

**FINAL DRAFT**

# Avian Conservation Implementation Plan Vicksburg National Military Park

National Park Service  
Southeast Region



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In cooperation with

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And Bird Conservation Partners  
January 2005

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## Introduction

This Avian Conservation Implementation Plan (ACIP) is provided to the staff at Vicksburg National Military Park (VICK) 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 with largely upland habitats in the East Gulf Coastal Plain, including VICK, 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 VICK will be discussed and integrated as appropriate.

Information and data presented in the ACIP have been obtained from several sources: 1) interviews with VICK staff 2) VICK bird conservation partners 3) the PIF East Gulf Coastal Plain Bird Conservation Plan, Version 1.0 (USFWS 2002), 4) National Park Service (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 VICK resource management staff and managers, Gulf Coast Inventory and Monitoring Network (GULN I&M) staff, and bird conservation partners and approved by VICK management. Optimally, this plan will be incorporated into the park's Resource Management Plan (Mauck 1996) and updated annually to reflect completed projects, newly identified needs, and shifts in bird conservation priorities in the region.

**VICK is not obligated to undertake any of the proposed actions in this plan. The plan is provided to offer guidance to VICK to voluntarily support important park, regional, and perhaps national and international bird conservation projects for which VICK 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-government 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 VICK 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 Policies (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](http://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 (Gulf Islands National Seashore, Canaveral 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 (Jean Lafitte's Barataria National Preserve), national battlefields (Chalmette 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 (USDI 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**

Vicksburg National Military Park (730 ha; 1800 acres) was established in 1899 to commemorate one of the most decisive battles of the American Civil War: the campaign, siege, and defense of the city of Vicksburg. During the Civil War, Vicksburg's landscape was mostly clear-cut to view the enemy. During the 1930's, the Civilian Conservation Corps planted trees in the park to alleviate a severe erosion problem. The U.S. Department of the Interior (USDI) indicates that a second-generation forest is now established within the park, and provides habitat for a variety of wildlife species (USDI NPS 2000). Consequently, the park functions as an important natural refuge in a predominantly urban area (USDI NPS 2000).

The administration views the park as primarily a cultural resource and intends to explore the option of removing woody vegetation in some areas to recreate a more historically accurate vista, per its enabling legislation. Unfortunately, the soil is sandy-clay and erodes easily without the vegetation holding it in place. Therefore, areas cleared of woody vegetation are currently re-planted with non-native Bermuda grass, which has a sod-forming fibrous root system and is relatively functional at preventing wide-scale erosion.

## **Avian Resources of East Gulf Coastal Plain**

The East Gulf Coastal Plain is approximately 245,200 km<sup>2</sup> 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.

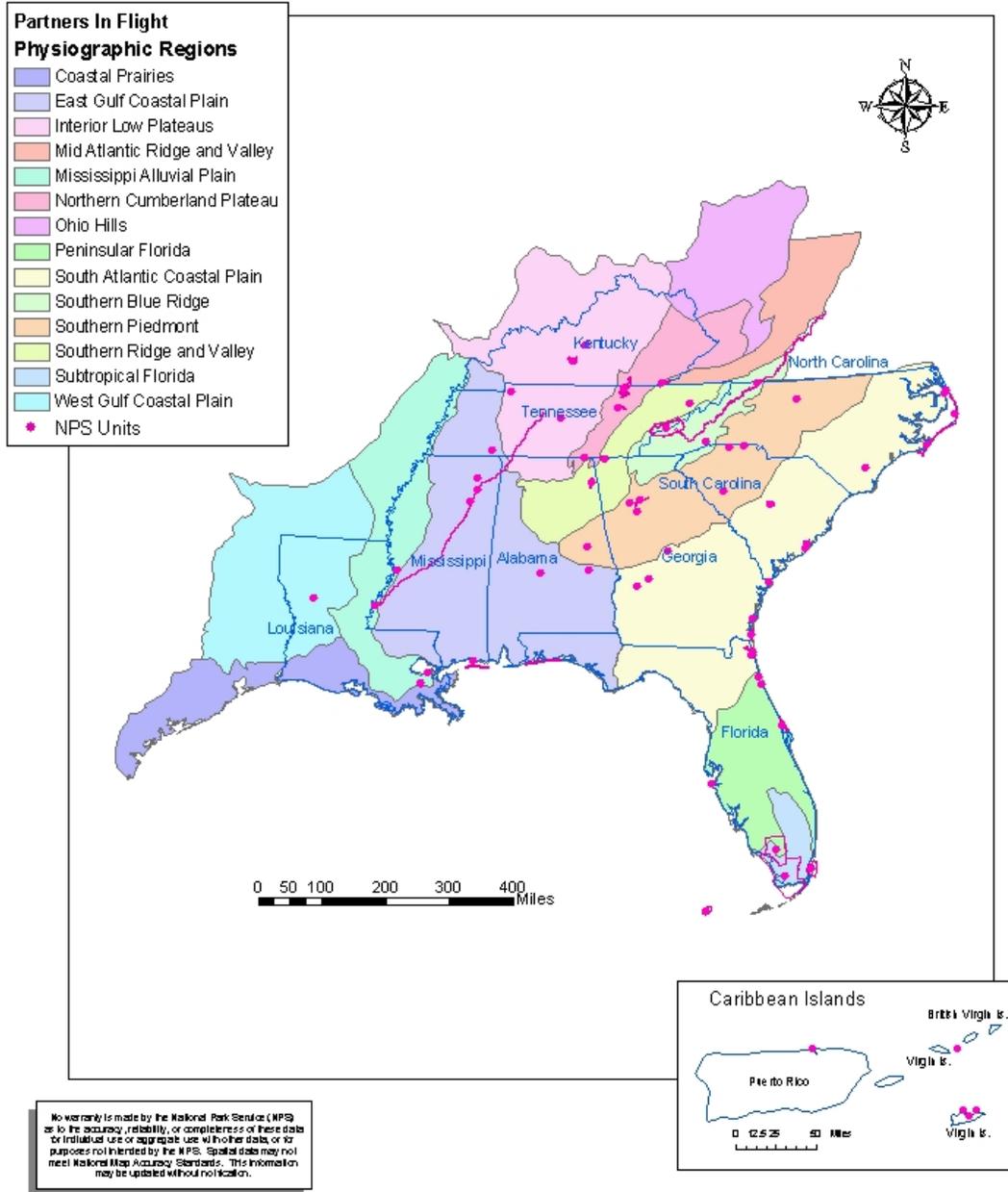
The East Gulf Coastal Plain is characterized by a diversity of bird habitats, including coastal dunes and marshes, pine flatwoods and savannas, and expansive upland and bottomland hardwood forests. The typical vegetation types can be characterized broadly as southern mixed forest, oak-hickory-pine, and 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. 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

# 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

National Park Service  
U.S. Department of the Interior

Southeast Region (SER)

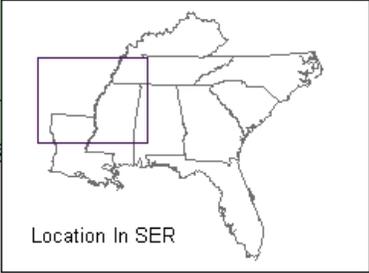
## Legend

### PIF Physiographic Regions

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



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February 2004

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 Yazoo River, and other rivers such as the Pearl, Alabama, and Tombigbee. 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.

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 loessial 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 180 bird species nest in the physiographic area, and more than 300 species occur annually in the East Gulf Coastal Plain as nesting species, post nesting dispersal species, transients, and/or wintering residents. 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 VICK

*Avian Biodiversity:* VICK has a complete avian inventory and a checklist of birds that is available for the public. Over 185 species have been documented for VICK, 88 of which are breeding species. Approximately 80% of these are Neotropical migrants whose numbers range from 5,000 to 15,000 birds per day in the park during spring migration (Somershoe et al. 2003).

Verified records of birds in VICK 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.

**Park Priorities:** Park staff and consultants have identified several of the wood warblers and woodland associated species as a park management concern or high priority for conservation. These species include Swainson's Warbler, Worm-eating Warbler, and Kentucky Warbler. Additionally, park staff are concerned about conserving all birds and their habitats in VICK. Several high priority PIF species occur in the park and conservation efforts in the park could focus on these species or groups of species.

**Inventory:** A complete inventory has been recognized as important information for park managers and is considered complete within the framework of the I&M program. VICK is one of several parks in the NPS Gulf Coast I&M Network (GULN) for which a plan to conduct high priority inventory projects has been prepared (USDI NPS 2000). The park is considering conducting a mammal inventory but does not plan to conduct an additional avian inventory at this time.

**Threatened and Endangered Species:** No Federally listed threatened or endangered species is known to nest in VICK. The Federally threatened Bald Eagle is an occasional visitor to the park and the recently de-listed Peregrine Falcon is a migrant through the park. In addition, the endangered interior least tern has been documented in the surrounding county.

Species receiving special protection in Mississippi do not occur in the park.

Several high priority PIF species for the East Gulf Coastal Plain occur in VICK (see below and Appendixes A and B). Prominent among these species are: Swainson's Warbler, Worm-eating Warbler, Kentucky Warbler, Chuck-will's-widow, Prothonotary Warbler, Orchard Oriole, Northern Bobwhite, Red-headed Woodpecker, Chimney Swift, Eastern Wood Pewee, Loggerhead Shrike, Black-throated Green Warbler, Purple Martin, Wood Thrush, Louisiana Waterthrush, Carolina Chickadee, Painted Bunting and Field Sparrow. Many other high priority Neotropical migrants use the park during migrations, especially spring migration (Somershoe et al. 2003) and several high priority species occur during the winter months.

**Monitoring:** Currently, several avian monitoring projects are being conducted at VICK:

- A Christmas Bird Count circle encompasses the park
- Raptor monitoring is conducted irregularly by the local Audubon Society and Hawk Watch International
- USGS/Audubon Society researchers are continuing with an annual mini-Breeding Bird Survey

**Research:** Scientific research is permitted within the park. Previous studies include:

- US Geological Survey, Biological Resources Division (USGS-BRD) compared banding results from different habitat types during migration periods

**Outreach:** The park provides a bird species checklist (available in the Visitor Center) and encourages public participation in the CBC and Raptor Monitoring with HWI. No other educational and outreach programs related to birds are undertaken in the park.

## **Park Identified Needs for Avian Conservation**

VICK has identified several projects needed to improve bird conservation at VICK. They are:

- Evaluate the mini-BBS routes
- Improve raptor monitoring
- Conduct additional migration monitoring
- Identify important habitats and quantify usage by high-priority species

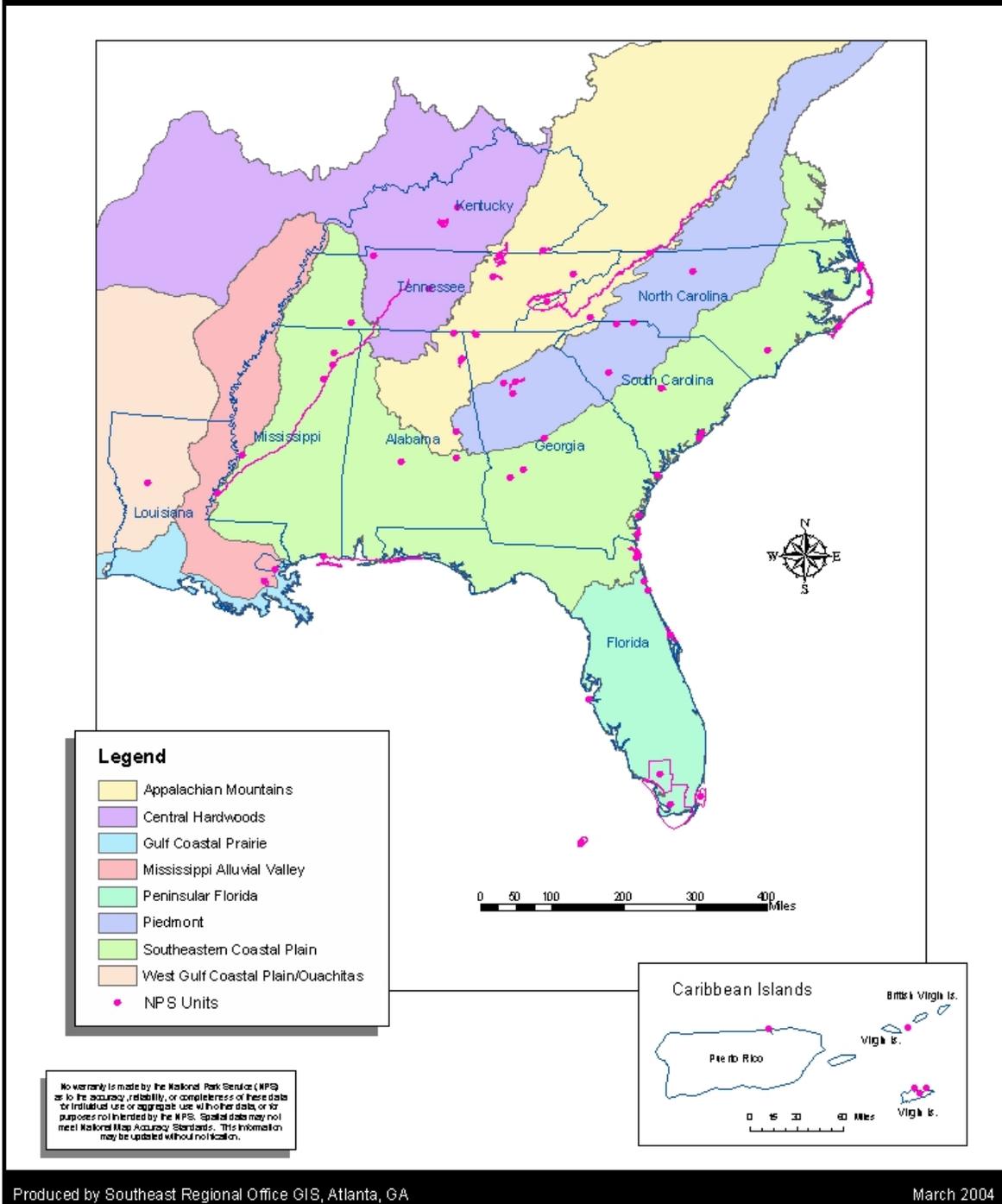
## **Coordination with Regional Conservation Initiatives**

**The 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, VICK is within the NABCI Southeastern Coastal Plain BCR, a unit that extends from Virginia south to northern Florida, west to Louisiana, and north to western Kentucky, following the Atlantic and Gulf coastal plains (see NABCI BCR map below) and encompasses several PIF physiographic areas (the planning unit for PIF)(compare to PIF map).

# Bird Conservation Regions

Southeast Region (SER)

National Park Service  
U.S. Department of the Interior



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March 2004

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 East Gulf Coastal Plain of the Southeastern Coastal Plain BCR does not have a designated coordinator; however, a bird conservation coordinator is expected to be hired in the near future from contributions made by bird conservation partners in the region. Eventually, this person can provide valuable assistance to VICK with implementation of aspects of this ACIP. Active bird conservation planning is underway in the adjacent Mississippi Alluvial Valley and communications with this coordinator will be important to fully assess the park's role in regional and landscape scale bird conservation.

**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 East Gulf Coastal Plain can be found in the draft bird conservation plan ([http://www.blm.gov/wildlife/plan/pl\\_04\\_10.pdf](http://www.blm.gov/wildlife/plan/pl_04_10.pdf)), 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. VICK 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 Mississippi does have a PIF coordinator (see contacts) and can be instrumental in assisting VICK to implement recommendations identified in this ACIP and projects important to bird conservation relative to Mississippi's role in implementation of the East Gulf Coastal Plain 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 regional step down plan is in preparation by FWS personnel and should be available in 2004. Since VICK 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 East Gulf Coastal Plain and none are presented here for VICK.

## 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 has inventoried its bird fauna exceptionally well. Although the avifauna of VICK is well documented, additional distribution and abundance data are desired to fully understand the status of birds in the park so that conservation actions for birds can be implemented. No endangered federal or state-listed bird species are known to occur at VICK. Nonetheless, information regarding the status of other high priority species (as identified in the East Gulf Coastal Plain bird conservation plan, the Endangered Species of Mississippi, and the USFWS Species of Conservation Concern [2002]) is needed to effectively structure park management for the continued preservation and enhancement of the park's avifauna.

**Additional surveys are needed:**

- **in the grassland and shrub-scrub areas of the park**
- **for shorebirds and waterbirds**
- **for High Priority forest species that may not be adequately surveyed with existing inventory effort (Swainson's Warbler, Kentucky Warbler, and Worm-eating Warbler)**
- **along stream corridors for high priority riparian species such as Louisiana Waterthrush**
- **at established forest point counts in winter**

Additionally, VICK is encouraged to:

- **verify other avian observational data collected in the park and enter into the appropriate database (NPSpecies, National Point Count Database, eBird (Cornell Laboratory of Ornithology [2002]; <http://www.ebird.org/about/index.jsp>), etc.)\***
- **standardize inventory and monitoring methodology to conform to NPS and/or FWS recommended standards (Fancy and Sauer 2000; Hunter 2000)**

**Monitoring:** The park does not have an active bird monitoring program, yet previous inventories have documented several high priority species that are of conservation concern in the East Gulf Coastal Plain. Efforts should be made to increase monitoring programs (through the NPS I&M Program), striving to conform to established NPS or FWS survey protocols. 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/mbcp/groups.htm>. Close coordination with adjacent BCR coordinators and the Mississippi PIF coordinators are 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:

- **continue to facilitate existing volunteer-based monitoring programs (raptor monitoring and Christmas Bird Count [CBC]) and enter data into the appropriate database(s) (NPSpecies, National Point Count Database, eBird, etc.)\***
- **assemble and verify additional records from recreational birding in the park\***
- **establish forest point counts along ecologically distinct or vegetative/habitat types that detect high priority species\***
- **improve raptor monitoring data collection and evaluation\***
- **evaluate mini-Breeding Bird Survey routes and adjust to increase detection of high priority species in the park\***
- **establish a migration monitoring program for Neotropical migrants in spring and fall\***
- **establish a monitoring program to determine the abundance and distribution wintering species \***
- **establish a monitoring program to detect changes in avian use and abundance in response to habitat management activities**
- **standardize inventory and 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 (USDI 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 VICK 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 VICK can greatly contribute to established habitat goals identified in the East Gulf Coastal Plain bird conservation plan.

The park is largely a second growth hardwood forest generated following clearing of most of the site during the Civil War. The forest is situated on the loess bluff habitat of the Mississippi River course. Loess bluff hardwood forests offer an extensive network of moist hardwood valleys and are extensively used by migrant and resident songbirds (Somershoe et al. 2003). Much of this habitat provides suitable area and vegetative cover for nesting landbirds, but could be improved through use of prescribed fire and forest thinning to restore the structural complexity of the forests in VICK that are required for many of the high priority bird species that occur there. Specific recommendations are to:

- **manage forests toward old growth conditions, implementing appropriate management techniques (e.g. selective thinning, prescribed fire, etc.) to develop desired understory structure for high priority species such as Swainson's Warbler, Worm-eating Warbler, Kentucky Warbler and other dense understory nesting species\***
- **protect the Loess bluff region, as this habitat is one of the few remaining protected loess bluff and associated hardwood forests in North America\***

- **convert a large portion of the cool season grasslands to native warm season grasses, and manage these with prescribed fire (see Threat Management below)\***
- **protect existing snag trees, where not identified as a safety hazard, as important to cavity nesting birds**
- **enhance or maintain water quality to support aquatic biota necessary to support existing riparian corridor nesting birds and birds that use the riparian corridor for foraging**
- **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 (pre-European settlement) landscape cover and determine feasibility of restoring landscape within the context of the park's enabling legislation**

**Threat Management:** Potentially the greatest impact to birds at VICK is urban development. VICK is one of the few protected natural areas in an urban environment. Habitat fragmentation in surrounding areas help identify VICK as an important conservation area for birds in the region. The park 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 local land trusts and private landowners to acquire and/or protect lands adjacent to the park**

One-third of the current park landscape consists of cool season grass fields that represent low-quality avian habitats due to their structure and typical management regime (e.g. frequent mowing). A gradual grassland restoration program from cool season grasses to native warm season grasses, coupled with shifts in the timing and types of management activities, would create important breeding habitat for high priority grassland nesting birds. The park is encouraged to:

- **convert a large portion of the cool season grass fields to native warm season grasses, and manage these with prescribed fire (and mowing as necessary) using an appropriate burning/mowing regime\***

- **restrict mowing of cool season grass fields between 1 April and 1 July to reduce nest destruction. Mowing is disruptive to nesting birds and recently mowed fields provide little structure for use as nesting substrate and less cover from predators**

The impact of exotic species on birds at VICK is largely unquantified, yet domestic dogs and feral cats occur in the park and may damage birds directly through predation or disturbance. The US Department of Agriculture, Agricultural and Plant Health Inspection Services (APHIS) Wildlife Services unit is available to provide feral cat reduction capability (see K. Godwin in Contacts). Park managers are encouraged to:

- **continue working 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\***
- **continue enforcing leash law in the park\***

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

Exotic plant species negatively affect habitat at VICK. Estimates place the number of exotic species in the park at 30% of the total number of plant species. The Gulf Coast Exotic Plant Management Team is currently working to remove the most invasive exotics from the park. Some planting of native hardwood species may occur. It is important to establish and continue inventory and monitoring for exotic plant species. The park is encouraged to:

- **continue the aggressive exotic plant management program\***

Additionally, the park is encouraged to:

- **prohibit installation of communications towers in the park**
- **assure protection of island/sandbar habitats in adjacent park parcel**

**Research:** the park is encouraged to:

- **list park needs and projects on Research Permit and Reporting System web site (RPRS)**
- develop contact with Gulf Coast Cooperative Ecosystem Studies Unit (CESU) at the Texas A&M in College Station, TX

- work cooperatively with research scientists and graduate students to evaluate the effects of current and proposed habitat management activities on avian use, abundance, reproductive success, and survival rates.

**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**

- **participate in International Migratory Bird Day (IMBD) events with a local partner (<http://birds.fws.gov/imbd.html>) such as the Mississippi Audubon Society\***
- **encourage development of outreach and educational programs to enhance visibility of bird conservation issues, which may include organized bird walks, owl prowls, and raptor surveys with the public and development of site bulletins or brochures depicting the bird life of VICK\***
- **encourage accurate documentation of bird sightings by visitors (see Cornell University's eBird monitoring program)\***

- **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 **MISSBIRD**, an electronic forum for bird sightings, discussion, and exchange of information in Mississippi (subscribe by sending message to [majordomo@listserv.olemiss.edu](mailto:majordomo@listserv.olemiss.edu) with the message, subscribe missbird)
- 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 Warren County and Vicksburg initiatives that could impact park resources**
- **continue to develop and strengthen relationship with the Jackson (Mississippi) Audubon society** (<http://dreamwater.org/jxnaudubon/index.html>) **and USGS-BRD to coordinate and conduct park bird conservation projects**
- **contact US Fish and Wildlife Service private lands biologists to discuss private landowner initiatives applicable to the area**
- **develop partnership with Mississippi Department of Wildlife, Fisheries and Parks**
- **contact the Lower Mississippi Valley 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 East Gulf Coastal Plain bird conservation plan**

**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. VICK 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:

- **increase 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. VICK is within a region which has an operational Joint Venture, the Lower Mississippi Valley Joint Venture.

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. VICK is encouraged to contact:

- **the Lower Mississippi River Ecosystem Team and consider participation in their planning efforts**

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 VICK are:

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## APPENDIX A

### HIGH PRIORITY SPECIES IN THE INTERIOR LOW PLATEAUS BIRD CONSERVATION REGION (from Table 2, Ford et al. 2000)

Priority breeding landbird species pool generated for the Interior Low Plateaus. Total scores and regional scores were developed from Partners in Flight criteria.

| Category | Species                             | Total<br>score | % of<br>pop. | AI | PT<br>Status <sup>1</sup> | Local |
|----------|-------------------------------------|----------------|--------------|----|---------------------------|-------|
| Ia       | Highest overall priority            |                |              |    |                           |       |
|          | Bewick's wren                       | 28             | 26.6         | 3  | 5                         | D     |
|          | Cerulean warbler                    | 28             | 7.8          | 3  | 5                         | B     |
| Ib       | High overall priority               |                |              |    |                           |       |
|          | Henslow's sparrow                   | 27             | 4.4          | 3  | 4                         | E     |
|          | Swainson's warbler                  | 26             | -            | 4  | 3                         | E     |
|          | Bachman's sparrow                   | 25             | -            | 2  | 3                         | E     |
|          | Blue-winged warbler                 | 24             | 7.8          | 3  | 5                         | B     |
|          | Prairie warbler                     | 24             | 12.2         | 4  | 5                         | B     |
|          | Worm-eating warbler                 | 24             | 7.9          | 3  | 3                         | B     |
|          | Louisiana waterthrush               | 23             | 9.1          | 4  | 3                         | B     |
|          | Whip-poor-will                      | 23             | 12.9         | 4  | 5                         | B     |
|          | Bell's vireo                        | 23             | 1.2          | 2  | 3                         | E     |
|          | Dickcissel                          | 23             | 1.0          | 3  | 5                         | B     |
|          | Wood thrush                         | 22             | 5.1          | 3  | 3                         | B     |
|          | Prothonotary warbler                | 22             | 2.4          | 3  | 3                         | B     |
|          | Kentucky warbler                    | 22             | 12.6         | 4  | 2                         | B     |
|          | Yellow-billed cuckoo                | 22             | 7.8          | 5  | 5                         | B     |
|          | Chimney swift                       | 22             | 10.1         | 5  | 5                         | B     |
|          | Eastern wood-pewee                  | 22             | 9.4          | 5  | 5                         | B     |
|          | Field Sparrow                       | 22             | 13.9         | 5  | 5                         | B     |
|          | Red-headed woodpecker               | 22             | 3.3          | 4  | 5                         | D     |
| IIa      | Physiographic area priority species |                |              |    |                           |       |
|          | Northern bobwhite                   | 21             | 6.1          | 4  | 5                         | R     |
|          | White-eyed vireo                    | 21             | 6.5          | 3  | 5                         | B     |
|          | Yellow-breasted chat                | 21             | 11.2         | 5  | 5                         | B     |
|          | Loggerhead shrike                   | 20             | -            | 3  | 5                         | R     |
|          | Black-and-white warbler             | 20             | -            | 3  | 5                         | B     |
|          | Grasshopper sparrow                 | 20             | -            | 3  | 5                         | B     |
|          | Ruby-throated hummingbird           | 19             | 6.9          | 5  | 3                         | B     |

| Category | Species   | Total score | % of pop. | AI | PT | Local Status <sup>1</sup> |
|----------|---|-------------|-----------|----|----|---------------------------|
|          | Eastern towhee  | 19          | 9.4       | 4  | 5  | R                         |
|          | Eastern meadowlark  | 19          | 7.7       | 5  | 5  | R                         |
| <hr/>    |   |             |           |    |    |                           |
| IIb      | Additional species: responsibilities for monitoring (> 10% BBS) |             |           |    |    |                           |
|          | Acadian flycatcher  | 21          | 10.9      | 4  | 2  | B                         |
|          | Orchard oriole  | 19          | 10.4      | 4  | 2  | B                         |
|          | Eastern bluebird  | 16          | 11.9      | 5  | 2  | R                         |
| <hr/>    |   |             |           |    |    |                           |
| III      | Additional species: global priority                             |             |           |    |    |                           |
|          | Chuck-will's-widow  | 21          | 3.1       | 3  | 4  | B                         |
|          | Bobolink  | 19          | -         | 2  | 3  | B                         |
| <hr/>    |   |             |           |    |    |                           |
| IV       | Federally listed species  |             |           |    |    |                           |
|          | Bald eagle  | 17          | -         | 2  | 3  | D                         |
| <hr/>    |   |             |           |    |    |                           |
| V        | Local, state, or regional interest species                      |             |           |    |    |                           |
|          | Mississippi kite  | 20          | -         | 2  | 3  | B                         |
|          | Chestnut-sided warbler  | 18          | -         | 2  | 3  | B                         |
|          | Lark sparrow  | 17          | -         | 2  | 4  | E                         |

1 – Local status refers to migratory status and is adapted from Texas Partners in Flight. In this category, B refers to birds that breed in the area and winter exclusively in the tropics, D refers to birds that breed and winter in the region but may involve different populations, E refers to species which are reaching distributional limits in the area, and R refers to resident, non-migratory birds.

## APPENDIX B

### HIGH PRIORITY HABITAT-SPECIES ASSEMBLAGES IN THE INTERIOR LOW PLATEAUS BIRD CONSERVATION REGION (from Table 2, Ford et al. 2000)

Table 3. Priority habitat-species suites generated for the Interior Low Plateaus, with habitat scores and action level.

| Habitat Species                                      | Habitat score <sup>1</sup> | TB | AI | PT | Action level <sup>2</sup> |
|--|----------------------------|----|----|----|---------------------------|
| Western mesophytic, oak-hickory, beech-maple forests |                            |    |    |    |                           |
| Yellow-billed cuckoo                                 | 13                         | 3  | 5  | 5  | III                       |
| Eastern wood-pewee                                   | 13                         | 3  | 5  | 5  | VI                        |
| Whip-poor-will                                       | 12                         | 3  | 4  | 5  | III                       |
| Downy woodpecker                                     | 12                         | 2  | 5  | 5  | VI                        |
| Northern flicker                                     | 12                         | 3  | 5  | 4  | VI                        |
| Cerulean warbler                                     | 12                         | 4  | 3  | 5  | II                        |
| Black-and-white warbler                              | 11                         | 3  | 3  | 5  | IV                        |
| Louisiana waterthrush                                | 11                         | 4  | 4  | 3  | III                       |
| Ruby-throated hummingbird                            | 10                         | 2  | 5  | 3  | IV                        |
| Wood thrush  | 10                         | 2  | 5  | 3  | IV                        |
| Worm-eating warbler                                  | 10                         | 4  | 3  | 3  | III                       |
| Kentucky warbler                                     | 10                         | 4  | 4  | 2  | III                       |
| Forested wetlands                                    |                            |    |    |    |                           |
| Yellow-billed cuckoo                                 | 13                         | 3  | 5  | 5  | III                       |
| Eastern wood-pewee                                   | 13                         | 3  | 5  | 5  | IV                        |
| Downy woodpecker                                     | 12                         | 2  | 5  | 5  | VI                        |
| Northern flicker                                     | 12                         | 3  | 5  | 4  | VI                        |
| Cerulean warbler                                     | 12                         | 4  | 3  | 5  | III                       |
| Black-and-white warbler                              | 11                         | 3  | 3  | 5  | III                       |
| Louisiana waterthrush                                | 11                         | 4  | 4  | 3  | III                       |
| Ruby-throated hummingbird                            | 10                         | 2  | 5  | 3  | III                       |
| Wood thrush  | 10                         | 4  | 3  | 3  | III                       |
| Prothonotary warbler                                 | 10                         | 4  | 3  | 3  | III                       |
| Kentucky warbler                                     | 10                         | 4  | 4  | 2  | III                       |
| Acadian flycatcher                                   | 9                          | 3  | 4  | 2  | III                       |
| Swainson's warbler                                   | 9                          | 4  | 2  | 3  | II                        |
| Bald eagle   | 8                          | 3  | 2  | 3  | VI                        |

| Habitat Species | Habitat score <sup>1</sup> | TB | AI | PT | Action level <sup>2</sup> |
|-----------------|----------------------------|----|----|----|---------------------------|
|-----------------|----------------------------|----|----|----|---------------------------|

Riparian

|                           |    |   |   |   |     |
|---------------------------|----|---|---|---|-----|
| Yellow-billed cuckoo      | 13 | 3 | 5 | 5 | III |
| Eastern wood-pewee        | 13 | 3 | 5 | 5 | VI  |
| Downy woodpecker          | 12 | 2 | 5 | 5 | VI  |
| Northern flicker          | 12 | 3 | 5 | 4 | VI  |
| White-eyed vireo          | 12 | 4 | 3 | 5 | III |
| Cerulean warbler          | 12 | 4 | 3 | 5 | II  |
| Eastern towhee            | 12 | 3 | 4 | 5 | III |
| Black-and-white warbler   | 11 | 3 | 3 | 5 | III |
| Louisiana waterthrush     | 11 | 4 | 4 | 3 | III |
| Indigo bunting            | 11 | 1 | 5 | 5 | VI  |
| Ruby-throated hummingbird | 10 | 2 | 5 | 3 | IV  |
| Wood thrush               | 10 | 2 | 5 | 3 | IV  |
| Prothonotary warbler      | 10 | 4 | 3 | 3 | III |
| Kentucky warbler          | 10 | 4 | 4 | 2 | III |
| Acadian flycatcher        | 9  | 3 | 4 | 2 | III |
| Swainson's warbler        | 9  | 4 | 2 | 3 | III |

Grassland

|                     |    |   |   |   |     |
|---------------------|----|---|---|---|-----|
| Eastern meadowlark  | 13 | 3 | 5 | 5 | VI  |
| Field sparrow       | 13 | 3 | 5 | 5 | VI  |
| Northern bobwhite   | 12 | 3 | 4 | 5 | III |
| Loggerhead shrike   | 12 | 4 | 3 | 5 | II  |
| Eastern towhee      | 12 | 3 | 4 | 5 | VI  |
| Grasshopper sparrow | 12 | 4 | 3 | 5 | III |
| Dickcissel          | 12 | 4 | 3 | 5 | III |
| Henslow's sparrow   | 10 | 4 | 3 | 3 | II  |
| Bobolink            | 9  | 4 | 2 | 3 | VI  |

Oak Savanna

|                       |    |   |   |   |    |
|-----------------------|----|---|---|---|----|
| Bewick's wren         | 13 | 4 | 4 | 5 | I  |
| Prairie warbler       | 13 | 4 | 4 | 5 | IV |
| Eastern wood-pewee    | 13 | 3 | 5 | 5 | VI |
| Downy woodpecker      | 12 | 2 | 5 | 5 | VI |
| Northern flicker      | 12 | 3 | 5 | 4 | VI |
| Orchard oriole        | 10 | 3 | 5 | 2 | VI |
| Eastern bluebird      | 9  | 2 | 5 | 2 | VI |
| Bachman's sparrow     | 9  | 4 | 2 | 3 | VI |
| Red-headed woodpecker | 7  | 3 | 3 | 1 | VI |

| Habitat Species                  | Habitat score <sup>1</sup> | TB | AI | PT | Action level <sup>2</sup> |
|----------------------------------|----------------------------|----|----|----|---------------------------|
| <b>Barrens/Glades/Old Fields</b> |                            |    |    |    |                           |
| Bewick's wren                    | 13                         | 4  | 4  | 5  | I                         |
| Prairie warbler                  | 13                         | 4  | 4  | 5  | IV                        |
| Yellow-breasted chat             | 13                         | 3  | 5  | 5  | IV                        |
| Field sparrow                    | 13                         | 3  | 5  | 5  | IV                        |
| Eastern meadowlark               | 13                         | 3  | 5  | 5  | VI                        |
| Northern bobwhite                | 12                         | 3  | 4  | 5  | III                       |
| Whip-poor-will                   | 12                         | 3  | 4  | 5  | III                       |
| Loggerhead shrike                | 12                         | 4  | 3  | 5  | II                        |
| White-eyed vireo                 | 12                         | 4  | 3  | 5  | IV                        |
| Blue-winged warbler              | 12                         | 4  | 3  | 5  | IV                        |
| Eastern towhee                   | 12                         | 3  | 4  | 5  | VI                        |
| Indigo bunting                   | 11                         | 1  | 5  | 5  | VI                        |
| Eastern bluebird                 | 9                          | 2  | 5  | 2  | VI                        |
| Bachman's sparrow                | 9                          | 4  | 2  | 3  | VI                        |
| Lark sparrow                     | 9                          | 3  | 2  | 4  | IV                        |

#### Short Rotation Pine

|                         |    |   |   |   |     |
|-------------------------|----|---|---|---|-----|
| Bewick's wren           | 13 | 4 | 4 | 5 | I   |
| Prairie warbler         | 13 | 4 | 4 | 5 | IV  |
| Yellow-breasted chat    | 13 | 3 | 5 | 5 | IV  |
| Field sparrow           | 13 | 3 | 5 | 5 | IV  |
| Northern bobwhite       | 12 | 3 | 4 | 5 | III |
| Northern flicker        | 12 | 3 | 5 | 4 | VI  |
| Blue-winged warbler     | 12 | 4 | 3 | 5 | IV  |
| Eastern towhee          | 12 | 3 | 4 | 5 | IV  |
| Black-and-white warbler | 11 | 3 | 5 | 3 | IV  |
| Indigo bunting          | 11 | 1 | 5 | 5 | VI  |
| Wood thrush             | 10 | 4 | 3 | 3 | IV  |
| Eastern bluebird        | 9  | 2 | 5 | 2 | VI  |
| Bachman's sparrow       | 9  | 4 | 2 | 3 | IV  |
| Chestnut-sided warbler  | 7  | 2 | 2 | 3 | VI  |

1 – Habitat scores are derived from TB (threats breeding), AI (area importance), and PT (population trend) scores, which are determined from CBO prioritization database.

2 - Action level refer to I – crisis recovery needed, II – immediate management or policy needed rangewide, III – management to reverse or stabilize populations, IV – long term planning is needed, V – investigations are needed to better define threats, VI – monitor population changes only.

## APPENDIX C

### ENDANGERED SPECIES OF MISSISSIPPI

MISSISSIPPI NATURAL HERITAGE PROGRAM

- 2003 -

| SPECIES NAME                         | COMMON NAME                | GLOBAL RANK | STATE RANK | FEDERAL STATUS |
|--------------------------------------|----------------------------|-------------|------------|----------------|
| <b>AVES</b>                          |                            |             |            |                |
| CAMPEPHILUS PRINCIPALIS              | IVORY-BILLED WOODPECKER    | GH          | SX         | LE             |
| CHARADRIUS ALEXANDRINUS TENUIROSTRIS | SOUTHEASTERN SNOWY PLOVER  | G4T3Q       | S2B,SZN    |                |
| CHARADRIUS MELODUS                   | PIPING PLOVER              | G3          | SZN        | (LE,LT)        |
| FALCO PEREGRINUS                     | PEREGRINE FALCON           | G4          | SZN        | (PS:LE)        |
| GRUS CANADENSIS PULLA                | MISSISSIPPI SANDHILL CRANE | G5T1        | S1         | LE             |
| HALIAEETUS LEUCOCEPHALUS             | BALD EAGLE                 | G4          | S1B,S2N    | (PS:LT,PDL)    |
| MYCTERIA AMERICANA                   | WOOD STORK                 | G4          | S1N        | (PS:LE)        |
| PELECANUS OCCIDENTALIS               | BROWN PELICAN              | G4          | S1N        | (PS:LE)        |
| PICOIDES BOREALIS                    | RED-COCKADED WOODPECKER    | G3          | S1         | LE             |
| STERNA ANTILLARUM ATHALASSOS         | INTERIOR LEAST TERN        | G4T2Q       | S3?B       | (PS:LE)        |
| THRYOMANES BEWICKII                  | BEWICK'S WREN              | G5          | S2S3B,SZN  |                |
| VERMIVORA BACHMANII                  | BACHMAN'S WARBLER          | GH          | SXB        | LE             |

## APPENDIX D

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

|   |                                |
|---|--------------------------------|
| Black-capped Petrel                                 | Le Conte's Sparrow             |
| Audubon's Shearwater                                | Nelson's Sharp-tailed Sparrow  |
| Little Blue Heron                                   | Saltmarsh Sharp-tailed Sparrow |
| Reddish Egret                                       | Seaside Sparrow                |
| Swallow-tailed Kite                                 | Painted Bunting                |
| Short-tailed Hawk                                   | Orchard Oriole                 |
| American Kestrel (resident <i>paulus</i> ssp. only) |                                |
| <i>Peregrine Falcon</i>                             |                                |
| 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                                   |                                |