, free-roaming and feral cats and dogs, and pollution associated with local industry and developments. Although the extent of these threats is undocumented, reduction or mitigation of many threats is desired by the park. SHIL is encouraged to:

- **work with the local community and other land conservation interests in the region to minimize habitat fragmentation and potentially restore habitats beneficial to wildlife and bird species of the region**
- **work with adjacent landowners and neighbors, the local community, and public officials to curb unregulated and free roaming feral and domestic cats in the park**

Cape Hatteras National Seashore has recently completed a feral cat reduction campaign that could be used as a model in SHIL (Altman 2002, Morrison 2002).

- **partner with the local Natural Resource Conservation Service (NRCS) to**
 - **explore potential to protect adjacent private lands through various private landowner incentive programs**
 - **restore natural channel to Owl Creek**
- **evaluate agricultural special use permits and consider incorporating NRCS incentives of the Farm Bill to modify current practices and improve habitat for birds on a working agricultural landscape; implement best grassland management practices**
- **work with special use hay operators to change timing of haying operations to reduce or eliminate destruction of grassland nesting birds and their nests and young**
- **work with local governments to improve water quality of Stones River**
- **continue aggressive approach to elimination of exotic plant species**
- **continue to enforce law against poaching of Wild Turkey**

- **determine extent of effect of deer browsing on vegetation**

Research:

No research needs have been identified at this time. However, SHIL is encouraged to:

- **list park needs and projects on Research Permit and Reporting System web site (RPRS)**
- develop contact with Southern Appalachian Mountains Cooperative Ecosystem Studies Unit (CESU) at the University of Tennessee, Knoxville, TN.

Compliance: Park compliance with the Migratory Bird Treaty Act and the Executive Order 13186 (US Government 2000), Responsibilities of Federal Agencies to Protect Migratory Birds, is necessary to assure that park activities incorporate bird conservation into park planning and operations. Further, to ensure that migratory birds are considered in all phases of park planning processes, especially during the National Environmental Policy Act (NEPA) and the Director's Order #12 Compliance processes, the park should consider adding specific language in project evaluations that requires consideration and implications of park projects on migratory birds. The MOU being developed between the NPS and the FWS will likely contain specific language requiring a park to consider implications of park projects on migratory birds. Additional considerations are to encourage:

- **park staff to begin specific consideration of migratory birds during park planning processes**
- park staff to attend USFWS training on implementation of EO 13186 at the National Conservation Training Center (NCTC) (when available) or other training on migratory bird conservation in North America. NCTC has several courses and training related to conservation of migratory birds (<http://training.fws.gov/courses.html>).

The USFWS NCTC offers and reserves two tuition free slots for National Park Service employees wishing to attend NCTC courses on a first come, first served basis. Additionally, discount lodging is also available while attending a NCTC course.

Outreach

- **complete the checklist for public availability***
- **participate in International Migratory Bird Day (IMBD) events with a local partner (<http://birds.fws.gov/imbd.html>) such as the Nashville Chapter of**

the Tennessee Ornithological Society (TOS)*
<http://www.tnbirds.org/chapters.htm#nashville>

- **nominate CUGA as an Important Bird Area**
(<http://www.abcbirds.org/iba/nominstr.htm>)
- **develop partnership with Nashville TOS to assist with implementation of various aspects of this plan**
- **encourage development of outreach and educational programs to enhance visibility of bird conservation issues, which may include organized bird walks, owl prowls, etc. with the public**
- **encourage accurate documentation and reporting from these and random outings by visitors (see Cornell University's eBird monitoring program (Cornell Lab. Ornith. 2002 (<http://www.ebird.org/about/index.jsp>))**
- **support bird conservation by serving shade-grown coffees at meetings, events, and the office buildings in the park**
(<http://www.americanbirding.org/programs/consbcof3.htm>)
- **work with adjacent landowners and neighbors, the local community, and public officials to curb unregulated and free roaming feral and domestic dogs and cats in the park**
- **park interpretation/education staff are encouraged to attend USFWS training on Migratory Bird Education at NCTC**
- **consider adding links to bird conservation information, data, etc., to the park's web site home page**
- **subscribe to **TN-Bird Net**, an electronic forum for listing bird sightings and publications in Tennessee**
- **explore cultural affiliation of landscape to inhabitants, both historical and contemporary. Cultures are strongly tied to the landscape they inhabit and birds often play a role in a cultural tie to the landscape. When these connections are discovered and preserved, a greater appreciation for the landscape and its value to the culture can be achieved.**

Partners and Partnerships: Partnerships for land conservation and protection will perhaps have the greatest positive influence on bird conservation above all other landscape scale planning. Specific recommendations are to:

- **keep abreast of Rutherford County and Murfreesboro initiatives that could impact park resources**
- **contact US Fish and Wildlife Service private lands biologists to discuss private landowner initiatives applicable to the area**
- **contact local NRCS District Conservationist to discuss various Farm Bill programs that could be used on leases or adjacent land to protect habitats and improve water quality, etc. (<http://www.tn.nrcs.usda.gov/>)**
- **continue to develop and strengthen relationship with Ms. Barbara and Dr. Stephen Stedman to coordinate and conduct park bird conservation projects**
- **develop partnership with Tennessee Wildlife Resources Agency**
- **contact the nearest Joint Venture office (see Funding section for explanation of Joint Ventures) or BCR coordinator to develop partnerships and funding proposals tiered to priorities established by the park, this ACIP, and the Interior Low Plateaus bird conservation plan**
- **contact and partner with the local chapter of the Tennessee Ornithological Society in Nashville, Tennessee. This group could be active partners in SHIL's bird conservation program (<http://www.tnbirds.org/chapters.htm#nashville>)**
- **evaluate local or regional land use data and plan potential for habitat protection across organizational boundaries**
- **develop land use agreements with local landowners through state, FWS programs, and especially with Catoosa Wildlife Management Area to protect important habitats and landscapes.**

Funding Opportunities: Internal NPS funding is often an effective source to obtain funding; however, the project will have to be a fairly high priority among the park's natural resource program to successfully compete for the limited funding available in the NPS. Therefore, partnerships and outside funding programs are often more productive for securing bird conservation funding. SHIL is encouraged to enter all high priority projects into the NPS Performance Management Information System (PMIS) database. Funding for conservation projects for Neotropical migrants is also available through the Park Flight program. Suggestions include:

- **increased base funding to implement basic protection and management needs for birds and their habitats (habitat based management not only benefits the birds but other wildlife as well)**

With the exception of the North American Waterfowl Management Plan (NAWMP and its associated funding legislation, the North American Wetland Conservation Act), funding opportunities for bird conservation programs, plans, and initiatives have been lacking. Only within the last decade have other appropriate and specific sources for bird conservation funding been created and used. The NAWMP has been supported for approximately 14 years by the North American Wetlands Conservation Act (NAWCA 1989). This program has provided \$487 million in appropriated funds matched with \$1.7 billion for wetland and bird conservation projects since its inception. In 2002 alone, over \$70 million US dollars were awarded to US and Canadian agencies and organizations to enhance waterfowl populations by improving, restoring, or protecting wetland habitats. To adequately evaluate projects and distribute these funds, partnerships called Joint Ventures were established. Nationally, 14 (11 US, 3 Canada) Joint Ventures have been established, several which are funded and staffed. Internet links to Joint Ventures are:

(<http://southwest.fws.gov/gulfcoastjv/ojvcontact.html>) and
(<http://northamerican.fws.gov/NAWMP/jv.htm>).

Funding through NAWCA is highly underutilized by the NPS and any park unit that has wetland, water, or bird conservation needs associated with wetland are encouraged to investigate using this funding source. Naturally, there are certain requirements to be eligible for all grants and park managers are encouraged to consult with the nearest Joint Venture, BCR, or PIF Coordinator to learn how this program might be applicable to implementation of this plan, and other park wetland issues. SHIL is not within a region which has an operational Joint Venture, but contact with the Central Hardwoods BCR coordinator and Tennessee state ornithologist will provide opportunity to investigate use of this funding source and developing proposals.

Internal FWS funding programs may be used to support projects, but no effective method of project proposal delivery to these sources is currently in place for the NPS. Current funding in these programs may result from FWS familiarity with NPS needs, or NPS participation in one of the area FWS Ecosystem Teams, where a project has been identified and proposed to be funded through the Ecosystem Team. SHIL is encouraged to:

- **encouraged to become a member of the USFWS Lower Tennessee-Cumberland Ecosystem Team**

One largely unexplored yet potentially fruitful funding source for national parks is the myriad of grants through the FWS State Programs, where grants are awarded to private individuals engaged in habitat conservation projects. No funding is directly available to national parks, but identified projects with important or critical adjacent landowners can sometimes be funded through these sources. Similar programs are available if the adjacent landowner is a federally recognized American Indian tribe.

Specific congressional appropriations to protect migratory birds have recently been authorized under the Neotropical Migratory Bird Conservation Act (2000) (<http://www.nfwf.org/programs/nmbcapp.htm>). Appropriations through this Act are authorized up to \$5 million per year. However, in 2000, appropriation was approximately \$3.75 million and a majority of this funding was directed toward projects in Central and South America.

Many of the identified projects are eligible for funding under various grant programs of the National Fish and Wildlife Foundation (<http://www.nfwf.org/programs/programs.htm>).

Other prominent funding sources available to NPS managers for bird conservation are listed on this projects web site at: <http://southeast.fws.gov/birds/NPSHighlits.htm>.

Funding opportunities for migratory bird conservation are available yet most natural resource agencies are not fully aware of and/or understanding of how to use these sources. Perhaps a consolidated migratory bird funding source catalog will become available to managers in the future; this is needed.

Contacts

Primary contacts within the region can be obtained by viewing the web site for the Southeastern Bird Conservation Initiative, National Park Service at <http://southeast.fws.gov/birds/npsbirds.htm>. This web site will provide contact information of the appropriate bird conservation coordinator in the region for park personnel. Primary contacts for SHIL are:

US Fish and Wildlife Service

Keith Watson
Asheville, NC
828-350-8228
Keith.Watson@fws.gov

Dean Demarest
Atlanta, GA
404-679-7371
dean_demarest@fws.gov

Jennifer Wheeler
Waterbird Conservation Plan
Coordinator
703-358-1714
Jennifer_A.Wheeler@fws.gov

Chuck Hunter
Regional Refuge Biologist
Atlanta, GA
404-679-7130
Chuck.Hunter@fws.gov

Dwight Cooley
Lower Tennessee-Cumberland
Ecosystem Team
Decatur, AL
256-353-7243
Dwight.Cooley@fws.gov

Brad Bingham
Partners for Fish and Wildlife
Tennessee Field Office
Cookeville, Tennessee
(931) 528-6481 ext. 205
bradley_binham@fws.gov

National Park Service

Stacy Allen
Shiloh National Military Park
731-689-5275 x32
Shiloh, TN
Stacy.Allen@nps.gov

Teresa Leibfreid
Cumberland/Piedmont
Inventory & Monitoring Network
Mammoth Cave, KY
270-749-2508
Teresa_Leibfreid@nps.gov

Chris Furqueron
Exotic Plant Management Coordinator
404-562-3113 ext 540
Chris_Furqueron@nps.gov

Raymond Albright
Southern Appalachian Mountains CESU
University of Tennessee
Knoxville, TN
865-974-8443
Ray_Albright@nps.gov

Tennessee

Mike Roedel
State Ornithologist
Nashville, Tennessee
615-781-6653
michael.roedel@state.tn.us

Stephen J. Stedman
Tennessee Technological University
Cookeville, TN 38505
931-372-3763
sstedman@tntech.edu

Barbara Stedman
2675 Lakeland Dr.
Cookeville, TN 38506
931-528-3820

Others

Mark Wimer
US Geological Survey
Patuxent Wildlife Research Center
Patuxent, MD
Mark_Wimer@usgs.gov

Brett Dunlap
USDA APHIS Wildlife Services
Kentucky Director
Madison, TN
(615) 736-5506
brett.g.dunlap@aphis.usda.gov

Jane Fitzgerald
Central Hardwoods BCR Coordinator
314-918-8505
jfitzgerald@abcbirds.org

Richard Connors
Tennessee Ornithological Society
Nashville, TN
615- 832-0521
Rconnorsphoto@aol.com

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APPENDIX A

High Priority Species in the East Gulf Coastal Plain Bird Conservation Region (from Table 1, USFWS 20002)

Priority bird species listed by total Partners in Flight concern score, and segregated by entry criteria. Other measures include area of importance and population trends scores, percent of BBS population, and local migratory status.

Priority Entry Criteria & species	Total PIF score	Concern scores		Percent BBS	Local migratory status
		AI	PT		
Ia. Highest overall priority					
Mississippi Sandhill Crane	35	5	5	-	RP
Red-cockaded Woodpecker	31	4	4	11.0	RP
Bachman's Sparrow	30	5	5	28.1	D
Nelson's Sharp-tailed Sparrow	29	5	3	-	C
Golden-winged Warbler	29	4	5	-	A
Henslow's Sparrow	29	4	5	-	F
Black Rail	28	4	4	-	D
Swallow-tailed Kite	28	4	3	-	E
Bewick's Wren	28	3	5	8.0	E
Piping Plover	28	4	4	-	C
Salt Marsh Sharp-tailed Sparrow	28	3	3	-	C
Swainson's Warbler	29	5	3	13.3	B
Ib. High overall priority					
American Kestrel	27	4	4	-	E
Snowy Plover	27	4	5	-	E
Brown-headed Nuthatch	26	5	4	16.6	R
Cerulean Warbler	26	3	3	11.7	E
Seaside Sparrow	26	5	3	-	E
Yellow Rail	26	4	3	-	C
Bicknell's Thrush	25	4	3	-	A
Prothonotary Warbler	25	4	5	9.5	B
Chuck-will's-widow	24	5	5	11.8	B
Prairie Warbler	24	4	5	7.4	B
Reddish Egret	24	2	3	-	E
Wilson's Plover	24	5	4	-	E
Worm-eating Warbler	24	3	3	1.6	E
Blue-winged Warbler	24	5	3	-	A
Bay-breasted Warbler	24	5	3	-	A
Bobolink	24	5	5	-	A
Red Knot	24	3	4	-	A
Stilt Sandpiper	24	3	3	-	A
Buff-breasted Sandpiper	24	3	3	-	A
Black-throated Blue Warbler	23	3	3	-	A
Bell's Vireo	23	2	3	-	B
American Black Duck	23	4	5	-	D

Priority Entry Criteria & species	Total PIF score	Concern scores		Percent BBS	Local migratory status
		AI	PT		
Redhead	23	5	4	-	C
Marbled Godwit	23	3	4	-	C
Short-billed Dowitcher	22	3	4	-	C
Black Tern	22	5	5	-	A
Kentucky Warbler	22	4	2	9.8	B
Orchard Oriole	22	5	5	9.3	B
Brown Pelican	22	4	1	80.2	RP
Clapper Rail	22	5	3	27.7	RP
American Oystercatcher	22	5	3	-	RP
Willet	22	4	5	-	RP
Northern Bobwhite	22	5	5	-	R
Yellow-billed Cuckoo	22	5	5	7.1	B
Red-headed Woodpecker	22	4	5	3.3	D
American Woodcock	22	4	4	-	D
Sedge Wren	22	5	5	-	C
Veery	22	5	5	-	A
Palm Warbler	22	5	5	-	A
Canada Warbler	22	4	3	-	A

II. Physiographic area priority species

Chimney Swift	21	4	5	-	B
Eastern Wood-Pewee	21	4	5	-	B
Loggerhead Shrike	21	4	5	-	D
American Bittern	21	4	5	-	D
King Rail	21	5	3	-	D
Black Skimmer	21	4	5	71.7	E
Canvasback	21	4	4	-	C
Semipalmated Sandpiper	21	4	5	-	A
Black-billed Cuckoo	21	5	3	-	A
Least Flycatcher	21	5	5	-	A
Chestnut-sided Warbler	21	5	3	-	A
Black-throated Green Warbler	21	5	3	-	A
Blackpoll Warbler	21	5	3	-	A
Rusty Blackbird	21	5	5	-	C
Northern Harrier	20	4	4	-	C
Sanderling	20	3	5	-	A
Common Ground-Dove	20	4	4	9.1	R
Purple Martin	20	5	5	11.2	B
Carolina Chickadee	20	4	5	6.7	R
Field Sparrow	20	3	5	-	R
Gull-billed Tern	20	5	3	23.6	E
Sandwich Tern	20	5	3	-	E
Dunlin	20	4	5	-	E
Royal Tern	19	5	3	32.1	E
Least Tern	19	4	4	63.8	E
Eastern Kingbird	19	4	5	-	B
Common Loon	19	5	3	-	C

Priority Entry Criteria & species	Total PIF score	Concern scores		Percent BBS	Local migratory status
		AI	PT		
III. Additional species: global priority					
Wood Thrush	21	4	2	5.7	B
Louisiana Waterthrush	21	3	2	3.7	B
IV. Additional species: abundant and declining in the physiographic area					
Downy Woodpecker	18	5	5	-	R
Eastern Meadowlark	18	4	5	-	D
Blue Jay	17	5	5	-	D
Common Grackle	15	4	5	-	D
Mourning Dove	14	4	5	-	D
V. Additional species: responsibility for monitoring (>10% BBS)					
White-eyed Vireo	20	5	2	13.3	B
Hooded Warbler	20	4	1	13.9	B
Summer Tanager	19	5	2	10.9	B
Fish Crow	18	4	3	21.2	D
Red-bellied Woodpecker	18	5	2	10.0	R
Pine Warbler	18	5	1	11.8	D
Yellow-breasted Chat	17	5	1	13.5	B
Eastern Towhee	17	5	2	12.3	D
VI. Federal listed species					
Bald Eagle	18	3	3	-	D
VII. Local, state, or regional interest species					
Painted Bunting	21	3	4	-	D
Ovenbird	17	2	3	-	B
Shiny Cowbird	10	1	3	-	D
Brown Creeper		????			D
Wood Stork		????			?

Migration status key:

- A = transient species, breeds and winters outside of physiographic area.
- B = breeds in temperate or tropical areas including the physiographic area, but winters exclusively outside the region.
- C = Breeds outside of the physiographic area, but winters in physiographic area.
- D = Breeds and winters in the physiographic area, but two different populations may be involved.
- E = Species reaching distributional limits in the physiographic area as breeding populations, but above peripheral status.
- F = As E above, but for wintering species.
- R = Resident, generally non-migratory species.
- RP = Resident, generally non-migratory species reaching distributional limits in the physiographic area, but above peripheral status.

APPENDIX B

High Priority Habitat-Species Assemblages in the East Gulf Coastal Plain Bird Conservation Region (from Table 2 USFWS 2000?)

Bird species assemblages designated for broad habitat type within the physiographic area, and listed by total Partners in Flight score. The sum of Area Importance, Population Trend, and Threats to Breeding are included as the Habitat Score, and provides as an indication of the importance of the habitat in the area. The overall score indicates management criteria, see below.

Habitat	Species	Total PIF score	Habitat score	Overall score ¹
Grasslands	Mississippi Sandhill Crane	35	15	I, V
	Bachman's Sparrow	30	14	II, V
	Henslow's Sparrow	25	9	II, V
	Bobolink	24	-	III
	Northern Bobwhite	22	13	III
	Sedge Wren	22	-	VI
	Loggerhead Shrike	21	13	II, V
	Field Sparrow	20	11	IV
	Northern Harrier	20	-	IV
	Eastern Kingbird	19	12	IV
Eastern Meadowlark	18	12	VI	
Early succession,	Bewick's Wren	28	12	II, V
Scrub-shrub	American Kestrel	27	12	II, V
Old field	Prairie Warbler	25	13	III
	Bell's Vireo	23	9	III
	LeConte's Sparrow	23	-	III
	American Woodcock	22	11	III
	Loggerhead Shrike	21	13	II, V
	Rusty Blackbird	21	-	VI
	Painted Bunting	21	9	VI
	White-eyed Vireo	20	10	VI
	Field Sparrow	20	11	VI
	Northern Harrier	20	-	IV
	Yellow-breasted Chat	17	9	VI
	Eastern Towhee	17	10	IV
	Mourning Dove	14	10	IV
Shiny Cowbird	10	5	VI	
Forested wetlands	Swainson's Warbler	29	12	III, V
	Swallow-tailed Kite	27	12	II, V
	Cerulean Warbler	26	10	I, V
	Prothonotary Warbler	25	12	III
	Kentucky Warbler	23	10	III
	Yellow-billed Cuckoo	22	13	III
	Eastern Wood-Pewee	21	12	VI
	Carolina Chickadee	20	11	VI

Habitat	Species	Total PIF score	Habitat score	Overall score ¹
	Summer Tanager	19	10	VI
	Red-bellied Woodpecker	18	9	VI
	Bald Eagle	18	9	III
	Fish Crow	18	9	VI
	Downy Woodpecker	18	12	VI
	Mourning Dove	14	10	IV
	Blue Jay	17	11	VI
	Common Grackle	15	10	VI
	Brown Creeper		??	VI
	Wood Stork		??	VI
Oak-hickory	Swallow-tailed Kite	27	12	II, V
Loess Bluffs	Cerulean Warbler	26	10	I, V
TN Plateau	Chuck-will's widow	24	13	II, V
Mixed Pine	Worm-eating Warbler	24	9	III
	Kentucky Warbler	23	10	III
	Orchard Oriole	23	14	IV
	Yellow-billed Cuckoo	22	13	III
	Eastern Wood-Pewee	21	12	VI
	Carolina Chickadee	20	11	VI
	Hooded Warbler	20	10	III
	Summer Tanager	19	10	IV
	Downy Woodpecker	18	12	VI
	Red-bellied Woodpecker	18	9	VI
	Blue Jay	17	11	VI
	Ovenbird	17	7	VI
	Common Grackle	15	10	VI
Loblolly-Shortleaf	Red-cockaded Woodpecker	31	13	I, V
	Bachman's Sparrow	30	14	II, V
	American Kestrel	27	12	II, V
	Brown-headed Nuthatch	27	13	III
	Chuck-will's widow	24	13	II, V
	Orchard Oriole	23	14	IV
	Yellow-billed Cuckoo	22	13	III
	Northern Bobwhite	22	13	III
	Eastern Wood-Pewee	21	12	VI
	Carolina Chickadee	20	11	VI
	Eastern Kingbird	19	12	VI
	Summer Tanager	19	10	VI
	Downy Woodpecker	18	12	VI
	Red-bellied Woodpecker	18	9	VI
	Blue Jay	17	11	VI
	Eastern Towhee	17	10	IV
	Mourning Dove	14	10	III

Habitat	Species	Total PIF score	Habitat score	Overall score ¹
Longleaf - Flatwoods	Mississippi Sandhill Crane	35	15	I, V
	Red-cockaded Woodpecker	31	13	I, V
Sandhills Slash Savanna	Bachman's Sparrow	30	14	II, V
	Brown-headed Nuthatch	27	13	III
	Prairie Warbler	25	13	III
	Henslow's Sparrow	25	9	II, V
	Orchard Oriole	23	14	IV
	Northern Bobwhite	22	13	III
	Eastern Wood-Pewee	21	12	VI
	Carolina Chickadee	20	11	VI
	Eastern Kingbird	19	12	IV
	Summer Tanager	19	10	VI
	Downy Woodpecker	18	11	VI
	Red-bellied Woodpecker	18	9	VI
	Blue Jay	17	11	VI
Short-rotation Pine	Bachman's Sparrow	30	14	III, V
	Bewick's Wren	28	12	II, V
	Prairie Warbler	25	13	III
	Northern Bobwhite	22	13	III
	Field Sparrow	20	11	IV
	White-eyed Vireo	20	10	IV
	Downy Woodpecker	18	12	VI
	Red-bellied Woodpecker	18	9	VI
	Blue Jay	17	11	VI
	Yellow-breasted Chat	17	10	VI
	Eastern Towhee	17	10	IV
	Mourning Dove	14	10	III
Maritime forest	Prairie Warbler	25	13	III
	Bicknell's Thrush	25	-	III
	Chuck-will's-widow	24	13	II
	Blue-winged Warbler	24	-	III
	Bay-breasted Warbler	24	-	III
	Orchard Oriole	23	14	III
	Black-throated Blue Warbler	23	-	III
	Northern Bobwhite	22	12	III
	Yellow-billed Cuckoo	22	13	III
	Veery	22	-	III
	Palm Warbler	22	-	VI
	Canada Warbler	22	-	VI
	Eastern Wood-Pewee	21	12	VI
	Black-billed Cuckoo	21	-	III
	Least Flycatcher	21	-	III
	Chestnut-sided Warbler	21	-	III
	Black-throated Green Warbler	21	-	III

Habitat	Species	Total PIF score	Habitat score	Overall score ¹
	Blackpoll Warbler	21	-	III
	Common Ground-Dove	20	12	IV
	Carolina Chickadee	20	11	VI
	Summer Tanager	19	10	VI
	Downy Woodpecker	18	12	VI
	Red-bellied Woodpecker	18	9	VI
	Fish Crow	18	9	VI
	Blue Jay	17	11	VI
	Yellow-breasted Chat	17	10	VI
	Eastern Towhee	17	10	IV
Emergent Wetlands	Nelson's Sharp-tailed Sparrow	29	-	II, V
	Salt Marsh Sharp-tailed Sparrow	28	-	II, V
	Swallow-tailed Kite	27	12	II, V
	Yellow Rail	26	-	III, V
	Seaside Sparrow	26	11	III, V
	Reddish Egret	25	10	III
	LeConte's Sparrow	23	-	III
	American Black Duck	23	-	III
	Redhead	23	-	III
	Sedge Wren	22	-	VI
	Clapper Rail	21	10	IV
	American Bittern	21	12	IV
	King Rail	21	10	IV
	Canvasback	21	-	III
Beaches and Dunes	Piping Plover	28	-	II
	Snowy Plover	27	13	II
	Red Knot	24	-	III
	Stilt Sandpiper	24	-	VI
	Buff-breasted Sandpiper	24	-	III
	Wilson's Plover	24	13	II
	Marbled Godwit	23	-	III
	American Oystercatcher	22	11	IV
	Willet	22	13	IV
	Brown Pelican	22	9	VI
	Short-billed Dowitcher	22	-	III
	Black Tern	22	-	VI
	Semipalmated Sandpiper	21	-	IV
	Least Tern	20	13	II
	Sandwich Tern	20	11	IV
	Black Skimmer	20	11	IV
	Brown Pelican	20	10	IV
	Royal Tern	20	10	IV
	-			

Habitat	Species	Total PIF score	Habitat score	Overall score ¹
	Sanderling	20	-	VI
	Dunlin	20	-	VI
	Gull-billed Tern	18	9	IV

¹ = Overall scores refer to the following:

I = Crisis recovery necessary

II = Immediate management and/or policy action necessary range-wide

III = Active, integrated management is needed to reverse, stabilize, or increase populations

IV = Long-term planning and habitat responsibility are needed, in association with monitoring

V = Research is necessary to further clarify population status or level of threat to species or habitat

VI = Monitor population trends and develop habitat management only as population levels dictate.

APPENDIX C
Tennessee Natural Heritage Program
Rare Vertebrates List
January 2001
Watch-Listed in Tennessee

Scientific Name	Common Name	Physiographic Province	Federal Status	State Status	State Rank	Global Rank	State Endemic?
BIRDS							
AMMODRAMUS LECONTEII	LE CONTE'S SPARROW				S1N	G4	
CALIDRIS ALPINA	DUNLIN				S3N	G5	
CAMPEPHILUS PRINCIPALIS	IVORY-BILLED WOODPECKER		LE		SX	GH	
CIRCUS CYANEUS	NORTHERN HARRIER			D	S4N	G5	
CISTOTHORUS PLATENSIS	SHORT-BILLED MARSH WREN				S3NSPB	G5	
DENDROICA PINUS	PINE WARBLER				S5	G5	
DOLICHONYX ORYZIVORUS	BOBOLINK				SHBS4 N	G5	
ELANOIDES FORFICATUS	SWALLOW-TAILED KITE				SAN	G5	
LIMNODROMUS	LONG-BILLED				S2N	G5	
SCOLOPACEUS	DOWITCHER						
MYCTERIA AMERICANA	WOOD STORK		(PS:LE)		S3N	G4	
PELECANUS	WHITE PELICAN				S3N	G3	
ERYTHRORHYNCHOS							
PICOIDES BOREALIS	RED-COCKADED WOODPECKER	CU CM BR WU CP	LE		SX	G3	
SCOLOPAX MINOR	AMERICAN WOODCOCK				S4B	G5	
VERMIVORA BACHMANII	BACHMAN'S WARBLER		LE		SX	GH	
VERMIVORA PINUS	BLUE-WINGED WARBLER				S4	G5	

Tracked in Tennessee

Scientific Name	Common Name	Physiographic Province	Federal Status	State Status	State Rank	Global Rank	State Endemic?
BIRDS							
ACCIPITER GENTILIS	GOSHAWK				SPB52N	G5	
ACCIPITER STRIATUS	SHARP-SHINNED HAWK	CU CM WR BR RV ER CP	(PS)	D	S3B	G5	
ACTITIS MACULARIA	SPOTTED SANDPIPER	CB			S2B	G5	
AEGOLIUS ACADICUS	NORTHERN SAW-WHET OWL	RV BR	MC	T	S1	G5	
AIMOPHILA AESTIVALIS	BACHMAN'S SPARROW	WR CU WU ER RV CP CB WF	MC	E	S2	G3	
AMMODRAMUS HENSLOWII	HENSLOW'S SPARROW	ER WR	MC	D	S1B	G4	
ANAS DISCORS	BLUE-WINGED TEAL				S2B	G5	
ANHINGA ANHINGA	ANHINGA	MF WR WU		D	S1B	G5	
AQUILA CHRYSAETOS	GOLDEN EAGLE	WR CB CU BR		T	S1	G5	
ARDEA ALBA	GREAT EGRET	WR MF RV BR CP		D	S2B53N	G5	
BOTAURUS LENTIGINOSUS	AMERICAN BITTERN	ER WR			S1	G4	
BUBULCUS IBIS	CATTLE EGRET				S2B53N	G5	
BUTEO LINEATUS	RED-SHOULDERED HAWK	MF CP WR WU RV CU ER CB			S4B	G5	

Scientific Name	Common Name	Physiographic Province	Federal Status	State Status	State Rank	Global Rank	State Endemic?
CAPRIMULGUS CAROLINENSIS	CHUCK-WILL'S WIDOW				S3S4	G5	
CAPRIMULGUS VOCIFERUS	WHIP-POOR-WILL				S3S4	G5	
CERTHIA AMERICANA	BROWN CREEPER				S2B54N	G5	
CHONDESTES GRAMMACUS	LARK SPARROW	CP WR WU CB MF		T	S1B	G5	
COCCYZUS	BLACK-BILLED CUCKOO				S2B	G5	
ERYTHROPTALMUS CONTOPUS COOPERI	OLIVE-SIDED FLYCATCHER	BR		D	S1	G5	
CORVUS CORAX	COMMON RAVEN	BR RV		T	S2	G5	
CORVUS OSSIFRAGUS	FISH CROW	MF			S3	G5	
DENDROICA CERULEA	CERULEAN WARBLER	RV BR WR WU CM		D	S3B	G4	
DENDROICA FUSCA	BLACKBURNIAN WARBLER				S3B54N	G5	
DENDROICA MAGNOLIA	MAGNOLIA WARBLER				S1B54N	G5	
EGRETTA CAERULEA	LITTLE BLUE HERON	CP WR MF WU		D	S2B53N	G5	
EGRETTA THULA	SNOWY EGRET			D	S2B53N	G5	
EGRETTA TRICOLOR	LOUISIANA HERON				SPB	G5	
EMPIDONAX ALNORUM	ALDER FLYCATCHER	BR			S1	G5	
EMPIDONAX MINIMUS	LEAST FLYCATCHER				S3	G5	
EMPIDONAX TRAILLII	WILLOW FLYCATCHER		(PS)		S2S3	G5	
EREMOPHILA ALPESTRIS	HORNED LARK				S4	G5	
FALCO PEREGRINUS	PEREGRINE FALCON	BR CU RV CB MF		E	S1N	G4	
FULICA AMERICANA	AMERICAN COOT				S2B	G5	
GALLINULA CHLOROPUS	COMMON MOORHEN	RV MF	(PS)	D	S1B	G5	
HALIAEETUS	BALD EAGLE	WR MF CP ER RV CB	T	D	S3	G4	
LEUCOCEPHALUS ICTINIA	MISSISSIPPI KITE	WU CU MF CP		D	S2S3	G5	
MISSISSIPPIENSIS							
IXOBRYCHUS EXILIS	LEAST BITTERN	RV MF ER CP CU CB		D	S2B	G5	
LANIUS LUDOVICIANUS	LOGGERHEAD SHRIKE		MC	D	S3	G5	
LATERALLUS JAMAICENSIS	BLACK RAIL	RV			S1	G4	
LIMNOTHLYPIS SWAINSONII	SWAINSON'S WARBLER	CP BR WR MF RV CU CM WU	MC	D	S3	G4	
LOXIA CURVIROSTRA	RED CROSSBILL				S1B52N	G5	
NYCTANASSA VIOLACEA	YELLOW-CROWNED NIGHT-HERON	RV CP MF CB			S3	G5	
NYCTICORAX NYCTICORAX	BLACK-CROWNED NIGHT-HERON	CB RV MF CP			S2S3B	G5	
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW	RV WR			S1B54N	G5	
PASSERINA CIRIS	PAINTED BUNTING				S2	G5	
PODILYMBUS PODICEPS	PIED-BILLED GREBE	WR			S2	G5	
POECILE ATRICAPILLUS	BLACK-CAPPED CHICKADEE		MC	D	S2B	G5	
POECETES GRAMINEUS	VESPER SPARROW	BR WR		D	S1B54N	G5	
PORPHYRULA MARTINICA	PURPLE GALLINULE	ER MF			S1B	G5	
RALLUS ELEGANS	KING RAIL	ER RV WR		D	S2	G4G5	
RALLUS LIMICOLA	VIRGINIA RAIL	RV			S1B53N	G5	
REGULUS SATRAPA	GOLDEN-CROWNED KINGLET	BR			S3B54N	G5	
RIPARIA RIPARIA	BANK SWALLOW	MF RV CB			S3	G5	
SITTA CANADENSIS	RED-BREASTED NUTHATCH				S2B54N	G5	

Scientific Name	Common Name	Physiographic Province	Federal Status	State Status	State Rank	Global Rank	State Endemic?
SITTA PUSILLA	BROWN-HEADED NUTHATCH				S2B	G5	
SPHYRAPICUS VARIUS	YELLOW-BELLIED SAPSUCKER	BR CP	MC	D	S1B54N	G5	
STERNA ANTILLARUM ATHALASSOS	INTERIOR LEAST TERN	MF	LE	E	S2S3B	G4T2Q	
THRYOMANES BEWICKII	BEWICK'S WREN	WR CP BR CB CM CU WU ER MF	MC	E	S1	G5	
TROGLODYTES	WINTER WREN				S3B54N	G5	
TROGLODYTES							
TYRANNUS FORFICATUS	SCISSOR-TAILED FLYCATCHER				S1B5AN	G5	
TYTO ALBA	COMMON BARN-OWL	CP MF RV CB BR WR ER		D	S3	G5	
VERMIVORA CHRYSOPTERA	GOLDEN-WINGED WARBLER		MC	D	S3B	G4	
VIREO BELLII	BELL'S VIREO	CP	(PS)		SPB	G5	

Physiographic Provinces

Physiographic province information provides a broad concept of a species' distribution in Tennessee and can be indicative of a particular geologic development or age in Tennessee.

BR Blue Ridge

CB Central Basin

CM Cumberland Mountains

CP Coastal Plain

CU Cumberland Plateau

ER Eastern Highland Rim

MF Mississippi Floodplain

RV Ridge and Valley

SV Sequatchie Valley

WR Western Highland Rim

WU Western Uplands

Federal Status

Federally listed animals are protected by the Endangered Species Act of 1973 (as amended), and the list is maintained by the U.S. Fish and Wildlife Service. In Tennessee, listing and recovery responsibilities are divided between two USFWS offices, in Cookeville, TN, and Asheville, NC. Please visit <http://southeast.fws.gov/> for additional information about USFWS activities in Tennessee.

The USFWS simplified the assignment of various "candidate species" designations in 1997, and those changes are reflected here. Applicable federal statuses are defined as follows, based on nomenclature adopted by The Nature Conservancy and the Tennessee Wildlife Resources Agency:

LE	Listed Endangered	Taxon is threatened by extinction throughout all or a significant portion of its range
E/SA	Endangered by Similarity of Appearance	Taxon is treated as an endangered species because it may not be easily distinguished from a listed

		species
LT	Listed Threatened	Taxon is likely to become an endangered species in the foreseeable future
T/SA	Threatened by Similarity of Appearance	Taxon is treated as a threatened species because it may not be easily distinguished from a listed species
PE	Proposed Endangered	Taxon proposed for listing as endangered
PT	Proposed Threatened	Taxon proposed for listing as threatened
C	Candidate species***	Taxon for which the USFWS has sufficient information to support proposals to list the species as threatened or endangered, and for which the Service anticipates a listing proposal
MC	Management Concern	Unofficial federal status for potential future candidate species
(PS)	Partial Status (based on taxonomy)	Taxon which is listed in part of its range, but for which Tennessee subspecies are NOT included in the Federal designation
(PS:status)	Partial Status (based on political boundaries)	Taxon which is listed in part of its range, but for which Tennessee populations are NOT included in the Federal designation e.g. (PS:LE)
(status, XN)	Non-essential experimental population in portion of range	Taxon which has been introduced or re-introduced in an area from which it has been extirpated, and for which certain provisions of the Act may not apply

(Modified from Federal Register, 50 CFR Part 17.11 {31 December 1999})

*** Taxa listed as candidate species may be added to the list of Endangered and Threatened species, and as such, consideration should be given to them in environmental planning. Taxa listed as LE, LT, PE, and PT must be given consideration in environmental planning involving federal funds, lands, or permits, and should be given consideration in all non-federal activities. For further information, please contact the Tennessee Field Office of the USFWS, 446 Neal Street, Cookeville, TN 38501; (931) 528-6481.

State Status

In Tennessee, vertebrates, mollusks and crustaceans may be formally listed by the TWRA as Endangered, Threatened, or "Deemed in Need of Management" (T.C.A. 70-8-104, 70-8-105, 70-8-107). No insects or arachnids can be listed by the TWRA, but may be listed by the USFWS.

E	Endangered	Any species or subspecies of wildlife whose prospects of survival or recruitment within the state are in jeopardy or are likely to become so within the foreseeable future.
T	Threatened	Any species or subspecies of wildlife that is likely to become an endangered species within the foreseeable future.
D	"Deemed in Need of Management"	Any species or subspecies of nongame wildlife which the executive director of the TWRA believes should be investigated in order to develop information relating to populations, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully. This category is analogous to "Special Concern".
PE	Proposed Endangered	Proposed as Endangered by the TWRA for consideration by the Tennessee Wildlife Resources Commission
PT	Proposed Threatened	Proposed as Threatened by the TWRA for consideration by the Tennessee Wildlife Resources Commission
PD	Proposed "Deemed"	Proposed as Deemed in Need of Management by the TWRA for consideration by the Tennessee Wildlife Resources Commission

Note: Many species presented in this list may have neither a state nor federal designation, however are considered rare by the DNH and should be evaluated during the environmental review process. Information is collected on these species in order to minimize the necessity of listing these taxa as Endangered or Threatened.

GRANK and SRANK

As a guide in setting conservation priorities, TNC developed a ranking system for estimating the abundance of plants and animals tracked by Heritage programs. The Global Rank (GRANK) is assigned by TNC Central Zoology staff based on the best range wide (global) abundance information for each taxon. A five-tier system (G1-G5) is used to describe rarity, from G1 (extremely rare) to G5 (widespread). The same system is applied by DNH to assign the State Rank (SRANK), which describes the species' abundance within our state borders.

SRANK and GRANK are based primarily upon the number of occurrences of the element (species) within the state and range wide, respectively. For obscure or under-studied species, ranks are based on the best available information, and consideration may be given to other factors influencing the rarity of each taxon.

SRANKs used in this list are defined below. GRANKs are similarly defined, except that ranking criteria apply range wide (e.g. an S1 species is "extremely rare" in the state, and a G1 species is "extremely rare" range wide).

S1	Extremely rare and critically imperiled in the state with five or fewer occurrences, or very few remaining individuals, or because of some special condition where the species is particularly vulnerable to extinction.
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S2	Very rare and imperiled within the state, six to twenty occurrences, or few remaining individuals, or because of some factor(s) making it vulnerable to extinction.
S3	Rare and uncommon in the state, from 21-100 occurrences.
S4	Widespread, abundant, and apparently secure within the state, but with cause for long-term concern.
S5	Demonstrably widespread and secure in the state
SH	Of historical occurrence in Tennessee, e.g. formally part of the established biota, with the expectation that it may be rediscovered.
SU	Can not be ranked using available information.
SX	Believed to be extirpated from the state.
S#S#	Denotes a "range rank" because the rarity of the species is uncertain (e.g. S1S3).
S?	Unranked at this time
SE	Exotic species established in the state
SE#	Exotic numeric (e.g. European starling would be SE5)
SP	Potentially occurring in Tennessee, but not yet documented by DNH
_N	Occurs in Tennessee in a non-breeding status (several birds)
_B	Breeds in Tennessee
SA	Accidental or casual in the state (several birds)
SR	Reported from the state, but insufficient data to assign rank
SRF	Reported falsely from the state
HYB	Hybrid within its range in Tennessee
SSYN	Synonym for another species
_Q	Questionable taxonomy (GRANKS only)
_T#	Subspecific taxon rank (GRANKS only)
<i>Numerous bird species are ranked for breeding and non-breeding status in Tennessee, e.g. RED-</i>	

BREASTED NUTHATCH (S2BS4N), *is more common as a wintering or migratory species than as a breeding species.*

Note: Those species having an SRANK of S1 to S3, state endemics, and species with limited distribution in Tennessee should be given special consideration in environmental planning. For further information contact DNH at (615) 532-9695.

State Endemic

If a species is endemic to Tennessee (occurs nowhere else), it may be categorized as follows:

Y, Yes	Endemic to Tennessee
P, Probable	Probably endemic to Tennessee
B, Breeding	Endemic to the state as a breeder only

APPENDIX D

USFWS SPECIES OF CONSERVATION CONCERN (2002) in the SOUTHEAST COASTAL PLAIN (BCR 27)

Black-capped Petrel
Audubon's Shearwater
Little Blue Heron
Reddish Egret
Swallow-tailed Kite
Short-tailed Hawk
American Kestrel (resident *paulus* ssp.
only)
Peregrine Falcon
Yellow Rail
Black Rail
Limpkin
Snowy Plover
Wilson's Plover
American Oystercatcher
Whimbrel
Marbled Godwit
Red Knot
Semipalmated Sandpiper
Stilt Sandpiper
Buff-breasted Sandpiper
Short-billed Dowitcher
Gull-billed Tern
Common Tern
Least Tern (except where Endangered)
Black Tern
Black Skimmer
Common Ground-Dove
Burrowing Owl
Chuck-will's-widow
Brown-headed Nuthatch
Bewick's Wren
Wood Thrush
Northern Parula
Black-throated Green Warbler
Prairie Warbler
Cerulean Warbler
Swainson's Warbler
Bachman's Sparrow
Henslow's Sparrow

Le Conte's Sparrow
Nelson's Sharp-tailed Sparrow
Saltmarsh Sharp-tailed Sparrow
Seaside Sparrow
Painted Bunting
Orchard Oriole