FINAL DRAFT

Avian Conservation Implementation Plan
Blue Ridge Parkway

National Park Service
Southeast Region

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

BLRI Resource Management Staff, Appalachian Highlands Inventory
and Monitoring Network Staff, National Park Service
November 2004

TABLE OF CONTENTS

Introduction 3

Background 4

The North American Bird Conservation Initiative 4

The Southeastern Bird Conservation Initiative: National Park Service 5

Role of NPS in Avian Conservation 5

Park Description 8

Avian Resources of the Southern Blue Ridge 8

Avian Conservation in BLRI 11

Park Identified Needs for Avian Conservation 13

Coordination with Regional Conservation Initiatives 13
- North American Bird Conservation Initiative 13
- North American Waterfowl Management Plan 13
- Partners In Flight 13
- United States Shorebird Conservation Plan 15
- Waterbird Conservation for the Americas 15

Integration of NABCI Goals and Objectives into Park Planning and Operations: NABCI Implementation Recommendations 15
- Inventory 16
- Monitoring 17
- Habitat Restoration 18
- Threat Management 20
- Research 21
- Compliance 22
- Outreach 23
- Partners and Partnerships 24
- Funding Opportunities 24
- Contacts 27

Literature Cited 29

Appendixes
- High Priority Species in the Southern Blue Ridge Bird Conservation Region
- Southern Blue Ridge Habitat Conservation and Species Assemblages Priorities
- North Carolina and Virginia Rare Species List 200
- Virginia Threatened, Endangered, and Special Concern Species
- USFWS Species of Conservation Concern 2002 in the Appalachian Mountains (BCR28)

Introduction

This Avian Conservation Implementation Plan (ACIP) is provided to the staff at Blue Ridge Parkway (BLRI 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 for 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 the Waterbird Conservation for the Americas (WCA). For example, parks in the Appalachians and the Cumberland Plateau, including BLRI, 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 Appalachians 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 BLRI will be discussed and integrated as appropriate.

Information and data presented in the ACIP have been obtained from several sources: 1) interviews with BLRI staff 2) BLRI bird conservation partners 3) the PIF Southern Blue Ridge Bird Conservation Plan, Version 1.0 (Hunter et al. 1999), 4) peer reviewed bird conservation and management literature, 5) NPS databases, and 6) personal communications with bird conservation specialists throughout North America, especially in the southeastern United States. This plan has been reviewed by BLRI resource management staff and managers, Appalachian Highland Network Inventory and Monitoring (AHN I&M) staff, and bird conservation partners and approved by BLRI management. Optimally, this plan will be incorporated into the park's Resource Management Plan (USDI NPS 1992) and updated annually to reflect completed projects, newly identified needs, and shifts in bird conservation priorities shift in the region.

BLRI is not obligated to undertake any of the proposed actions in this plan. The plan is provided to offer guidance to BLRI to voluntarily support important park, regional, and perhaps national and international bird conservation projects for which BLRI 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 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). Together, the four bird conservation initiatives mentioned above, as well as several other local and regional partnerships, work together to collectively 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 between 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 BLRI 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, Responsibilities of Federal Agencies To Protect Migratory Birds (US Government 2000), 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. 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. 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 (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 includes 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).

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

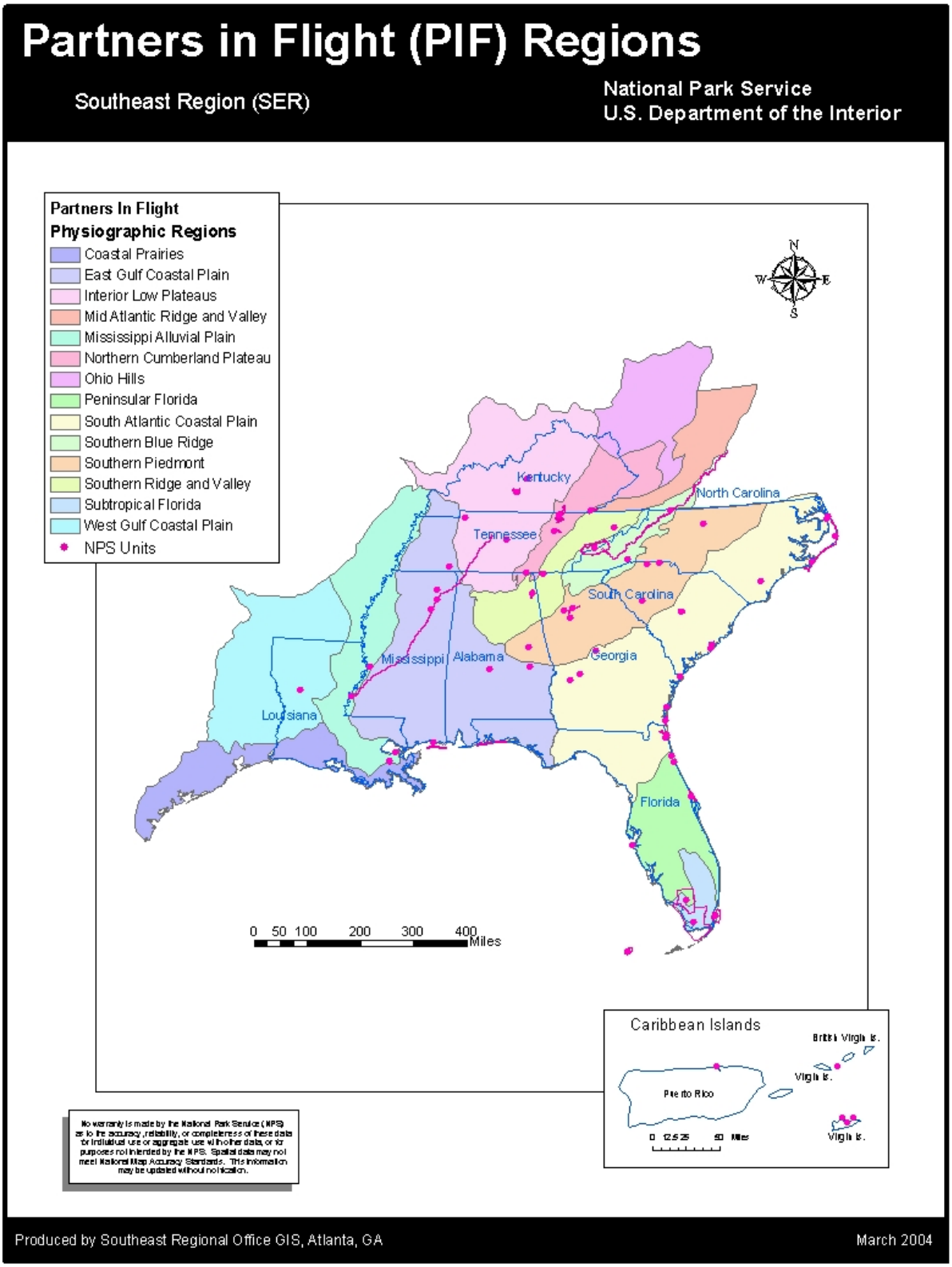
A unique single management unit, the Blue Ridge Parkway constitutes an extended linear ecological transect spanning portions of two states with the potential to support a greater diversity of native plant and animal species than most comparably sized but non-linear units of the National Park System in the Southeast. Designed as a scenic highway, the 750 km Blue Ridge Parkway encompasses 35,894 ha and ranges in elevation from 198 m to 1,844 m as it winds along the crest of the southern Appalachian Mountains. The Parkway connects Shenandoah and Great Smoky Mountains National Parks and passes through George Washington, Jefferson, Pisgah, and Nantahala National Forests. Authorized in the 1930's and taking over 50 years to complete, the Parkway provides tremendous scenic vistas while also protecting diverse high elevation sites along a latitudinal transect. BLRI is within the Partners in Flight Southern Blue Ridge physiographic area (See PIF map).

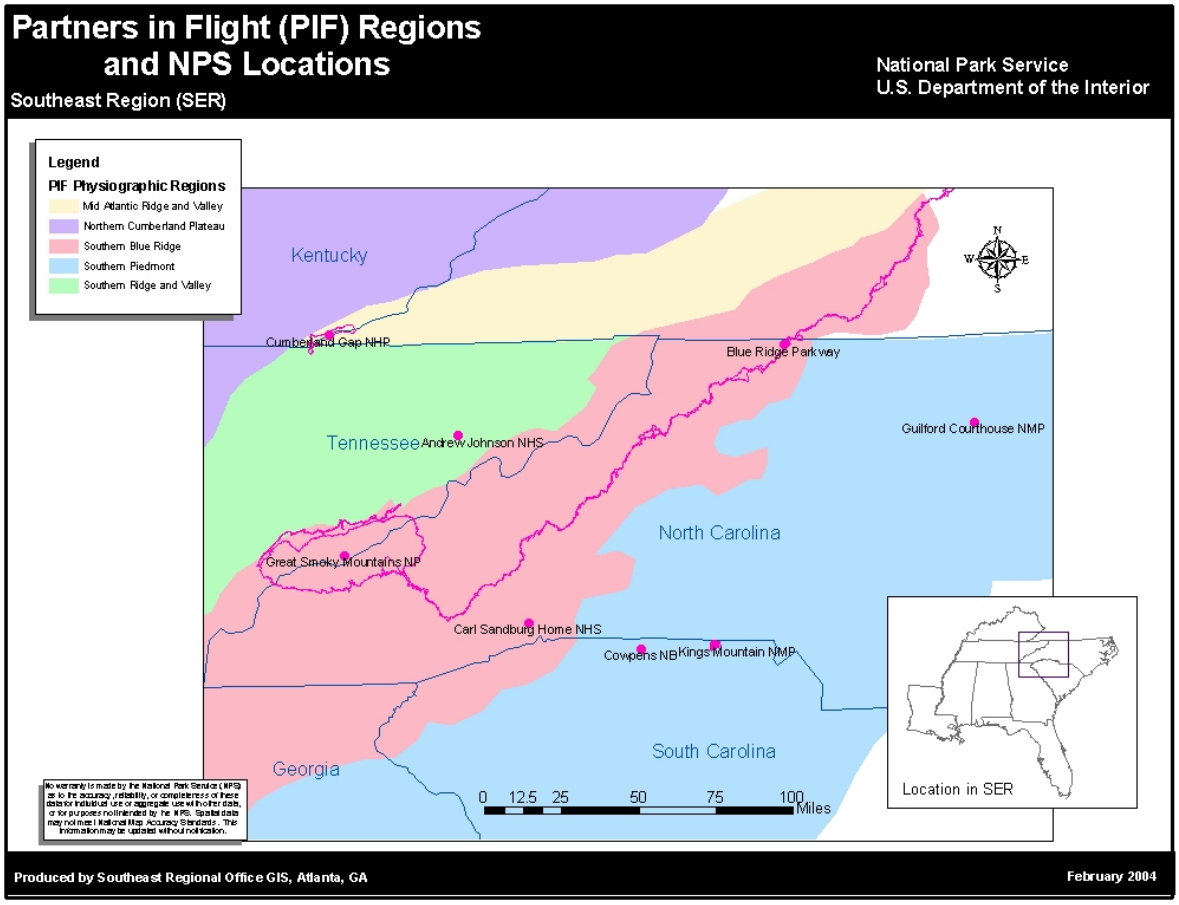
Lower elevations along the Parkway are dominated by oak and oak-pine forests with rich cove forests common in topographically sheltered areas. As elevation increases, northern hardwood species such as American beech, sugar maple, yellow buckeye and yellow birch become common. At the highest elevations, spruce-fir forest dominates, although much of the Fraser fir overstory has been eliminated by the balsam woolly adelgid. Interspersed among the forests are small unique habitats such as grassy balds, heath balds, mountain bogs, cliffs and rock outcrops, talus slopes and beech gaps. The Parkway also administers over 500 agricultural leases that involve hayfields, pastures, and some cultivated croplands (these leases are contractual arrangements with private landowners; close coordination with Parkway Resource Management staff is essential so that negotiations with the lessees can be done in advance of any work proposed to be conducted within the areas they lease from the Parkway).

Avian Resources of the Southern Blue Ridge

The Southern Blue Ridge Physiographic Area (SBR) includes the Central Blue Ridge, Southern Blue Ridge and Metasedimentary Mountains subsections of the Southern Appalachians, which covers portions of Northern Georgia, Western North Carolina, Northwestern South Carolina, Eastern Tennessee and Southern Virginia (see PIF and NPS location maps below). Topography consists of tall mountains with long broad ridges, steep slopes, deep ravines and wide intermountain valleys. The combinations of landform, elevation, and soils, along with the area's humid and temperate climate, make the Southern Blue Ridge one of the most biologically diverse areas in North America. The region supports large numbers of plant and animal species including the highest diversity of salamanders in the world, extremely rich forests with a tremendous diversity of tree and herbaceous species, and very high densities of breeding birds.

Six forest types and 3 general habitat categories have been identified as important bird habitats. These include spruce-fir, high-elevation (including northern) hardwoods, hemlock-white pine, cove (mixed mesophytic) hardwoods, Appalachian oak hardwoods,


Partners in Flight (PIF) Regions
Southeast Region (SER)
National Park Service
U.S. Department of the Interior
Partners In Flight
Physiographic Regions
Coastal Prairies
East Gulf Coastal Plain
Interior Low Plateaus
Mid Atlantic Ridge and Valley
Mississippi Alluvial Plain
Northern Cumberland Plateau
Ohio Hills
Peninsular Florida
South Atlantic Coastal Plain
Southern Blue Ridge
Southern Piedmont
Southern Ridge and Valley
Subtropical Florida
West Gulf Coastal Plain
NPS Units
N
W
E
S
Kentucky
North Carolina
Tennessee
South Carolina
Mississippi
Alabama
Georgia
Louisiana
Florida
0 50 100 200 300 400
Miles
Caribbean Islands
British Virgin Is.
Virgin Is.
Puerto Rico
Virgin Is.
0 12.5 25 50 Miles
No warranty is made by the National Park Service (NPS) as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS. Spatial data may not meet National Map Accuracy Standards. This information may be updated without notification.
Produced by Southeast Regional Office GIS, Atlanta, GA
March 2004



and southern yellow pine forests, as well as, early successional habitats, lowland riparian woodlands and urban/suburban “backyards”/rural woodlots. Bird species have been scored according to the Partners in Flight prioritization process and grouped into three broad suites associated with: (1) high-elevation forests, (2) habitat conditions associated with frequently disturbed forests, and (3) mature forests of all types.

Conservation opportunities and management recommendations have been described and suggested for each habitat type. Specific landscape habitat recommendations for the Southern Blue Ridge include:

1. protecting and restoring imperiled spruce-fir and Table mountain/pitch pine forest communities,
2. increasing the amount of late successional northern hardwoods, hemlock-white pine, cove hardwoods, southern yellow pine forests,
3. improving structural complexity for presently closed canopy, mid-successional stands in all forest types for understory and canopy dependent forest species,
4. protecting and restoring sensitive mountain wetlands and bald communities, and

5. increasing the amount of early successional, shrub scrub habitat in high-elevation (again including northern) hardwoods, Appalachian oak, and southern yellow pine forests, and (6) improving the condition and increasing the amount of lowland riparian habitats.

Over 155 bird species nest in the Southern Blue Ridge. Widespread and representative species include Dark-eyed Junco, Northern Cardinal, Black-throated Blue Warbler, Carolina Wren and Blue-headed Vireo. Appalachian populations of Bewick's Wren, Yellow-bellied Sapsucker, Northern Saw-whet owl, and Black-capped Chickadee, as well as Golden-winged, Swainson's and Cerulean warblers are rare or uncommon, have very specific habitat requirements and serve as umbrella, or focal, species for conservation planning efforts. Of these birds, a large proportion is Nearctic Neotropical migrants dependent on mature forest. Examples include Louisiana Waterthrush, Acadian Flycatcher, Veery, Ovenbird and Canada Warbler. Furthermore, species associated with frequently disturbed and/or early successional habitats like Prairie Warbler, Field Sparrow, and Northern Bobwhite have also suffered significant population declines in the recent past and warrant conservation attention.

The vast majority of bird conservation recommendations in the Southern Blue Ridge bird conservation plan can be integrated into existing NPS programs including habitat restoration, fire management, exotic species management, and interpretation and education programs (see Integration of NABCI Goals and Objectives into Park Planning and Operations later in this ACIP).

Avian Conservation in BLRI

Avian Biodiversity: BLRI has an avian inventory (*http://data2.itc.nps.gov/parks/blri/ppdocuments/BLRI%20Bird%20species%20list.pdf*) but does not have a bird checklist that is available for public use. Managers recognize the need to update the inventory and checklist and have plans to do so. Additionally, the park has plans to collect distribution and abundance data on the parks birds through the NPS I&M program. The parkway has documented 250 species within its boundaries and approximately 150 of these are nesting in the parkway. Records of birds in BLRI 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.

Inventory: The occurrence (presence/absence) portion of the avian inventory is considered complete according to NPS I&M goals. However, an effort is underway to update this information through the establishment of point counts in one (1) ha plots and special surveys to detect additional species, and obtain distribution and relative abundance measures. BLRI is one of four parks in the NPS Appalachian Highlands I&M Network for which a plan to conduct high priority inventory projects has been prepared (Nichols et al. 2000).

Threatened and Endangered Species: No Federally listed threatened or endangered species occur in BLRI. The Federally endangered Red-cockaded Woodpecker is extirpated from the park and region.

Several North Carolina Watchlist species occur on the parkway and are considered of high to extremely high conservation concern in North Carolina (Johns 2002). These species are Northern Saw-whet Owl, Yellow-bellied Sapsucker, Black-capped Chickadee, Red-breasted Nuthatch, Red Crossbill (Type II), Winter Wren, Golden-crowned Kinglet, Peregrine Falcon, Golden-winged Warbler, Ruffed Grouse, Field Sparrow, Wood Thrush, Blackburnian Warbler, Worm-eating Warbler, Canada Warbler, Cerulean Warbler, Swainson's Warbler, Acadian Flycatcher, Louisiana Waterthrush, Black-throated Blue Warbler, Kentucky Warbler, Hooded Warbler, and Northern Bobwhite.

Several high priority PIF species for the Southern Blue Ridge occur in BLRI (see below and Appendixes A and B). Prominent among these species are: Red Crossbill, Black-capped Chickadee, Northern Saw-whet Owl, Brown Creeper, Yellow-bellied Sapsucker, Golden-winged Warbler, Winter Wren, and many species of warblers and other neotropical migrants.

Monitoring: At least two monitoring projects are currently being conducted in the park.

- volunteers and staff of North Carolina Audubon are monitoring sections of the BLRI that are being nominated or are Important Bird Areas
- seasonal surveys of Yellow-bellied Sapsucker are being conducted in several locations along the parkway
- seven Christmas Bird Counts (CBC) include portions of the BLRI

Past monitoring efforts included the Monitoring Avian Productivity and Survivorship (MAPS) effort conducted for a period of six years and North Carolina Audubon's point count surveys to determine the avifauna of escarpments along the BLRI. Other non-park based monitoring efforts such as Breeding Bird Surveys and hawk watches are likely covering sections of the parkway, but little is known of current extent of these efforts. Other efforts the parkway contributed to were the Cerulean Warbler and Golden-winged Warbler Atlas Projects coordinated by the Cornell Laboratory of Ornithology (CLO).

Research: Scientific research is permitted within the park. Currently, research on the Southern Appalachian population of the Yellow-bellied Sapsucker is being conducted at Moses Cone and other areas along the parkway. No other active avian research is ongoing.

Outreach: The park is involved with International Migratory Bird Day (IMBD) at Grandfather Mountain in conjunction with the North Carolina Audubon Society. No other specific bird educational or outreach programs are conducted in the park.

Park Identified Needs for Avian Conservation

Staff at BLRI has identified several potential projects that would increase the knowledge of birds in the park and contribute to greater participation in regional bird conservation programs.

In conjunction with the NPS Inventory and Monitoring Program, additional inventory data on abundance and distribution of species that occupy the park are being gathered. Also, several potential monitoring programs for specific birds or groups of birds are being considered by the park within the framework of the I&M program. Other than projects within the I&M program, no projects are identified in the parks databases related to bird conservation.

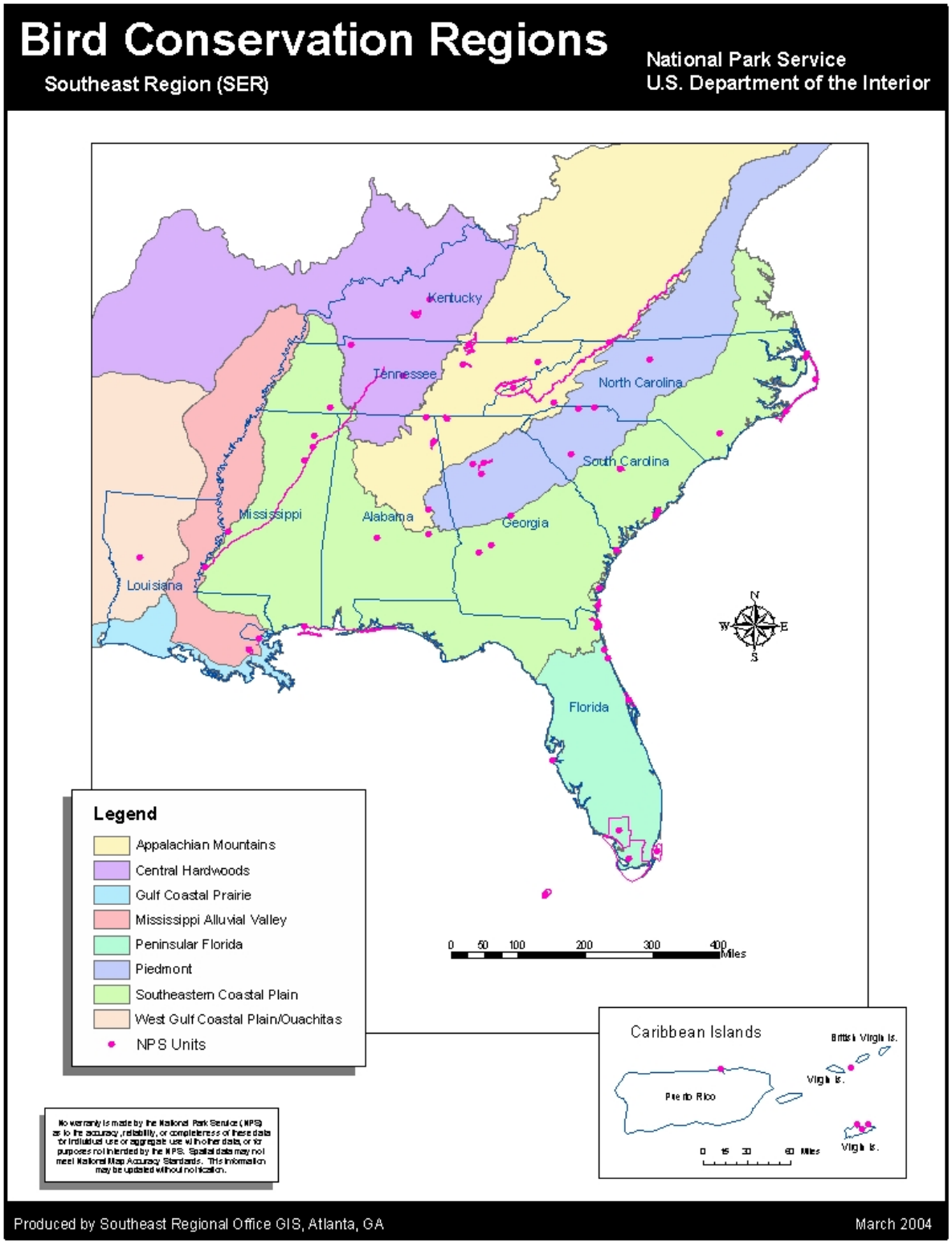
Coordination with Regional Conservation Initiatives

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, BLRI is within the NABCI Appalachian BCR which extends from New York to Georgia (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 Appalachian BCR does not have a designated coordinator; however, a bird conservation coordinator for the southern Appalachians that includes several PIF physiographic areas (Southern Blue Ridge, Southern Ridge and Valley, Northern Cumberland Plateau) has been established (see contacts below) and can provide valuable assistance to BLRI with implementation of aspects of this ACIP. Active bird conservation planning is underway in the adjacent Central Hardwoods BCR (see contacts below) 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 Southern Blue Ridge can be found in the draft bird conservation plan, previously submitted to the park. A revised version of this plan should be available in the near future. However, bird and habitat conservation priorities are not likely to be significantly changed. The park will receive updates of the plan as they are completed. The current plan identifies priority bird and habitat


Bird Conservation Regions
Southeast Region (SER)
National Park Service
U.S. Department of the Interior
Kentucky
Tennessee
North Carolina
South Carolina
Mississippi
Alabama
Georgia
Louisiana
Florida
N
W
E
S
Legend
Appalachian Mountains
Central Hardwoods
Gulf Coastal Prairie
Mississippi Alluvial Valley
Peninsular Florida
Piedmont
Southeastern Coastal Plain
West Gulf Coastal Plain/Ouachitas
NPS Units
0 50 100 200 300 400 Miles
Caribbean Islands
British Virgin Is.
Virgin Is.
Puerto Rico
Virgin Is.
0 15 30 60 Miles
No warranty is made by the National Park Service (NPS) as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by the NPS. Spatial data may not meet National Map Accuracy Standards. This information may be updated without notification.
Produced by Southeast Regional Office GIS, Atlanta, GA
March 2004

conservation goals that must be implemented in order to achieve bird conservation success in this region. BLRI 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 States of North Carolina and Virginia have a PIF coordinator and can be instrumental in assisting BLRI to implement recommendations identified in this ACIP and projects important to bird conservation relative to North Carolina's and Virginia's role in implementation of the 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 2003. Since BLRI has little habitat of regional importance to shorebird conservation, recommendations for shorebird conservation are limited.

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.nacwcp.org/21ContinentalPlan.htm). Since BLRI has little habitat of regional importance to waterfowl conservation, recommendations for shorebird conservation are limited.

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. This plan will focus recommendations on the North Carolina section of BLRI, but most recommendations will similarly apply and be relevant to bird communities and habitat conservation needs in Virginia. 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, participation in these efforts at some level could become mandatory with the completion of an MOU with the FWS regarding EO 13186 (US Government 2000). The MOU will establish a formal agreement between the FWS and the NPS 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 immediate funding for are marked with an asterisk (*****). These projects are those that are critical or high priority to the stabilization or improvement of a bird population or habitat in the planning region.

Inventory: The park has inventoried its bird fauna exceptionally well to date and is undertaking additional effort to document additional species, distribution, and relative abundance. These data will be obtained through a series of methods, including point count, road surveys, cliff surveys, and species specific surveys. This effort will allow the park to achieve a pre-established I&M standard goal of at least 90% of the species in any particular taxon to be documented; in this case, all bird species in all habitats throughout the year. Recently, the FWS has reviewed the bird inventory plan and protocols proposed for bird inventory at BLRI.

Although the park has a checklist forthcoming, additional inventories that determine occurrence and abundance during all seasons are needed to fully understand the avifauna of BLRI. Additional presence, distribution, and abundance surveys are desired:

- **along the parkway's agricultural lease areas, roadside grasslands, wetlands, and bogs***

- **for high priority forest and shrub-scrub species that may not be adequately surveyed with existing or planned inventory effort (Bewick's Wren, Golden-winged Warbler, Yellow-bellied Sapsucker, Northern Saw-whet Owl, etc.)**

- **along stream corridors for high priority riparian species such as Louisiana Waterthrush, Acadian Flycatcher, Spotted Sandpiper, and Wood Duck**

- for migrating fall raptors at several locations along the parkway

- at established forest point counts or other specific areas in migration and winter

Additionally, BLRI is encouraged to:

- **partner with Pisgah and Nantahala National Forests, State of North Carolina, Great Smoky Mountains National Park, and the Eastern Band of the Cherokee to coordinate area inventory efforts. In Virginia, the George Washington/Jefferson National Forest, and State of Virginia should be contacted to coordinate area inventory efforts.**

- **standardize inventory and monitoring methodology to conform to NPS and/or FWS recommended standards (Fancy and Sauer 2000, Hunter 2000)**

Monitoring: Efforts could be made to expand avian monitoring programs, striving to conform to established NPS or FWS surveys protocols (Appalachian Highlands are proposing to use monitoring recommendations proposed by Fancy and Sauer (2000) and Hunter (2000)). Close coordination with adjacent BCR coordinators, North Carolina and Virginia PIF coordinators, and national forests 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. These monitoring programs should be designed for long term operation. The park is encouraged to consider establishing permanent monitoring stations (e.g. point counts, etc.) in main habitat types to collect baseline 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.
Specific recommendations are to:

- **continue to monitor cliff nesting species such as Peregrine Falcon in cooperation with the State of North Carolina**

- **monitor high elevation early successional species such as Chestnut-sided Warbler, Golden-winged Warbler, Canada Warbler**

- **organize and coordinate existing and future hawk watches so that data can be obtained and used in park and regional bird conservation planning**

- **establish forest point counts in forests that are expected to decline over time due to introduced insects or pathogens, especially in Eastern Hemlock forests**

- **consider establishing a volunteer operated migration monitoring project for the parkway**

- **consider establishing a migration monitoring banding station along the parkway with local partners**

- **contact CBC coordinators to obtain lists of species that occur in the park and request coordinators to submit information to park**

- **partner with Pisgah and Nantahala National Forests, State of North Carolina, and Great Smoky Mountains National Park to coordinate area monitoring efforts, and with George Washington/Jefferson National Forests**

- **standardize inventory and monitoring methodology to conform to NPS and/or FWS recommended standards (Fancy and Sauer 2000, Hunter 2000)**

- consider establishment of several MAPS stations, especially in high elevation to determine productivity and survivorship of Southern Appalachian endemic subspecies of the High Peaks forests.

Habitat Restoration and Management: 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 BLRI 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. In an unmanaged regime, these lands often remain in a disturbance free successional cycle that often leads to poor quality of forest complexity and structure. Protection, restoration, and enhancement of habitats in BLRI can greatly contribute to established habitat goals identified in the Southern Blue Ridge bird conservation plan.

The park is largely an upland mixed hardwood pine forest with oak and pine dominating the plateau shelf, mixed mesophytic species occurring along stream banks and gorges and riparian species along river courses. 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 BLRI that are required for many of the high priority bird species that occur there. Specific recommendations are to:

- **work toward increasing optimizing habitat structure for forest interior birds that utilize dense understory structure (Swainson's Warbler, Hooded Warbler, Kentucky Warbler) and other dense understory nesting wood warblers through prescribed fire, and potentially other forest management practices. In particular, cooperate with Pisgah and Nantahala National Forests and the North Carolina Wildlife Resources Commission to conduct joint prescribed fires operations for mutual benefit***

- **manage a portion of the closed canopy forests toward old growth conditions, implementing appropriate management techniques to develop desired understory structure for high priority birds***

- **identify appropriate habitat management, enhancement, and restoration goals with the use of prescribed fire, in conjunction with the new Fire Management Plan**

- **conduct prescribed fire in areas where Southern Pine Beetle has created forest gaps to maintain early successional habitats***

- **participate in effort to restore high elevation spruce-fir forests in areas where these forests historically occurred***

- **conduct a short term experiment to convert or modify agricultural leases and roadside clearings toward native vegetation for enhancement of early successional grassland/shrub-scrub species***

- **develop wetlands management plan in park to provide direction for better managing wetland species such as Alder and Least Flycatchers, and other wetland species***
- **improve timing of existing hay leases to allow grassland species to fledge first brood (May to July)**

- **manage a portion of the agricultural leases toward native grass/shrub/scrub habitat with periodic fire or mowing**

- **manage cliff areas that are potentially impacted by rock climbers and other recreational activity**

- **protect existing snag trees, where not identified as a safety hazard, as important to cavity nesting birds**

- **allow beaver colonization in areas that will not affect roadways or flood property of high value, or private property (unless landowner agrees to allow colonization)**

- **assess historic landscape cover and determine feasibility of restoring landscape within the context of the park's enabling legislation, especially high elevation balds and wetlands**

- **document all major habitat management activities, including information such as location (e.g. on map or with 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**

Threat Management: Exotic species are a current and future threat to habitat and species composition along the Parkway. The introduced balsam woolly adelgid has significantly reduced the Fraser Fir habitat in BLRI. However, this loss of fir has not been related to changes in bird species but fir loss along with other high elevation habitat impacts throughout the region are a primary reason many high elevation birds in the Southern Blue Ridge are considered high conservation priorities. Also, the introduced hemlock woolly adelgid has recently been discovered in the park and if not effectively managed, has the potential to dramatically reduce the Eastern Hemlock component of the BLRI. This would likely lead to some significant changes in bird composition and status of many birds that use these forests.

Feral hog populations in the Heintooga Road area are beginning to enter the park. Park managers should cooperate with Great Smoky Mountains National Park (GRSM) managers and consider various methods to reduce the hog population before habitats are impacted. The US Department of Agriculture, Agricultural and Plant Health Inspection Services (APHIS) Wildlife Services unit is available to provide feral hog reduction capability (see contacts). Additionally, feral hog reduction advice is available through other NPS units that have experienced feral hog reduction programs, especially GRSM.

Although no significant exotic plants species are negatively impacting habitat at BLRI, it is important to establish and continue inventory and monitoring for exotic plant species. If necessary, consult with regional Exotic Plant Management Team (EPMT) to remove exotic plant species. Other suggestions are to:

- **implement recommendations from Northern Saw-whet Owl research to reduce disturbance to owls in campgrounds and visitor use areas where Northern Saw-whet Owls are known to nest**

- **reduce feral cats in areas adjacent to urban areas**

- **cooperate with staff of Great Smoky Mountains National Park to reduce wild hogs in Heintooga area**

- **assess potential threat of various introduced insect pests on forest habitat and implement appropriate actions to preserve habitat, particularly Eastern Hemlock**

- **continue to identify and manage introduced plant species that negatively affect native plants and habitat quality**

- **avoid construction of towers of any kind on ridge tops**

- **hire additional law enforcement officers to monitor Peregrine Falcon nest areas, Northern Saw-whet Owl nest areas adjacent to visitor use areas**

Research: The park is encouraged to:

- **determine feasibility of reintroduction of Black-capped Chickadee to portions of the Black and Craggy Mountains and follow with appropriate action***

- **evaluate the potential to restore grasslands and grassland bird communities to certain areas of the parkway currently under agricultural lease, especially where adjacent to park maintained vistas, or privately owned and unleased grassland or bald habitats*. Species such as Vesper**

Sparrow, Bobolink, Dickcissel, Savannah Sparrow, Grasshopper Sparrow, and Horned Lark are all species for which little is known in mountain grasslands in the region

- **continue to work with North Carolina Audubon to develop a management plan for grassland birds in Watagua County area**

- **continue with Northern Saw-whet Owl disturbances studies***

- **evaluate relationship of spruce-fir bird communities and presence and potential restoration of spruce-fir forest**

- **evaluate long term research opportunities to determine breeding productivity of forest and grassland birds**

- **establish migration monitoring using point counts or MAPS stations to determine usage of parkway by migrating neotropical migrants**

- 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 EO 13186 (US Government 2000) 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 (General Management Plans, Resource Management Plans, Fire Management Plans, NEPA, etc.)**

- **consider this plan as an integral part of the developing BLRI Strategic Plan**

- park staff to attend USFWS training on implementation of EO 13186 (US Government 2000) 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).

Outreach: The park is encouraged to:

- **complete the bird checklist for public availability**

- **consider implementation of organized bird walks, owl prowls, and raptor surveys with the public and encourage accurate documentation and reporting from these and random outings by visitors (see Cornell University's eBird monitoring program, 2003**; http://www.ebird.org/content/**)**

- **participate in International Migratory Bird Day (IMBD) events with a local partner** (http://birds.fws.gov/imbd.html) **such as the Cradle of Forestry**

- **continue participation in the Grandfather Mountain IMBD events**

- **continue partnering with North Carolina Audubon to train seasonal naturalists in bird identification**

- **offer NPS sponsored bird walks throughout the year**

- **attend North Carolina and Virginia's Partners in Flight meetings**

- consider hosting a regional meeting that features implementation of this plan

- park interpretation/education staff are encouraged to attend USFWS training on Migratory Bird Education at NCTC

- support bird conservation by serving shade-grown coffees at meetings, events, and the office buildings in the park (http://www.americanbirding.org/programs/conssbcof3.htm)

- subscribe to Carolinabirds, an electronic forum for learning about matters of interest regarding birds of North Carolina. Many reports often cover birds in the Southern Blue Ridge and the Blue Ridge Parkway.

- 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:

- **partner with the Conservation Trust of North Carolina to identify high value adjacent lands for acquisition or protection**

- **continue to develop partnership with North Carolina Audubon for implementation of common programs, such as Important Bird Area identification, inventory and monitoring efforts, research, etc.**

- **contact US Fish and Wildlife Service private lands biologists to discuss private landowner initiatives applicable to the area, especially for protection of adjacent private lands. Several private landowner programs could be implemented that would serve to protect areas adjacent to BLRI and potentially improve water and habitat quality in the vicinity**

- **develop partnerships with Pisgah and Nantahala National Forests, States of North Carolina and Virginia, North Carolina Audubon, the Eastern Band of the Cherokee, and private landowners**

- **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 and in this ACIP**

- contact and partner with the local chapter of the Carolina Bird Club (http://www.carolinabirdclub.org/) or the Elisha Mitchell Audubon Society (http://www.main.nc.us/emas/) throughout the geographic area of the park. These groups could be active partners in BLRI's bird conservation program

- 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 to protect important habitats and landscapes adjacent to park.

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. BLRI 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.

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, PIF Coordinator, to learn how this program might be applicable to implementation of this plan, and other park wetland issues. BLRI is within the Atlantic Coast Joint Venture (ACJV) and staff of this program can offer opportunity guidance and assistance in developing and submitting proposals appropriate for this funding sources.

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.

One 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. Primary contacts for BLRI are:

Bird Conservation

USFWS

Keith Watson
Asheville, NC 28801
828-350-8228
Keith_Watson@fws.gov

Anita Goetz
Private Lands Biologist
Asheville, NC
828-258-3939 x228
Anita_Goetz@fws.gov

Dean Demarest
US Fish and Wildlife Service
Atlanta, GA
404-679-7371
dean_demarest@fws.gov

National Park Service

Robert Emmott
Appalachian Highlands Network Coordinator
National Park Service
828-271-4779 x312
Robert_Emmott@nps.gov

Nora Murdock
Appalachian Highlands Network Ecologist
National Park Service
828 271-4779 x312
Nora_Murdock@nps.gov

Toby Obenauer
Blue Ridge Parkway
Exotic Plant Management Team
828-350-3821 ext. 213
Toby_Obenauer@nps.gov

Raymond Albright
Southern Appalachian Mountains CESU
Department of Forestry, Wildlife and Fisheries
University of Tennessee
Knoxville, TN
Phone: (865) 974-8443
Ray_Albright@nps.gov

North Carolina

Mark E. Johns
North Carolina Partners In Flight Biologist
919-852-5124
johnsme@mindspring.com

Chris McGrath
North Carolina Wildlife Resources Commission
828-683-0671
mcgrathc1@mindspring.com

Others

Matthew Rowe
Appalachian State University
Boone, NC
(828) 262-2676
rowemp@appstate.edu

Fred Alsop
East Tennessee State University
Johnson City, TN
423-439-6838
ALSOPF@mail.etsu.edu

Ted Simons
North Carolina State University
Raleigh, NC
919-515-2689
tsimons@ncsu.edu

John Gerwin
North Carolina State Museum of Natural Sciences
Raleigh, NC
(919) 715-600
John.Gerwin@ncmail.net

Curtis Smalling
Mountain Avian Research Institute
Boone, NC
828-265-0198
csmalling@audubon.org

Simon Thompson
Ventures Birding and Nature Tours
PO Box 1095
Skyland, NC 28776
828-253-4247
Travel@birdventures.com

John F. Heisterberg
USDA APHIS Wildlife Services
North Carolina
(919-786-4480)

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

LITERATURE CITED

Barden, L.S. 1997. Historic Prairie in the Piedmont of North and South Carolina, USA. Natural Areas Journal 17:149-152.

Brawn, J.D., S.K. Robinson and F. R. Thomson III. 2001. The Role of Disturbance in the Ecology and Conservation of Birds. Annu. Rev. Ecol. Syst. 32:251-76.

Cornell University. 2003. eBird Monitoring Program. Laboratory of Ornithology, Cornell University, Ithaca, NY.

Fancy, S. and J. Sauer. 2000. Recommended Methods for Inventorying and Monitoring Landbirds in National Parks. National Park Service, Ft. Collins. 13p.

Hunter, C. 2000. Bird Population Survey, Inventory, and Monitoring Standards for National Wildlife Refuges and Partners in the Southeastern U.S. USFWS. January 2002. 49p.

Hunter, C., R. Katz, D. Pashley, and R. Ford. 1999. Partners in Flight Bird Conservation Plan for The Southern Blue Ridge (Physiographic Area 23). American Bird Conservancy, The Plains, VA. 101p.

Hunter C., D. Buehler, R. Canterbury, J. Confer, and P. Hamel. 2001. Conservation of disturbance-dependent birds in eastern North America. Wildlife Society Bulletin 29:440-455.

Johns, M.E. 2002. North Carolina Bird Species Assessment. North Carolina Wildlife Resources Commission. 15p.

Nichols, B., M. Jenkins, J. Rock, K. Langdon, and T. Leibfreid. 2000. Study Plan for Vertebrate and Vascular Plant Inventories. Appalachian Highlands Network and Cumberland/Piedmont Network. National Park Service. 80pp.

North American Wetlands Conservation Act. 1989. 103 Stat. 1968; 16 U.S.C. 4401-4412. Public Law 101-233, enacted December 13, 1989.

North Carolina Wildlife Resources Commission. 2003. Partners in Flight web site. http://faculty.ncwc.edu/mbrooks/pif/.

Sauer, J.R., J.E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966-1999. Version 98.1, U.S.G.S. Patuxent Wildlife Research Center, Laurel, MD.

Teague, B. and A. R. Hess. 1992. Resource Management Plan, Blue Ridge Parkway, 200 p.

USDI, Geological Survey. 2003. National Point Count Database. Biological Research Division, Patuxent Wildlife Research Station, Patuxent, MD.

USDI National Park Service. 1916. Organic Act. 39 Stat. 535 16 U.S.C. 1-4, enacted August 25, 1916.

USDI, National Park Service. 2001. National Park Service Management Policies. 2001. December 2000. 137p.

USDI National Park Service. 2002. Park Flight and Migratory Bird Conservation. National Park Service, Natural Resource Program Center. 2p.

US Government. 2000. Presidential Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, January 2000.

US NABCI Committee. 2000. The North American Bird Conservation Initiative in the United States: A Vision of American Bird Conservation. U.S. NABCI Committee, September 2000. 29p.

Williams, G.W. 2002. Aboriginal Use of Fire: Are There Any “Natural” Plant Communities? USDA Forest Service, Washington D.C., June 2002. 18p.

APPENDIX A

HIGH PRIORITY SPECIES IN THE SOUTHERN BLUE RIDGE BIRD CONSERVATION REGION (from Hunter et al. 1999)

Table 1. Entry criteria for identifying priority species, with indications for why the species is considered to be of conservation interest (definitions below).

Priority Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Percent of BBS Population
Ia.	Bewick's Wren Appal. subsp.	35	5	5	9.1
	Yellow-bellied Sapsucker S. App. pop.	33	5	5	
	Northern Saw-whet Owl S. App. pop.	32	5	4	
	Red-breasted Nuthatch S. App. pop.	30	5	4	
	Brown Creeper S. App. pop.	30	5	4	
	Winter Wren S. App. Pop.	30	5	4	
	Golden-crowned Kinglet S. App. pop.	30	5	4	
	Golden-winged Warbler	30	4	5	2.3
	Red Crossbill Types I & 2	30	5	4	
	Swainson's Warbler	29	4	4	3.1
	Black-capped Chickadee S. App. pop.	28	5	5	
Ib.	Black-throated Blue Warbler	26	5	4	10.9
	Cerulean Warbler	26	3	3	
	Louisiana Waterthrush	26	5	5	5.7
	Acadian Flycatcher	26	5	5	5.0
	Worm-eating Warbler	25	5	2	7.9
	Wood Thrush	24	4	5	2.3
	Kentucky Warbler	24	3	5	1.3
	Yellow-throated Vireo	23	4	5	
	Brown-headed Nuthatch (GA)	23	3	3	

Table 1 (continued).

Priority Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Percent of BBS Population
					Ib. (cont.)
	Blackburnian Warbler	23	4	4	
	Canada Warbler	23	5	3	3.2
	Ruffed Grouse	22	3	5	
	Eastern Wood-Pewee	22	5	5	
	Blue-winged Warbler	22	3	3	
	Chestnut-sided Warbler	22	4	5	
	Prairie Warbler	22	3	4	
	Yellow-throated Warbler	22	5	3	7.0
	Black-and-white Warbler	22	5	5	
	Hooded Warbler	22	5	2	7.1
II.	Peregrine Falcon	21	3	5	
	Chimney Swift	21	4	4	
	Black-throated Green Warbler	21	5	3	
	Scarlet Tanager	21	5	4	
	Northern Bobwhite	20	3	5	
	Ruby-throated Hummingbird	20	4	5	
	Ovenbird	20	4	4	
	Field Sparrow	20	3	5	
	Eastern Phoebe	19	5	4	
	Carolina Wren	19	4	5	
	Blue-gray Gnatcatcher	19	5	5	
	Gray Catbird	19	4	5	
	Yellow-breasted Chat	19	3	5	
III.	Prothonotary Warbler	21	2	3	
	Chuck-will's-widow	19	2	3	
	Red-headed Woodpecker	18	2	3	
IV.	Downy Woodpecker	18	5	5	
	Indigo Bunting	18	5	5	
	Northern Flicker	17	4	5	
	Chipping Sparrow	17	4	5	
	Blue Jay	16	4	5	5.2
	Barn Swallow	14	4	5	
V.	Blue-headed Vireo	19	5	2	5.7

Table 1 (continued).

Priority Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Percent of BBS Population
VI.	NONE				
VII.	Olive-sided Flycatcher	21	2	5	
	Rose-breasted Grosbeak	21	3	4	
	Black-billed Cuckoo	20	3	4	
	Veery	19	4	3	
	Warbling Vireo	19	2	4	
	Northern Parula	19	5	2	
	Baltimore Oriole	19	2	4	
	Vesper Sparrow	17	2	5	
	Alder Flycatcher	16	2	3	
	Dark-eyed Junco	15	4	3	
	Common Raven	11	2	1	

I. Species with total score above 22. Ordered by total score. Consider deleting species with AI $\leq$ 2 confirmed to be of peripheral occurrence and not of local conservation interest, but retain species potentially undersampled by BBS or known to have greatly declined during this century. Divide species scoring 28+ as highest priority species (I a), with 22-27 as high priority species (I b).

II. Slightly lower score total 19-21 with PT+AI=8+. Ordered by total score. These are moderate priority species.

III. Add WatchList species (Global scores, minus AI, of 18+), not already listed in either I or II, with AI=2+. Order by total score. Consider deleting species with AI=2 if confirmed to be of peripheral occurrence and not of local conservation interest, but retain if a local population is viable and/or manageable.

IV. Abundant but declining species, AI+PT=9 or 10, not already listed in I, II, or III. Ordered by total score. Among Southeast physiographic areas, Northern Flickers, Common Yellowthroats, Indigo Buntings, and Chipping Sparrows are frequently included under this criterion and though still abundant and widespread these species probably deserve more monitoring attention at a regional or national level. In a number of physiographic areas, however, species meeting this criterion include starlings, grackles, cowbirds, blue jays, and house sparrows, species for which conservation interest is only on how their populations negatively effect higher priority species.

V. High percent of Breeding Bird Survey (BBS) population (>5% in physiographic areas <200,000 km^2, >10% in physiographic areas >200,000 km^2) if not already listed above. Ordered from highest to lowest percentages, also include species with exceptionally high relative abundance (detection rates on BBS routes). These are likely secure species, but are still designated "High Responsibility" within physiographic area.

VI. Federal listed species if not already included above. Appropriate legal obligations to protect and monitor these species still apply. Only Bald Eagle meets this criterion in some Southeast physiographic areas.

VII. Local interest species includes game or nongame species identified by State Working Groups. Also, may include species often meeting criteria for I or II within other physiographic areas and therefore of regional interest for monitoring throughout the Southeast. These are low priority species within physiographic area, but may be more important within one or more States.

Include for each species: Total Score, AI, PT, and, when data available, percent of BBS population.

APPENDIX B

SOUTHERN BLUE RIDGE
BIRD ASSEMBLAGES AND HABITAT CONSERVATION PRIORITIES
(from Table 2 Hunter et al. 1999)

Species suites for focusing conservation action. Once species are grouped into the above tiers (Appendix A), then habitats and species suites are identified to look for patterns within and among habitats and species suites, within each physiographic area. Species are drawn from tiers I, II, and VII in Table 1. Overall level of conservation action needed is identified (as defined at end of table).

Species Suite Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Overall Conservation Action
<u>High Peaks Forest</u>					
Ia.	Northern Saw-whet Owl S. App. pop.	32	5	4	I
	Red-breasted Nuthatch S. App. pop.	30	5	4	V
	Brown Creeper S. App. pop.	30	5	4	III
	Winter Wren S. App. Pop.	30	5	4	V
	Golden-crowned Kinglet S. App. pop.	30	5	4	V
	Red Crossbill Type I	30	5	4	III
	Black-capped Chickadee S. App. pop.	28	5	5	II
VII.	Olive-sided Flycatcher	21	2	5	II
<u>Disturbed Forest</u>					
Ia.	Bewick's Wren Appal. subsp.	35	5	5	I
	Yellow-bellied Sapsucker S. App. pop.	33	5	5	I
	Red-cockaded Woodpecker	30	2	5	II
	Golden-winged Warbler	30	4	5	II

Table 2 (cont.).

Species Suite Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Overall Conservation Action
Disturbed Forest (cont.)					
Ib.	Bachman's Sparrow	25	2	3	II
	Brown-headed Nuthatch (GA)	23	3	3	V
	Ruffed Grouse	22	3	5	III
	Chestnut-sided Warbler	22	4	5	IV
	Prairie Warbler	22	3	4	IV
II.	Peregrine Falcon	21	3	5	II
	Northern Bobwhite	20	3	5	III
	Field Sparrow	20	3	5	V
	Gray Catbird	19	4	5	V
	Yellow-breasted Chat	19	3	5	V
VII.	Vesper Sparrow	17	2	5	V
	Alder Flycatcher	16	2	3	V
	Common Raven	11	2	1	VI
Mature Forest					
Ia.					
	Swainson's Warbler	29	4	4	III
Ib.	Black-throated Blue Warbler	26	5	4	III
	Cerulean Warbler	26	3	3	II
	Louisiana Waterthrush	26	5	5	V
	Acadian Flycatcher	26	5	5	V
	Worm-eating Warbler	25	5	2	VI
	Wood Thrush	24	4	5	IV
	Kentucky Warbler	24	3	5	V
	Yellow-throated Vireo	23	4	5	V
	Blackburnian Warbler	23	4	4	III
	Canada Warbler	23	5	3	IV
	Eastern Wood-Pewee	22	5	5	IV
	Yellow-throated Warbler	22	5	3	IV
	Black-and-white Warbler	22	5	5	IV
	Hooded Warbler	22	5	2	VI

Table 2 (cont.).

Species Suite Entry Criteria	Species	Total PIF Priority Score	Concern Scores: Area Importance	Concern Scores: Population Trend	Overall Conservation Action
Mature Forest (cont.)					
II.	Chimney Swift	21	4	4	III
	Black-throated Green Warbler	21	5	3	IV
	Scarlet Tanager	21	5	4	IV
	Ruby-throated Hummingbird	20	4	5	V
	Ovenbird	20	4	4	IV
	Eastern Phoebe	19	5	4	IV
	Carolina Wren	19	4	5	V
	Blue-gray Gnatcatcher	19	5	5	V
VII.	Rose-breasted Grosbeak	21	3	4	V
	Black-billed Cuckoo	20	3	4	V
	Veery	19	4	3	VI
	Warbling Vireo	19	2	4	V
	Northern Parula	19	5	2	VI
	Baltimore Oriole	19	2	4	V
	Dark-eyed Junco	15	4	3	IV

Overall Conservation Action:

I. Crisis recovery(*e.g.*, many but not all endangered species or otherwise non-listed but extremely vulnerable species).

II. Immediate management and/or policy action needed for population stabilization, part of rangewide effort (*e.g.*, Bachman's Sparrow, Golden-winged Warbler, Cerulean Warbler).

III. Management to reverse, stabilize, or increase populations in the physiographic area (*e.g.*, Brown-headed Nuthatch, Painted Bunting, Bicknell's Thrush).

IV. Long-term planning and responsibility in the physiographic area (*e.g.*, monitoring species with high percent of BBS population, with unclear or stable population trends).

V. Investigations (Survey/Inventory or Research) to better determine status or level of threat (*e.g.*, high scoring but poorly monitored species such as Swallow-tailed Kite, Henslow's Sparrow, Swainson's Warbler, Southern Appalachian populations of some spruce-fir forest birds).

VI. Monitor potentially encouraging population trends or expansions (*e.g.*, Swainson's Hawk, Prothonotary Warbler, Worm-eating Warbler).

APPENDIX C

NATURAL HERITAGE PROGRAM LIST OF THE RARE BIRDS OF NORTH CAROLINA

Scientific Name	Common Name	Status		Rank	
Province: Habitat (Counties of occurrence)		N.C.	U.S.	N.C.	Global
	BIRDS				
Accipiter striatus	Sharp-shinned Hawk	SR	-	S2B,S4N	G5
MPS: forests and woodlands (for nesting) [breeding evidence only] (Avery, Mitchell+, Orange*, Watauga*, Yancey*)					
Aegolius acadicus pop 1	Northern Saw-whet Owl - Southern Appalachian population	T	FSC	S2B,S2N	G5T?
M: spruce-fir forests or mixed hardwood/spruce forests (for nesting) [breeding season only] (Avery, Buncombe, Graham, Haywood, Jackson, Macon, Mitchell, Swain, Transylvania, Watauga, Yancey)					
Aimophila aestivalis	Bachman's Sparrow	SC	FSC	S3B,S2N	G3
PSC: open longleaf pine forests, old fields [breeding season only] (Bladen, Brunswick, Buncombe*, Carteret, Chatham, Columbus, Craven, Cumberland, Halifax*, Harnett, Hoke, Jones, Macon*, Moore, Onslow, Pender, Richmond, Robeson, Sampson, Scotland, Wake*, Warren)					
Ammodramus henslowii	Henslow's Sparrow	SR	FSC	S2B,S1N	G4
C: clearcut pocosins and other damp weedy fields [breeding season only] (Beaufort, Bertie, Brunswick, Carteret, Columbus, Edgecombe, Gates, Martin, Onslow, Pender, Pitt, Wilson)					
Anhinga anhinga	Anhinga	SR	-	S2B,SZN	G5
C: wooded lakes or ponds, or open swamps (for nesting) [breeding evidence only] (Bertie, Bladen, Brunswick, Carteret*, Columbus*, Craven, Cumberland, Dare, Halifax, Jones, New Hanover, Robeson)					
Botaurus lentiginosus	American Bittern	SR	-	S1B,S3N	G4
CT: fresh or brackish marshes [breeding season only] (Beaufort*, Carteret, Hyde, Pamlico)					
Catharus guttatus	Hermit Thrush	SR	-	S1B,S5N	G5
M: spruce-fir forests (for nesting) [breeding season only] (Avery, Haywood, Mitchell, Swain, Yancey)					
Certhia americana	Brown Creeper	SC	-	S3B,S5N	G5
M: high elevation forests, favoring spruce-fir mixed with hardwoods (Avery, Buncombe, Haywood, Jackson, Mitchell, Swain, Transylvania, Watauga, Yancey)					

Scientific Name	Common Name	Status		Rank	
Province: Habitat (Counties of occurrence)		N.C.	U.S.	N.C.	Global
Charadrius melodus	Piping Plover	T	T	S2B,S2N	G3
T: ocean beaches and island-end flats [breeding evidence only] (Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover, Onslow, Pender)					
Charadrius wilsonia	Wilson's Plover	SR	-	S3B,SZN	G5
T: beaches, island-end flats, estuarine islands [breeding evidence only] (Brunswick, Carteret, Dare, Hyde, New Hanover, Onslow, Pender)					
Chondestes grammacus	Lark Sparrow	SR	-	S1B,SZN	G5
S: barren, sandy fields with scattered saplings in the sandhills region [breeding season only] (Cumberland, Hoke, Richmond, Scotland)					
Circus cyaneus	Northern Harrier	SR	-	S1B,S4N	G5
T: extensive brackish marshes (for nesting) [breeding evidence only] (Carteret, Dare, Hyde)					
Coccyzus erythropthalmus	Black-billed Cuckoo	SR	-	S2B,SZN	G5
M: deciduous forests, mainly at higher elevations [breeding season and habitat only] (Ashe*, Avery, Buncombe, Burke, Caldwell, Haywood, Henderson, Jackson, McDowell, Mitchell+, Transylvania, Watauga)					
Columbina passerina	Common Ground-Dove	SR	-	SHB,SZN	G5
T: dunes, sandy fields, margins of maritime woods and thickets [breeding season only] (Brunswick, New Hanover, Pender)					
Contopus cooperi	Olive-sided Flycatcher	SC	FSC	SUB,SZN	G4
M: montane conifer forests (mainly spruce-fir) with openings or dead trees [breeding season only] (Haywood, Macon*, McDowell*, Mitchell*, Swain, Yancey)					
Coturnicops noveboracensis	Yellow Rail	SR	-	S2N	G4
TC: brackish or fresh marshes, wet fields [winter season only] (Carteret, Currituck, Dare, Hyde, New Hanover*)					
Dendroica cerulea	Cerulean Warbler	SR	FSC	S2B,SZN	G4
MC: mature hardwood forests; steep slopes and coves in mountains, natural levees in Coastal Plain [breeding season only] (Bertie, Buncombe, Clay, Graham, Halifax, Haywood, Johnston, Macon, McDowell, Northampton, Polk, Rutherford, Transylvania, Watauga, Wilkes)					
Dendroica magnolia	Magnolia Warbler	SR	-	S1S2B,SZN,	G5
M: spruce-fir forests, especially in immature stands [breeding season only] (Avery, Buncombe, Graham, Haywood, Jackson*, McDowell, Mitchell, Watauga, Yancey)					
Dendroica virens waynei	Black-throated Green Warbler - Coastal Plain population	SR	-	S3B,SZN	G5TU
C: nonriverine wetland forests, especially where white cedar or cypress are mixed with hardwoods [breeding season only] (Beaufort, Bladen, Brunswick,					

Scientific Name	Common Name	Status N.C.	Status U.S.	Rank N.C.	Rank Global
Province: Habitat (Counties of occurrence)					
Camden, Carteret, Craven, Cumberland, Dare, Gates, Hyde*, Jones, Pamlico, Tyrrell, Washington)					
Egretta caerulea	Little Blue Heron	SC	-	S3B,S3N	G5
T: forests or thickets on maritime islands [breeding sites only] (Brunswick, Carteret, Columbus*, Cumberland, Currituck, Dare, Hyde, Jones, New Hanover, Robeson)					
Egretta thula	Snowy Egret	SC	-	S3B,S3N	G5
T: forests or thickets on maritime islands [breeding sites only] (Brunswick, Carteret, Columbus*, Currituck, Dare, Hyde, New Hanover, Robeson)					
Egretta tricolor	Tricolored Heron	SC	-	S3B,S3N	G5
T: forests or thickets on maritime islands [breeding sites only] (Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover)					
Empidonax alnorum	Alder Flycatcher	SR	-	S2B,SZN	G5
M: high elevation shrub/sapling thicket [breeding season only] (Alleghany, Ashe, Avery, Buncombe, Haywood, Jackson, Mitchell, Watauga, Yancey)					
Falco peregrinus	Peregrine Falcon	E	-	S1B,S2N	G4
MT: cliffs (for nesting); coastal ponds and mudflats (for foraging in winter) [nesting evidence; regular wintering sites] (Avery, Brunswick, Buncombe, Burke, Carteret, Dare, Haywood, Hyde*, Jackson, Madison, Rutherford, Stokes, Surry, Transylvania, Wilkes*, Yancey)					
Haematopus palliatus	American Oystercatcher	SR	-	S3B,S4N	G5
T: estuaries, oyster beds, mudflats [breeding evidence only] (records not yet entered)					
Haliaeetus leucocephalus	Bald Eagle	T	T (PD)	S3B,S3N	G4
PCT: mature forests near large bodies of water (for nesting); lakes and sounds [nesting sites; regular non-breeding sites] (Alexander, Anson, Beaufort, Bertie, Bladen, Brunswick, Burke, Camden, Catawba, Chatham, Chowan, Columbus, Craven, Currituck, Dare, Davidson, Durham, Gaston, Granville, Guilford, Halifax, Harnett, Haywood, Hyde, Johnston*, Lenoir, Martin*, Mecklenburg, Montgomery, Nash, Northampton*, Onslow, Orange, Pamlico, Pasquotank, Pitt, Richmond, Rowan, Stanly, Tyrrell, Vance*, Wake, Warren*, Washington, Wilson)					
Himantopus mexicanus	Black-necked Stilt	SR	-	S2B	G5
T: fresh or brackish ponds and impoundments [breeding sites only] (Beaufort, Brunswick, Carteret, Dare, Onslow, Pamlico)					

Scientific Name	Common Name	Status		Rank	
Province: Habitat (Counties of occurrence)		N.C.	U.S.	N.C.	Global
Ictinia mississippiensis	Mississippi Kite	SR	-	S2B	G5
C: mature, extensive bottomland forests, mainly in Roanoke River floodplain [regular summer locations only] (Bladen, Carteret, Columbus, Halifax, Harnett, Johnston, Martin, Nash, Richmond, Scotland, Wayne)					
Lanius ludovicianus ludovicianus	Loggerhead Shrike	SC	-	S3B,S3N	G4T4
PSC: fields and pastures [breeding season only] (Alamance+, Ashe+, Bladen+, Brunswick, Carteret, Catawba, Chatham, Cleveland, Davie, Edgecombe+, Forsyth, Franklin, Gaston, Granville+, Greene+, Guilford, Halifax, Iredell, Johnston+, Lenoir+, Lincoln, Mecklenburg, Montgomery, Moore, New Hanover+, Pitt, Polk, Richmond, Robeson, Rowan, Rutherford, Scotland+, Stanly, Transylvania+, Wake+, Wayne)					
Lanius ludovicianus migrans	Migrant Loggerhead Shrike	SC	FSC	SUB,SUN	G4T3Q
M: fields and pastures [breeding season only]					
Laterallus jamaicensis	Black Rail	SR	FSC	S3B,S2N	G4
TCP: brackish marshes, rarely fresh marshes [breeding season only] (Carteret, Craven, Currituck, Dare, Hyde, Onslow, Pamlico)					
Loxia curvirostra pop 1	Southern Appalachian Red Crossbill	SC	FSC, S3B,S3N,		G5T?
M: coniferous forests, preferably spruce-fir (Ashe*, Avery, Buncombe, Burke, Haywood, Jackson, McDowell, Mitchell, Swain, Transylvania, Yancey)					
Mycteria americana	Wood Stork	E	E	S1N	G4
T: fresh or brackish ponds (for foraging) [regular non-breeding sites] (Brunswick)					
Passerculus sandwichensis	Savannah Sparrow	SR	-	S2B,S5N	G5
M: grassy fields and pastures [breeding season only] (Alleghany, Ashe, Watauga)					
Passerina ciris ciris	Eastern Painted Bunting	SR	FSC	S3B,SZN	G5T3T4
T: maritime shrub thickets and forest edges [breeding season only] (Brunswick, Carteret, New Hanover, Onslow, Pender)					
Pelecanus occidentalis	Brown Pelican	SR	-	S3B,S4N	G4
T: maritime islands [breeding sites only] (Brunswick, Carteret, Dare, New Hanover)					
Phalacrocorax auritus	Double-crested Cormorant	SR	-	S1B,S5N	G5
CP: lakes with scattered trees for nesting [breeding sites only] (Chatham, Craven)					
Picoides borealis	Red-cockaded Woodpecker	E	E	S2	G3
PSC: mature open pine forests, mainly in longleaf pine [breeding evidence only] (Anson, Beaufort, Bertie, Bladen, Brunswick, Camden*, Carteret, Chatham*, Columbus, Craven, Cumberland, Currituck*, Dare, Duplin, Edgecombe*, Forsyth*, Gates, Halifax*, Harnett, Hertford*, Hoke, Hyde, Johnston, Jones, Lee*, Lenoir*,					

Scientific Name	Common Name	Status N.C.	Status U.S.	Rank N.C.	Rank Global
Province: Habitat (Counties of occurrence)					
Montgomery, Moore, Nash*, New Hanover, Northampton*, Onslow, Orange*, Pamlico*, Pender, Pitt*, Richmond, Robeson, Sampson, Scotland, Tyrrell, Wake*, Wayne, Wilson*)					
Plegadis falcinellus	Glossy Ibis	SC	-	S2B,SZN	G5
T: forests or thickets on maritime islands [breeding sites only] (Brunswick, Carteret, Currituck, Dare, Hyde, New Hanover)					
Poecile atricapillus practicus	Southern Appalachian Black-capped Chickadee	SC	FSC	S3	G5T?
M: high elevation forests, mainly spruce-fir [breeding season only] (Avery, Buncombe*, Haywood, Jackson, Swain, Transylvania, Yancey*)					
Pooecetes gramineus	Vesper Sparrow	SR	-	S2B,S2N	G5
M: high elevation pastures and grassy fields [breeding season only] (Ashe, Avery, Haywood, Mitchell, Watauga)					
Porphyrula martinica	Purple Gallinule	SR	-	SHB	G5
C: freshwater ponds with floating vegetation [breeding sites only] (Brunswick, Onslow*, Robeson)					
Riparia riparia	Bank Swallow	SR	-	SUB,SZN	G5
MP: high, vertical banks for nesting [breeding sites only] (Avery, Wilkes*)					
Rynchops niger	Black Skimmer	SC	-	S3B,S3N	G5
T: sand flats on maritime islands [breeding sites only] (Brunswick, Carteret, Dare, Hyde, New Hanover, Onslow, Pender)					
Sphyrapicus varius appalachiensis	Appalachian Yellow-bellied Sapsucker	SC	FSC	S3B,S5N	G5T?
M: mature, open hardwoods with scattered dead trees [breeding season only] (Avery*, Buncombe, Clay*, Graham, Haywood, Henderson, Jackson, Macon, Mitchell*, Swain, Transylvania, Watauga, Yancey)					
Sterna antillarum	Least Tern	SC	-	S3B,SZN	G4
T: beaches, sand flats, open dunes (Brunswick, Carteret, Craven, Dare, Hyde, New Hanover, Onslow, Pender)					
Sterna caspia	Caspian Tern	SR	-	S1B,S2N	G5
T: sand flats on maritime islands [breeding sites only] (Dare, Hyde*)					
Sterna dougallii	Roseate Tern	E	E	SAB,SZN	G4
T: sand flats on maritime islands [breeding evidence only] (Carteret*, Dare)					
Sterna hirundo	Common Tern	SC	-	S3B,SZN	G5
T: sand flats on maritime islands [breeding sites only] (Carteret, Dare, Hyde, New Hanover, Onslow, Pender)					
Sterna nilotica	Gull-billed Tern	T	-	S3B,SZN	G5
T: sand flats on maritime islands [breeding sites only] (Brunswick, Carteret, Dare, Hyde, Onslow*)					
Thryomanes bewickii altus	Appalachian Bewick's Wren	E	FSC	SHB,SZN	G5T2Q
M: woodland borders or openings,					

Scientific Name	Common Name	Status N.C.	Status U.S.	Rank N.C.	Rank Global
Province: Habitat (Counties of occurrence)					
farmlands or brushy fields, at high elevations [breeding season only] (Ashe*, Avery*, Buncombe*, Haywood*, Jackson*, Macon*, Transylvania*)					
Vermivora chrysoptera	Golden-winged Warbler	SR	-	S3B,SZN	G4
M: old fields and successional hardwoods (Alleghany, Ashe, Watauga; plus many additional counties)					
Vermivora pinus	Blue-winged Warbler	SR	-	S2B,SZN	G5
M: low elevation brushy fields and thickets [breeding season only] (Alleghany, Ashe, Buncombe*, Cherokee*, Graham*, Macon)					
Vireo gilvus	Warbling Vireo	SR	-	S2B,SZN	G5
M: groves of hardwoods along rivers and streams [breeding season only] (Alleghany, Ashe, Avery, Buncombe, Cleveland, Halifax, Henderson, Macon*, Orange, Watauga)					

NATURAL HERITAGE PROGRAM LIST OF THE WATCH LIST BIRDS OF NORTH CAROLINA

Only the breeding season populations are of concern; provinces and habitats are for these populations only.

Accipiter cooperii	Cooper's Hawk	SC	-	3S4B,S4N	G5
MPSC: forests and woodlands					
Accipiter gentilis	Northern Goshawk	W3	-	SUB,SZN	G5
M: extensive, remote forests, mainly at high elevations					
Ammodramus caudacutus	Saltmarsh Sharp-tailed Sparrow	W3	-	SUB,S4N	G4
T: tidal marshes					
Ammodramus savannarum	Grasshopper Sparrow	W1,W5	-	S3B,S1N	G5
PSCM: pastures and other grasslands					
Anas discors	Blue-winged Teal	W2	-	SHB,S2N	G5
TC: fresh to slightly brackish marshes, usually at impoundments					
Anas rubripes	American Black Duck	W1	-	S3B,S4N	G5
TC: fresh or brackish marshes, often at impoundments					
Asio flammeus	Short-eared Owl	W3	-	SUB,S3N	G5
TC: coastal marshes					
Asio otus	Long-eared Owl	W3	-	SUB,SZN	G5
M: high elevation forests in northern mountains					
Carduelis pinus	Pine Siskin	W3	-	SUB,S4N	G5
M: spruce-fir forests					
Coragyps atratus	Black Vulture	SC	-	S3S4	G5
MPSC: forested areas for nesting; forests or open country for foraging					
Corvus corax	Common Raven	W2	-	S3	G5
MP: cliffs for nesting; forests or fields (mainly at high elevations) for foraging					
Dendroica coronata	Yellow-rumped Warbler	W3	-	SUB,S5N	G5
M: spruce-fir forests, especially in immature stands					
Dolichonyx oryzivorus	Bobolink	W3,W5	-	SUB,SZN	G5
M: meadows and other grasslands					

Scientific Name	Common Name	Status N.C.	Status U.S.	Rank N.C.	Rank Global
Province: Habitat (Counties of occurrence)					
Elanoides forficatus	Swallow-tailed Kite	W3	-	SUB,SZN	G5
C: extensive swamps and bottomlands, often forages over nearby fields or marshes					
Empidonax minimus	Least Flycatcher	W2	-	S3B,SZN	G5
M: open hardwood forests, groves, streamside trees					
Empidonax traillii	Willow Flycatcher	W2	-	S3B,SZN	G5
MP: wet thickets in open country, often along streams in broad valleys					
Eudocimus albus	White Ibis	W2	-	S3B,S3N	G5
T: forests or thickets on maritime islands					
Falco sparverius	American Kestrel	W1,W5	-	S3B,S5N	G5
MPSC: open country; nests in cavities, even in buildings or poles in cities					
Helmitheros vermivorus pop 1	Worm-eating Warbler - Coastal Plain population	W5	-	S3B,SZN	G5T?
C: nonriverine wet hardwoods, pocosins					
Icterus galbula	Baltimore Oriole	W2	-	S3B,S3N	G5
MP: hardwood groves or streamside trees, in open country					
Ixobrychus exilis	Least Bittern	W3	-	S3B,SZN	G5
TCSP: fresh or brackish marshes					
Limnothlypis swainsonii	Swainson's Warbler	W2,W5	-	S3B,SZN	G4
CSMP: forests with dense understory, often with cane in Coastal Plain and rhododendron in mountains					
Lophodytes cucullatus	Hooded Merganser	W3	-	S1B,S4N	G5
PMC: lakes and ponds, with dead trees for nesting					
Nyctanassa violacea	Yellow-crowned Night-Heron	W2,W3	-	S3B,SZN	G5
TCP: swamps; woods or thickets on maritime islands					
Pheucticus ludovicianus	Rose-breasted Grosbeak	W1	-	S3B,SZN	G5
M: hardwood forests at mid- to high elevations					
Rallus elegans	King Rail	W1,W3	-	S3B,S3N	G4G5
TCPS: fresh to slightly brackish marshes					
Regulus satrapa	Golden-crowned Kinglet	W2	-	S3S4B,S5N,	G5
M: spruce-fir forests; hardwood forests mixed with spruce or hemlock					
Sitta canadensis	Red-breasted Nuthatch	W2,W5	-	S3B,S4N	G5
M: high-elevation coniferous forests, preferably spruce-fir					
Spiza americana	Dickcissel	W3,W5	-	S2B,SZN	G5
PC: fallow fields and pastures with tall forbs					
Sterna forsteri	Forster's Tern	W2	-	S3B,S5N	G5
T: salt or brackish marshes, nesting on wrack material or matted grasses					
Sterna fuscata	Sooty Tern	W2	-	SUB,S3N	G5
T: sand flats on maritime islands; forages over open ocean					
Sterna sandvicensis	Sandwich Tern	W2,W5	-	S3B,SZN	G5
T: sand flats on maritime islands					
Tachycineta bicolor	Tree Swallow	W2	-	S2S3B,S4N,G5	
MPC: cavities near ponds or other open water					

Scientific Name	Common Name	Status		Rank	
Province: Habitat (Counties of occurrence)		N.C.	U.S.	N.C.	Global
Troglodytes troglodytes	Winter Wren	W2,W5	-	S3B,S5N	G5
M: cool, moist forests at mid- to high elevations					
Tyto alba	Barn Owl	W2,W3	-	S3B,S3N	G5
MPSCT: extensive open country, nesting in old buildings, silos, large tree cavities					

LIST FORMAT

Species are grouped by major taxa. The vertebrates are arranged by class, beginning with the most advanced phylogenetically (mammals). Within a given taxa, species are listed alphabetically by scientific name. The following information is presented for each species on the list. "Status" is a word or phrase that indicates the degree of protection (if any), based on rarity, of a species; "rank" is a numerical scale of the rarity of a species, regardless of legal protection.

Scientific Name.

Common Name. For most groups, these names are not standardized.

North Carolina Status. Endangered, Threatened, and Special Concern species of mammals, birds, reptiles, amphibians, freshwater fishes, freshwater and terrestrial mollusks, and crustaceans have legal protection status in North Carolina (Wildlife Resources Commission). In addition to the above categories, the Natural Heritage Program maintains computer and map files on Significantly Rare species, as well as species considered Extirpated. Paper files only are maintained for a few of the above species; these species are indicated by the phrase "not tracking."

STATUS CODE	STATUS	DEFINITION
E	Endangered	"Any native or once-native species of wild animal whose continued existence as a viable component of the State's fauna is determined by the Wildlife Resources Commission to be in jeopardy or any species of wild animal determined to be an 'endangered species' pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
T	Threatened	"Any native or once-native species of wild animal which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, or one that is designated as a threatened species pursuant to the Endangered Species Act." (Article 25 of Chapter 113 of the General Statutes; 1987).
SC	Special Concern	"Any species of wild animal native or once-native to North Carolina which is determined by the Wildlife Resources Commission to require monitoring but which may be taken under regulations adopted under the provisions of this Article." (Article 25 of Chapter 113 of the General Statutes; 1987).

STATUS CODE	STATUS	DEFINITION
P_	Proposed	Species has been proposed by a Scientific Council as a status (Endangered, Threatened, Special Concern, Watch List, or for De-listing) that is different from the current status, but the status has not yet been adopted by the General Assembly as law. In the lists of rare species in this book, these proposed statuses are listed in parentheses below the current status. Only those proposed statuses that are different from the current statuses are listed.
SR	Significantly Rare	Any species which has not been listed by the N.C. Wildlife Resources Commission as an Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring. (This is a N.C. Natural Heritage Program designation.) Significantly Rare species include "peripheral" species, whereby North Carolina lies at the periphery of the species' range (such as Hermit Thrush).
EX	Extirpated	A species which is no longer believed to occur in the state. (This is a N.C. Natural Heritage Program designation, though WRC also uses this status; the NHP list includes those on the WRC list.)
W	Watch List	Any other species believed to be of conservation concern in the state because of scarcity, declining populations, threats to populations, or inadequacy of information to assess its rarity (see page 59 for a more complete discussion). (This is a N.C. Natural Heritage Program designation.)
G	----	Species is a game animal, and therefore (by law) cannot be listed for State protection as E, T, or SC.

United States Status. This status is designated by the U.S. Fish and Wildlife Service. Federally listed Endangered and Threatened species are protected under the provisions of the Endangered Species Act of 1973, as amended through the 100th Congress. Unless otherwise noted, definitions are taken from the *Federal Register*, Vol. 56, No. 225, November 21, 1991 (50 CFR Part 17).

STATUS CODE	STATUS	DEFINITION
E	Endangered	A taxon "which is in danger of extinction throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
T	Threatened	A taxon "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (Endangered Species Act, Section 3).
FSC	(Federal) Species of Concern [also known as Species at Risk]	"... the Service is discontinuing the designation of Category 2 species as candidates in this notice. The Service remains concerned about these species, but further biological research and field study are needed to resolve the conservation status of these taxa. Many species of concern

STATUS CODE	STATUS	DEFINITION
		will be found not to warrant listing, either because they are not threatened or endangered or because they do not qualify as species under the definition in the [Endangered Species] Act. Others may be found to be in greater danger of extinction than some present candidate taxa. The Service is working with the States and other private and public interests to assess their need for protection under the Act. Such species are the pool from which future candidates for listing will be drawn." (*Federal Register*, February 28, 1996). The Service suggests that such taxa be considered as "Species of Concern" or "Species at Risk", neither of which has official status. The N.C. Natural Heritage Program uses "(Federal) Species of Concern" in this document for those taxa formerly considered as Category 2.
P_	Proposed	Species proposed in the *Federal Register* as a status different from its current Federal status.
T (S/A)	Threatened due to Similarity of Appearance	"Section 4 (e) of the [Endangered Species] Act authorizes the treatment of a species (subspecies or population segment) as endangered or threatened even though it is not otherwise listed as endangered or threatened if -- (a) the species so closely resembles in appearance an endangered or threatened species that enforcement personnel would have substantial difficulty in differentiating between the listed and unlisted species; (b) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and (c) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of the Act." (*Federal Register*, November 4, 1997). [The American Alligator is listed as T (S/A) due to Similarity of Appearance with other rare crocodilians, and the southern population of the Bog Turtle is listed as T (S/A) due to Similarity of Appearance with the northern population of the Bog Turtle (which is federally listed as Threatened and which does not occur in North Carolina).]
XN	Nonessential Experimental Population	"Section 10 (j) of the Endangered Species Act of 1973, as amended, provides for the designation of introduced populations of federally listed species as nonessential experimental. This designation allows for greater flexibility in the management of these populations by local, state, and Federal agencies. Specifically, the requirement for Federal agencies to avoid jeopardizing these populations by their actions is eliminated and allowances for taking the species are broadened." (U.S. Fish and Wildlife Service, 1995).
D	De-listed	Species has been proposed by the U.S. Fish and Wildlife Service for de-listing from the List of Endangered and Threatened Wildlife. However, at the present time, the species is still on the List of Endangered

STATUS CODE	STATUS	DEFINITION
		and Threatened Wildlife and is thus protected under the Endangered Species Act. Because such species still have legal Federal protection, the NHP will maintain existing records on the species, though new records might not necessarily be added. If the status becomes law prior to the next publication of the NHP Rare Animal List, the Program will remove the Federal designation from its database (and thus the species will no longer appear on printouts of Federally listed species). NHP may or may not continue to track the species, depending on its legal State status and other factors such as overall abundance and range in the state.

North Carolina Rank. North Carolina ranks are based on The Nature Conservancy's system of measuring rarity and threat status. This system is widely used by other agencies and organizations, as the best available scientific and objective assessment of a species' rarity at the state level. State ranks are assigned by biologists within each Natural Heritage Program.

RANK	NUMBER OF EXTANT POPULATIONS	DESCRIPTION
S1	1-5	Critically imperiled in North Carolina because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from North Carolina.
S2	6-20	Imperiled in North Carolina because of rarity or because of some factor(s) making it very vulnerable to extirpation from North Carolina.
S3	21-100	Rare or uncommon in North Carolina.
S4	100-1000	Apparently secure in North Carolina, with many occurrences.
S5	1000+	Demonstrably secure in North Carolina and essentially ineradicable under present conditions.
SA	1-?	Accidental or casual; one to several records for North Carolina, but the state is outside the normal range of the species.
SH	0?	Of historical occurrence in North Carolina, perhaps not having been verified in the past 20 years, and suspected to be still extant.
SR	--	Reported from North Carolina, but without persuasive documentation which would provide a basis for either accepting or rejecting the report.
SX	0	Apparently extirpated from North Carolina.
SU	--	Possibly in peril in North Carolina but status uncertain; need more information.
S?	--	Unranked, or rank uncertain.

RANK	NUMBER OF EXTANT POPULATIONS	DESCRIPTION
_N	1-?	Rank of the non-breeding population in the state. Used for migratory species only.
_Z_	1-?	Population is not of significant conservation concern. For example, the status "SZN" indicates that the population in the non-breeding seasons (generally in migration or in winter) is transitory, without any regular locales of occurrence whereby the species can be protected. Where a number is listed with the "B" or "N" modifier, there are definable locales of occurrence that can be identified for protection.

Global Rank. Global ranks are assigned by NatureServe (formerly the science branch of The Nature Conservancy) staff biologists and contract biologists, based on a consensus of scientific experts, the individual natural heritage programs, and the Natural Heritage Network. Global ranks apply to the status of a species throughout its range, and are based on data on the species' status rangewide. This system is widely used by other agencies and organizations, as the best available scientific and objective assessment of a species' rarity throughout its range. NOTE: Global ranks in brackets are those suggested by Scientific Councils in North Carolina, or by the N.C. Natural Heritage Program, and are not NatureServe's assigned ranks. These suggested ranks are listed below the TNC assigned ranks. In some cases, these suggested ranks were made to indicate that the Global Rank perhaps should be changed, with the taxa apparently more common in North Carolina than the Global Rank will allow (i.e., a rank of S3 G2 isn't technically allowed; thus, the global rank is suggested to be G3.)

RANK	NUMBER OF EXTANT POPULATIONS	DESCRIPTION
G1	1-5	Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction.
G2	6-20	Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3	21-100	Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single physiographic region) or because of other factors making it vulnerable to extinction throughout its range.
G4	100-1000	Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5	1000+	Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
GH	0?	Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered.
GX	0	Believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered.

RANK	NUMBER OF EXTANT POPULATIONS	DESCRIPTION
GU	--	Possibly in peril range-wide, but status uncertain; more information is needed.
G?	--	Unranked, or rank uncertain.
G_Q	--	Questionable taxonomic assignment.
T_	--	The rank of a subspecies or variety. As an example, G4T1 would apply to a subspecies of a species with an overall rank of G4, but the subspecies warranting a rank of G1.

Physiographic Province/Region. The provinces/regions in which the animal is known to occur are indicated. This should not be regarded as the only province(s) or region(s) of the state in which the species could occur; our knowledge of the fauna of North Carolina, especially the invertebrates, is still very imperfect. The provinces are abbreviated as follows:

M	Mountains	All parts of North Carolina west of the foot of the Blue Ridge Escarpment.
P	Piedmont	All parts of North Carolina east of the foot of the Blue Ridge Escarpment and west of the Fall Line, including outlying "foothill" ranges, such as the Brushy, Uwharrie, and Sauratown mountains.
S	Sandhills	The southwestern portion of the Coastal Plain province consisting mostly of deep aeolian sands of the Middendorf and Pinehurst formation (portions of Cumberland, Harnett, Hoke, Lee, Moore, Richmond, Scotland, and Montgomery counties). The Sandhills are actually part of the Coastal Plain but are here distinguished because of their distinctive geomorphology and vegetation.
C	Coastal Plain	All parts of North Carolina east of the Fall Line, but excluding the Sandhills region and those portions associated with tidal water (ocean, sounds, barrier islands, and mainland brackish or salt marshes).
T	Tidewater	That part of the state associated with tidal water, such as the ocean and barrier islands, sounds, estuaries, and mainland brackish or salt marshes.

Habitat. The known, or the most typical, habitats are described briefly; as with provinces, these should not be regarded as the only possible habitats of the species in the state.

Counties of occurrence. Following the description of habitats is a listing, in parentheses, of the known counties of occurrence of the records in the Natural Heritage Program database. For most vertebrate species, this listing of counties is complete or reasonably complete. However, for many invertebrates, and a few vertebrates (generally those newly added to the Rare List), there is no listing of counties, as records have yet to be added to the database. Where county names appear in brackets, records from these counties have not yet been added to the database.) **Counties in which the element was last observed more than 20 years ago are marked with an asterisk (*).**

The asterisk does not necessarily mean that the species no longer exists in that county; simply, it means that the date of the last observation available to the Natural Heritage Program from that county is 1983 or earlier. **Counties where no date of occurrence (e.g., data from an atlas/dot map) is available are marked with a plus (+).** Without additional information, the Program has no way of knowing whether such data should be considered as current or historic (marked with *). Records from such references, atlases, and other lists that were published or made available to the Program from 1983 or earlier should be considered as historic, but the Program has not yet updated the database for these obscure date records.

WATCH LIST CODES

W1 = species known to be declining in the state; may need listing in upcoming years
W2 = species rare to uncommon, but probably not in trouble
W3 = species that is poorly known; perhaps needs listing in upcoming years
W4 = species reported from the state without adequate documentation
W5 = species with increasing amount of threats to its habitat, whether populations are known to be declining or not
T = Threatened (see Page 3). Though still on the State Protected List, biologists consider the species to no longer need tracking by the N.C. Natural Heritage Program.
SC = Special Concern (see Page 3). Though still on the State Prote

APPENDIX D

USFWS Species of Conservation Concern 2002
Appalachian Mountains BCR 28

Peregrine Falcon
Upland Sandpiper
Buff-breasted Sandpiper
Black-billed Cuckoo
Short-eared Owl
Northern Saw-whet Owl (breeding populations only)
Chuck-will's-widow
Whip-poor-will
Red-headed Woodpecker
Yellow-bellied Sapsucker (breeding populations only)
Olive-sided Flycatcher
Acadian Flycatcher
Black-capped Chickadee (southern Blue Ridge populations only)
Bewick's Wren
Sedge Wren
Wood Thrush
Golden-winged Warbler
Prairie Warbler
Cerulean Warbler
Prothonotary Warbler
Worm-eating Warbler
Swainson's Warbler
Louisiana Waterthrush
Kentucky Warbler
Bachman's Sparrow
Henslow's Sparrow
Red Crossbill (southern Appalachian populations only)