

BALD EAGLE MANAGEMENT PLAN

Haliaeetus leucocephalus

Adopted:
April 9, 2008



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
620 South Meridian Street
Tallahassee, Florida 32399-1600

BALD EAGLE MANAGEMENT PLAN TEAM

Sponsors:	Timothy A. Breault, Director Division of Habitat and Species Conservation	
	Gil McRae, Director Fish and Wildlife Research Institute	
Sponsor Representative:	Elsa M. Haubold, Section Leader Division of Habitat and Species Conservation	
Team Leader:	Robin Boughton, Avian Coordinator Division of Habitat and Species Conservation	
Team Members:	Janell Brush, Fish and Wildlife Research Institute	
	Dave Eggeman, Division of Habitat and Species Conservation	
	Don Holway, Division of Law Enforcement	
	Glenn Lowe, St. Johns Water Management District	
	Annemarie Prince, Division of Habitat and Species Conservation	
	Dan Sullivan, Division of Habitat and Species Conservation	
Team Resources:	Rebecca Trudeau, St. Johns Water Management District	
	Facilitator:	Steve Zukowsky
	Stakeholder Coordination:	Bill Pranty, Perran Ross
	Editor:	Bill Pranty
	Community Relations:	Beth Scott
	Legal:	Michael Yaun
	Recorder:	Terri Tiffany
	Education and Outreach:	Judy Gillan
	Eagle Research and Surveys:	Stephen B. Nesbitt
	Executive Director's Office:	Dennis David

EXECUTIVE SUMMARY

The dramatic recovery of the bald eagle (*Haliaeetus leucocephalus*) in the past 35 years represents one of the great conservation success stories in our nation's history. This management plan provides the framework for the conservation and management of the bald eagle in Florida to ensure its continued recovery. This plan meets the requirements of the Florida Fish and Wildlife Conservation Commission's (FWC) listing process (Rule 68A-27.0012, *Florida Administrative Code* [F.A.C.]). The listing process was initiated in July 2002, when the FWC was petitioned to reevaluate the status of the bald eagle, which was considered a threatened species in Florida (Rule 68A-27.004, F.A.C.). Action on the petition was delayed due to a listing moratorium, which was lifted in April 2005.

Following the guidance of FWC's listing process, a five-member biological review panel was approved in June 2005. The panel assessed the eagle's population and distribution data against species-imperilment criteria (Rule 68A-1.004, F.A.C.), and determined that the bald eagle no longer met the criteria for state listing at any level. As a result, the panel unanimously recommended that the bald eagle be removed from Florida's list of imperiled species. The panel also acknowledged the importance of protecting nest sites, and suggested that continued protection of nesting habitats was necessary to sustain recovery of the species (Sullivan *et al.* 2006). The decision to delist the bald eagle in Florida is based on the following biological data: (1) bald eagles occur throughout the state; (2) the population does not experience extreme fluctuations in distribution or numbers; (3) the estimated number of adults has increased more than 300% during the past three eagle generations (defined in this document as a total of 24 years); and (4) the population is not expected to experience significant declines over the next 24 years.

The continental bald eagle population began to decline in the 18th century as a result of habitat loss and direct persecution. The decline intensified during the mid-20th century with widespread use of organochlorine pesticides such as DDT compounding the losses from habitat destruction and shooting. DDT was used widely in the U.S. until it was banned in 1972, in part because it caused eggshell thinning in raptors, resulting in widespread reproductive failure.

Bald eagles reclaimed their entire historic range by the late 1990s, and their estimated population in the Lower 48 states increased from an estimated 417 pairs in 1963 to 9,789 pairs by 2007. Bald eagles have met or exceeded the population goals established in each of the five regional recovery plans, and in August 2007, the U.S. Fish and Wildlife Service (USFWS) removed the species from the list of species protected by the Endangered Species Act. The USFWS recovery plan for the southeastern United States established 400 bald eagle nesting territories as the number necessary to down-list the Florida population from endangered to threatened, and 1,000 nesting territories in the state as one criterion for delisting the eagle nationally. By early 2007, there were 1,218 active bald eagle nesting territories in Florida (FWC unpublished data).

The goal of this management plan is to maintain a stable or increasing population of bald eagles throughout Florida in perpetuity. To achieve this goal, bald eagles and their nests must continue to be protected through science-based management, regulation, public education, and law enforcement. Continued conservation efforts are required to prevent a population decline of 10% or more that might trigger a re-evaluation for relisting the bald eagle. To maintain the

conservation goal, this management plan establishes four conservation objectives that will be calculated annually as five-year running averages. All of these objectives have already been met, and maintaining these objectives will assure that the goal of this management plan is met: (1) a minimum of 1,020 nesting territories per year over the next 24 years; (2) an average of 68% of nesting territories producing ≥ 1 nestling per year; (3) an average reproductive success of ≥ 1.5 fledglings per active nest; and (4) maintain the current area of occupancy (>770 mi²) and extent of occurrence (52,979 mi²) of eagles statewide.

In addition to being our national symbol, reasons for continued conservation, management, and monitoring of Florida's bald eagles include the following: (1) Florida supports 11% of the nesting population in the Lower 48 states, more than any state other than Alaska and Minnesota; (2) 67% of all eagle nests in the state are located on private lands; (3) disturbance can negatively affect the reproductive success of nesting eagles; (4) growth of Florida's human population assures continued encroachment into eagle nesting and foraging habitats; and (5) the public insists on continued conservation of this magnificent species. The FWC's biological review panel determined that Florida's eagle population would not experience significant declines over the next three generations, but acknowledged that protection of nest sites should continue. This plan proposes continued regulation of nesting habitats during the first five years following delisting. The FWC will monitor Florida's eagle population and will study the effects of human activities near eagle nests. After five years, results of this research will be evaluated and regulations will be adjusted as appropriate.

To ensure that the conservation goal and objectives continue to be met, this management plan recommends a suite of conservation actions. These actions are best accomplished by applying an adaptive management approach that allows adjustment to policies, guidelines, and techniques based on science and observed responses to implemented conservation measures. The conservation actions are organized into the following sections or sub-sections: Habitat Management, Land Acquisition, Private Lands Incentives, Law Enforcement, Proposed Regulations, Permitting Framework April 2008, Local Government Coordination, Monitoring Plan, Education and Outreach, and Ongoing and Future Research.

Management of bald eagles in Florida through the implementation of this plan requires the cooperation of local, state, and federal governmental agencies; non-governmental organizations; business, agricultural, and forestry interests; universities; and the public. This plan was developed by the FWC in collaboration with a diverse group of stakeholders, and its successful implementation requires the cooperation of and coordination with other agencies, organizations, private interests, and individuals. Any significant changes to this management plan will be made with the involvement of our stakeholders.

The FWC formally solicited public comment and peer-review on the proposed delisting action of the bald eagle in Florida at several junctures of the delisting process and the writing of this management plan. Comment periods were noticed in the *Florida Administrative Weekly* to solicit: (1) information on the bald eagle's biological status to be considered during the development of the Biological Status Report for the Bald Eagle (Sullivan *et al.* 2006); (2) information on the management needs of the eagle and any economic, social, and ecological factors to consider as part of its management; and (3) public and stakeholder input on drafts of

the management plan. Public comments also were received following release of the Biological Status Report for the Bald Eagle in 2006, and at the September 2007 FWC Commission meeting when a draft of this Bald Eagle Management Plan and its associated rule changes were presented to the Commissioners and received conceptual approval. Following this meeting, the FWC created an “ad-hoc” committee of some of its most active bald eagle stakeholders, and this committee met several times into early 2008 to assist the FWC in resolving issues remaining with regulation and management of the state’s bald eagle population.

Five years following approval of this plan, the FWC and its stakeholders will re-evaluate the biological status of the bald eagle in Florida. If nest-monitoring data suggest that modification of guidelines for the regulation of land uses surrounding eagle nests may be appropriate, then this management plan will be revised accordingly.

TABLE OF CONTENTS

BALD EAGLE MANAGEMENT PLAN TEAM	ii
EXECUTIVE SUMMARY	iii
LIST OF FIGURES	viii
LIST OF TABLES	viii
GLOSSARY AND ACRONYMS	ix
CHAPTER 1: BIOLOGICAL BACKGROUND	1
Distinguishing Characteristics	1
Taxonomy	1
Life History and Habitat	1
<i>Breeding Behavior</i>	1
<i>Movements</i>	2
<i>Food</i>	3
<i>Longevity</i>	3
<i>Habitat</i>	3
Distribution and Population Status	4
<i>Historical Distribution</i>	4
<i>Population Trends</i>	5
<i>Current Distribution</i>	6
Historic and Ongoing Conservation Efforts	8
CHAPTER 2: THREAT ASSESSMENT	10
Reasons for Delisting	10
Present and Anticipated Threats	10
<i>Human-caused Threats</i>	10
<i>Natural Threats</i>	11
CHAPTER 3: CONSERVATION GOAL AND OBJECTIVES	13
Conservation Goal	13
Conservation Objectives	13
CHAPTER 4: RECOMMENDED CONSERVATION ACTIONS	15
Strategies to Achieve the Conservation Objectives	15
Land Acquisition	16
Private Lands Incentives	17
Law Enforcement	19
Proposed Regulations	19
Permitting Framework April 2008	22
A. FWC Eagle Management Guidelines (Activities That Do Not Require a FWC Eagle Permit)	23
B. Activities That Do Not Require a FWC Eagle Permit if Federally Authorized	29
C. Activities That Require a FWC Eagle Permit	30
D. Activities That May Require a FWC Eagle Permit	32
Local Government Coordination	36
Monitoring Plan	38
Education and Outreach	41
Research	43

CHAPTER 5: IMPLEMENTATION STRATEGY	46
Priority Actions	46
Required Resources and Other Costs Associated with Implementation	47
Implementation Schedule	48
Management Plan Review and Revision	51
CHAPTER 6: ANTICIPATED IMPACTS	52
Economic Impacts	52
Social Impacts	52
Ecological Impacts	53
LITERATURE CITED	54
APPENDIX 1: LINKS TO ONLINE USFWS DOCUMENTS	58
APPENDIX 2: LIST OF FWC STAKEHOLDERS	59

LIST OF FIGURES

Figure 1. Distribution of bald eagle nests in Florida, 2005–2006.....	4
Figure 2. Number of bald eagle nesting territories in Florida, 1973–2007.....	5
Figure 3. Location of bald eagle “core nesting areas” in Florida, 2005–2006.....	7
Figure 4. Process map for determining whether or not a FWC Eagle Permit would be recommended for a proposed activity near a bald eagle nest	24

LIST OF TABLES

Table 1. Number of bald eagle nesting territories in the top 10 counties in Florida, 2004–2005 ..	7
Table 2. Landowner assistance programs that may be used to promote the conservation of bald eagles in Florida.....	18
Table 3. The minimum allowed distances from an active or alternate bald eagle nest that a Category A or Category B activity can occur without the need for a FWC bald eagle permit.	26

GLOSSARY AND ACRONYMS

Abandoned Nest: A bald eagle nest that is intact or partially intact but has been inactive through six or more consecutive nesting seasons. While the buffer zone surrounding the nest is no longer protected, the nest itself may not be altered. *Compare with Alternate Nest.*

Active Nest: A nest that shows or showed evidence of breeding by bald eagles, such as an adult attending the nest or in incubating position, a clutch of eggs, or a brood of nestlings, at any time during the current or most recent nesting season.

Active Territory: A bald eagle nesting territory that contains or contained an active nest at any time during the current or most recent nesting season.

Adaptive Management: A decision process that promotes flexible decision-making that can be adjusted as outcomes from management actions and other events are better understood. Adaptive management recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a “trial and error” process, but rather emphasizes “learning while doing.”

Alternate Nest: A bald eagle nest that is intact or partially intact and has been used by bald eagles at any time during the past five nesting seasons, but that was not used during the current or most recent nesting season. An inactive nest is considered to be an alternate nest until it has been inactive for five consecutive nesting seasons, at which time it becomes an Abandoned Nest. Bald eagles often build multiple nests within their territory, but usually only one will be used for nesting in any given nesting season. *Compare with Abandoned Nest.*

Area of Occupancy: The smallest area of suitable habitats essential at any stage to the survival of bald eagles in Florida, based on the presumption that each active nesting territory contains 397–794 acres (1–2 km²). Based on 1,101 known active territories, the Area of Occupancy of bald eagles in Florida was estimated to be between 658 and 1,275 mi² in early 2005 (Sullivan *et al.* 2006, Figure 2). To qualify for listing as a species of special concern in Florida, a species must have an area of occupancy of <700 square miles. *See also Extent of Occurrence.*

Bald and Golden Eagle Protection Act: The federal law enacted in 1940 that now serves as the primary protection for bald eagles nationally now that the eagle has been removed from protection under the U.S. Endangered Species Act.

Bald Eagle Conservation Fund: A fund to be established between the FWC and the Wildlife Foundation of Florida to collect “monetary contributions” (conservation funds) from the issuing of FWC Eagle Permits to applicants whose projects impact buffer zones of active or alternate bald eagle nests. Each year, the amount charged will change by an amount equal to the annual Consumer Price Index for the Southeast region, and will be based on changes during the CPU calendar year (1 January–31 December). The appropriate change to the monetary contribution should take effect on 1 March of each year because the CPI

for the previous year is usually not available until mid-February. The contribution will be calculated based on the date that a completed application is received by FWC.

Breeding Productivity: The number of nestlings produced by an eagle pair or population. Nestlings should be surveyed just before they fledge. The recommended procedure for determining breeding productivity is to divide the number of nestlings produced by the number of active nesting territories. *Compare with Reproductive Success.*

Communal Roost: An area where bald eagles gather and perch overnight, or and sometimes during the day during inclement weather. Communal roosts are usually in large trees (alive or dead) that are close to foraging areas. Communal roosts are rare in Florida.

Conservation Measures: One or more actions provided by landowners to benefit bald eagles in exchange for a permit to conduct an activity within the buffer zone of an active or alternate bald eagle nest in Florida..

Core Nesting Area: One of 16 regions in Florida that contains a high density of bald eagle nesting territories (Figure 3, page 7). Together, the core areas support a majority of the state's known active nesting territories. The core nesting areas are numbered chronologically from the year of discovery and are located in the following regions: (1) lakes Lochloosa, Newnans, and Orange in Alachua County; (2) Lake George in Lake, Marion, Putnam, and Volusia counties; (3) the middle St. Johns River in Brevard, Seminole, and Volusia counties; (4) the Kissimmee chain of lakes in Osceola and Polk counties; (5) the Placida Peninsula in Charlotte and Sarasota counties; (6) the Harris chain of lakes in Lake, Marion, and Sumter counties; (7) the Lee County coast; (8) St. Vincent National Wildlife Refuge in Franklin County; (9) St. Marks National Wildlife Refuge in Wakulla County; (10) the Lower St. Johns River in Clay, Flagler, and St. Johns counties; (11) Rodman Reservoir in Marion and Putnam counties; (12) the central Gulf Coast in Citrus, Hernando, and Pasco counties; (13) central Polk County; (14) Lake Istokpoga in Highlands County; (15) the northeast shore of Lake Okeechobee in Martin and Okeechobee counties; and (16) coastal Charlotte County.

Development of Regional Impact: A development that is likely to have regional effects beyond the local government jurisdiction in which it is located.

Disturb: (as defined by USFWS (2007b): "To agitate or bother a bald or golden eagle to the degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Endangered Species Act: The federal law enacted in 1973 that offered primary protection nationally to bald eagles. When the bald eagle was removed from the list of species protected under the Endangered Species Act on 8 August 2007, the Bald and Golden Eagle Protection Act became the primary protection to eagles nationwide.

Extent of Occurrence: The area contained within a minimum convex polygon encompassing all known nesting territories. Based on 1,101 known active territories, the Extent of Occurrence of bald eagles in Florida was estimated to be 52,979 mi² in early 2005 (Sullivan *et al.* 2006). To qualify for listing as a species of special concern in Florida, a species must have an extent of occurrence of <7,700 mi². *See also Area of Occupancy.*

Exterior Construction: All construction and related work for homes or other buildings, including roads, sewer and water lines, powerlines, fill, or excavation work.

F.A.C.: Florida Administrative Code.

Fledgling: A young eagle that is capable of flight and that has left the nest, usually at 10–12 weeks of age. Fledglings may return to the nest for several weeks to be fed or to roost. *Compare with Nestling.*

FWC: The Florida Fish and Wildlife Conservation Commission, the state agency legally mandated to protect and manage Florida's native wildlife resources.

FWC Eagle Permit: A permit issued by the FWC to allow for activities that would otherwise be prohibited by law, such as disturbance, nest removal, capture for rehabilitation, or scientific collection. Some activities require conservation measures to be conducted before a permit will be issued. Because the USFWS has yet to finalize its permitting process, the relationship between state and federal permits remains to be determined, but the need for duplicative permits will be minimized to the greatest extent possible.

Harass: *see Disturb.*

Harm: *see Disturb.*

Inactive Nest: A bald eagle nest that was not used during the current or most recent nesting season. *See Abandoned Nest and Alternate Nest.*

Inactive Territory: A bald eagle nesting territory that does not contain an active nest during the current or most recent nesting season.

Interior Construction: Any activity or related work for homes or other buildings that is carried out inside a building that has completed exterior walls, roof, windows, and doors.

Land Development Code: Any ordinance that regulates development.

Local Government: Any agency or governmental body including state agencies such as the Florida Department of Environmental Protection and the five water management districts.

Lost Nest: A nest that is no longer present from natural causes (*e.g.*, one that fell apart or was blown out of a tree). In some cases, the nest tree itself may be lost. The FWC recommendations in the section entitled Permitting Framework April 2008 section apply

to lost nests through two complete, consecutive nesting seasons. *Compare with Abandoned Nest.*

Nest: A structure of sticks created, modified, or used by bald eagles for reproduction, whether or not reproduction was successful. Most nests are in living trees, but some nests are built in snags, on communication towers or other artificial structures, or on the ground. Most eagle territories contain more than one nest; the average across the eagle's range is 1.5 nests/territory. *See also Abandoned Nest, Active Nest, Alternate Nest, Lost Nest, and Unknown Nest.*

Nesting Season: In Florida, the period 1 October–15 May, unless the young fledge before or after 15 May.

Nesting Success: *See Breeding Productivity and Reproductive Success.*

Nesting Territory: The area associated with one breeding pair of bald eagles and that contains one or more nests. In rare cases, a nesting territory may lack a nest at the time of the survey, as when the nest is destroyed by severe weather.

Nestling: A young eagle (eaglet) that is incapable of flight and that is dependent on its parents. Once an eaglet fledges (*i.e.*, leaves the nest), it becomes a fledgling.

Non-Injurious Disturbance: Persistent and intentional disturbance to disperse bald eagles from a site, such as an airport or a fish hatchery, without physical capture or direct handling, or by any means likely to cause injury.

Permanent Activity: Any activity expected to disturb bald eagles during two or more nesting seasons.

Reproductive Success: The number of fledglings produced annually by a bald eagle pair. *Compare with Breeding Productivity.*

Scientific Collection Permit: A permit issued for activities that include salvage, voucher, bird banding, wildlife possession, or special purpose. Applications must demonstrate a scientific or educational benefit for bald eagles, and must identify the purpose, scope, objective, methodology, location, and duration of the project.

Similar scope: A measure comparing activities near bald eagle nests. An existing activity near a bald eagle nest is of similar scope to a proposed activity, when the project is similar in nature, size, and use.

Site Work: Construction activities such as land clearing or road building that precede construction of homes or other building.

Successful Nest: A bald eagle nest that produces at least one fledgling.

“Take” (as defined in 68A-1.004 F.A.C.): “Taking, attempting to take, pursuing, hunting, molesting, capturing, or killing any wildlife or freshwater fish, or their nests or eggs by any means whether or not such actions result in obtaining possession of such wildlife or freshwater fish or their nests or eggs.”

Temporary Activity: 1) Outside the nesting season: any activity that will leave no permanent structure or have any permanent effect. 2) During the nesting season: any activity expected to disturb bald eagles during only one nesting season.

Unknown Nest: A bald eagle nest that was surveyed (usually only once) during the current or most recent nesting season, but that its status could not be determined.

U.S.C.: United States Code.

USFWS: The United States Fish and Wildlife Service, the federal agency mandated to protect and manage the nation’s native wildlife resources.

CHAPTER 1: BIOLOGICAL BACKGROUND

The bald eagle (*Haliaeetus leucocephalus*) is the symbol of the United States and one of North America's most spectacular birds. It is also one of the most thoroughly studied birds, with perhaps 2,500 articles published on its biology or management (Buehler 2000). This chapter summarizes some aspects of the bald eagle's biology, primarily in Florida. Detailed information on the biology of bald eagles throughout their range is found in Stalmaster (1987), Gerrard and Bortolotti (1988), and Buehler (2000).

Distinguishing Characteristics

The bald eagle is the largest raptor (bird of prey) that occurs in North America, ranging from 28 to 38 inches in length and with a wingspan from 66 to 96 inches. The largest eagles are found in Alaska and the smallest occur in the southern United States and Mexico (Buehler 2000). The sexes are indistinguishable by plumage, but females are as much as 25% larger than males. Adults are dark brown with a white head and tail. The eyes, bill, legs, and feet are yellow. Juveniles are dark brown overall with white mottling on the belly, tail, and underwings. The eyes are dark brown and the bill is gray to black. The plumage of sub-adults is highly variable, according to age, with a decreasing amount of white on the body and an increasing amount of white on the head and tail attained with each successive molt. The eyes and bill turn yellow during the eagle's fourth year, and full adult plumage is attained during the bird's fifth or (usually) sixth year (Buehler 2000).

Taxonomy

The bald eagle is a member of the family Accipitridae and the order Falconiformes. It is one of eight members of the genus *Haliaeetus*, which is from the Greek and means *sea eagle*; the bald eagle's full scientific name means *white-headed sea eagle*. The bald eagle is the only member of its genus that occurs regularly in North America. Two other species, the white-tailed eagle (*H. albicilla*) of Eurasia and the Steller's sea-eagle (*H. pelagicus*) of Asia, have strayed to the United States, and the white-tailed eagle has bred in Alaska (AOU 1998). Fossil evidence of bald eagles dates back at least one million years and comes from several sites, including three from Florida (Buehler 2000). Two subspecies are recognized by some ornithologists, the larger *H. l. alascanus* breeding north of 40° N latitude and the smaller *H. l. leucocephalus* to the south. However, the bald eagle may have no subspecies, with its size and mass differences merely representing a decrease along a north-to-south gradient (Curnutt 1996, Buehler 2000). The only other eagle that occurs regularly in North America is the golden eagle (*Aquila chrysaetos*), which in Florida is a rare non-breeding winter resident, primarily of the panhandle (Stevenson and Anderson 1994).

Life History and Habitat

Breeding Behavior

Bald eagles are highly social outside of the nesting season, but are extremely territorial when nesting. They are capable of breeding in their fourth year, while still in sub-adult plumage, but may not breed until their sixth or seventh year where breeding competition is intense (Buehler

2000). Bald eagles are thought to be monogamous, with pair bonds persisting for several years, but this is largely unproven. Eagles are single-brooded, although pairs may renest if the first clutch is lost.

Bald eagles in Florida begin nest building or nest maintenance activities in late September or early October. The nesting season is prolonged, with egg-laying beginning as early as October or as late as April (later nests are mostly renesting attempts; Millsap *et al.* 2004). For purposes of this management plan, the bald eagle nesting season is defined as the period 1 October–15 May. Nest sites tend to be built near habitat edges (McEwan and Hirth 1980) in a living tree that offers a view of the surrounding area and that can support the eagle's often sizeable nest. Substrates used in Florida vary according to local conditions, and include pines (*Pinus palustris* and *P. elliottii*), cypress (*Taxodium* spp.), mangroves (*Avicennia germinans* and *Rhizophora mangle*), great blue heron (*Ardea herodias*) nests, artificial structures such as communication towers, transmission towers, and raptor nesting platforms, and even—very rarely—on the ground (Broley 1947, Shea *et al.* 1979, Curnutt and Robertson 1994, Curnutt 1996, Millsap *et al.* 2004). However, bald eagles in Florida strongly prefer living native pines to all other substrates; 75% of all eagle nests surveyed during 2006 were built in living native pines (FWC unpublished data).

The bald eagle nesting season in Florida is defined as 1 October–15 May.

Nearly all bald eagle nests in Florida are built within 1.8 miles of water (Wood *et al.* 1989). Territory size varies depending on habitat and prey density but is thought to encompass 0.6–1.2 square miles (Buehler 2000). Bald eagle nests are spaced apart to ensure sufficient food resources for nestlings and to raise young with minimal disturbance from other eagles. Eagle pairs often build more than one nest, which allows them to move to an alternate nest while remaining in their territory. Throughout their range, eagles maintain an average of 1.5 nests per territory, ranging from one nest to five nests (Stalmaster 1987, Buehler 2000).

Bald eagles in Florida strongly prefer live, native pines to all other nesting substrates.

Most clutches of eggs in Florida are laid between December and early January. Mean clutch size throughout the bald eagle's range is 1.87 eggs, with most nests containing two eggs. Incubation lasts about 35 days. Average brood size in Florida is 1.56 nestlings per nest (FWC unpublished data). Nestlings in Florida fledge at around 11 weeks of age and remain with their parents near the nest for an additional 4–11 weeks (Wood 1992, Wood *et al.* 1998). Fledglings begin widespread local movements before initial dispersal, which occurs from April to July (Millsap *et al.* 2004). Based on a sample of 18,838 nests in Florida during 1973–2004, average annual breeding productivity was 70.6%, ranging from 52.2% in 1974 to 82.7% in 1996 (Nesbitt 2005). Average reproductive success during 1973–2004 was 1.16 fledglings for all nests and 1.54 fledglings per successful nest.

Movements

Most of Florida's breeding bald eagles, especially those nesting in the extreme southern peninsula, remain in the state year-round, but most sub-adults and non-breeding adults migrate out of Florida (Stevenson and Anderson 1994, Curnutt 1996, Mojica 2006). Eagles migrate

northward between April and August and return southward from late July through late December. Juveniles migrate northward later than older sub-adults (Broley 1947, Wood and Collopy 1995, Mojica 2006). Most juveniles disperse at about 128 days of age and spend their first summer as far north as Newfoundland, with peak numbers summering around Chesapeake Bay and the coastal plain of North Carolina (Broley 1947, Millsap *et al.* 2004, Mojica 2006). Florida's bald eagles use three migration flyways—the Atlantic coast, Appalachian Mountains, and the Mississippi River valley—with equal frequency, and they use stopover sites for resting or foraging (Mojica 2006). Eagles also exhibit nomadic wandering, mostly by sub-adults. Northern-breeding *alascanus* bald eagles winter in Florida at least occasionally (Stevenson and Anderson 1994).

Food

Bald eagles are opportunistic foragers, feeding or scavenging on a wide variety of prey. Primary prey of eagles in Florida includes various fish and waterfowl species. Prey from one study in north-central Florida was composed of 78% fish (mostly catfish, especially brown bullhead; *Ictalurus nebulosus*), 17% birds (mainly American coot; *Fulica americana*), 3% mammals, and 1% amphibians and reptiles combined (McEwan and Hirth 1980). Most prey is captured from the surface of the water, but bald eagles often harass ospreys (*Pandion haliaetus*) in flight to drop fish that they have captured. Bald eagles in Florida often scavenge carcasses along roadways or garbage at landfills (Millsap *et al.* 2004).

Longevity

The record lifespan for a bald eagle in the wild is 28 years. Eagles follow a pattern typical of raptors, with lower juvenile survival followed by increasing survival to adulthood (Buehler 2000, Millsap *et al.* 2004).

Habitat

Throughout their range, bald eagles use forested habitats for nesting and roosting, and expanses of shallow fresh or salt water for foraging. Nesting habitat generally consists of densely forested areas of mature trees that are isolated from human disturbance (Buehler 2000). Daytime roosts are generally in “super-canopy” trees adjacent to shorelines, and are typically located away from human disturbance (Buehler 2000). Communal roosts, which are rare in Florida, are located within three miles of water (Mojica 2006). The quality of foraging habitat is characterized by the diversity, abundance, and vulnerability of eagle prey, the structure of the aquatic habitat (*e.g.*, presence of shallow water), and the extent of human disturbance (Buehler 2000). Bald eagle nesting habitats are protected by law, but little or no emphasis has yet been placed on the preservation of roosting or foraging habitats (Mojica 2006). The greatest numbers of bald eagle nesting territories in Florida are found along the Gulf coast and around some of the larger inland lakes and river systems in the peninsula (Figure 1).

Bald eagles use forested habitats for nesting and roosting, and expanses of shallow fresh or salt water for foraging.

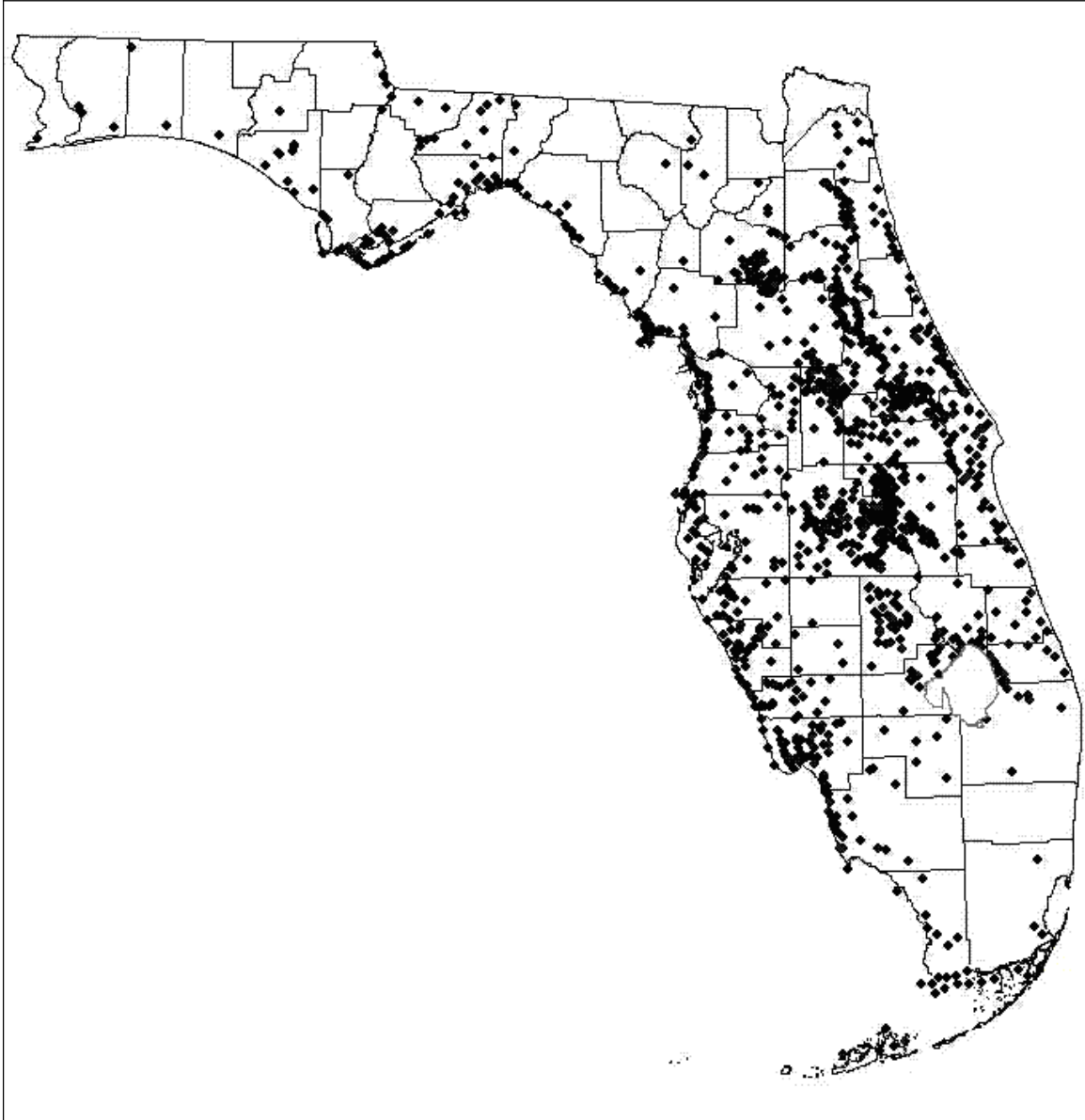


Figure 1. The distribution of active bald eagle nesting territories in Florida, 2005–2006.

Distribution and Population Status

Historical Distribution

Bald eagles formerly bred from central Alaska and the Maritime Provinces south to Baja California and Florida. It is widely believed that eagles were abundant in areas with high quality forested and aquatic habitats, both coastally and inland. In Florida, the eagle was called “abundant” (Bailey 1925) and “common” (Howell 1932) during the early 20th century. The size of Florida’s historic bald eagle population is unknown but it “must have been well in excess of

1,000 nesting pairs,” with numbers around Tampa Bay and Merritt Island thought to be “among the densest breeding concentrations of a large raptor known anywhere on earth” (Peterson and Robertson 1978).

Population Trends

The continental eagle population began to decline during the 18th century from loss of breeding habitat and from direct persecution—more than 128,000 bald eagles were shot in Alaska between 1917 and 1952 (Buehler 2000). The population decline intensified during the mid-20th century with widespread use of DDT compounding the continuing losses from habitat destruction and direct persecution. DDT is an organochlorine pesticide that was widely used in agriculture and mosquito control beginning in the 1940s. Widespread use of DDT was banned in the United States in 1972, partially because it

disrupted calcium metabolism in raptors. This calcium reduction resulted in eggshells that ruptured during incubation, causing significant and widespread reproductive failure in bald eagles and other raptors (Stalmaster 1987, Buehler 2000). Broley (1950) documented “heavy nesting failures” of eagles in Florida, and Cruickshank (1980) wrote of their “alarming decrease” and near-extirpation as a breeding species in Brevard County after 1950.

Substantial recovery of the bald eagle, continentally and in Florida, began in the 1970s, following the banning of DDT and a reduction in persecution brought on in part by passage of the U.S. Endangered Species Act of 1973. The Florida eagle population has increased greatly since statewide breeding season surveys began in 1972–1973, and especially since the early 1990s (Figure 2). The federal recovery plan for bald eagles in the southeastern states (USFWS 1989) established a “recommended recovery level” for Florida of 1,000 nesting territories, an average of 0.9 fledglings per active nest and ≥ 1.5 fledglings per successful nest, and $\geq 50\%$ breeding productivity. Eagles in Florida have exceeded each of these parameters for the past 20 years (Nesbitt 2005). One reason for the recovery of the eagle in Florida has been the continued availability of appropriate nesting and foraging habitats, thought to be the result of adherence to management guidelines for construction activities near eagle nests (Nesbitt *et al.* in review).

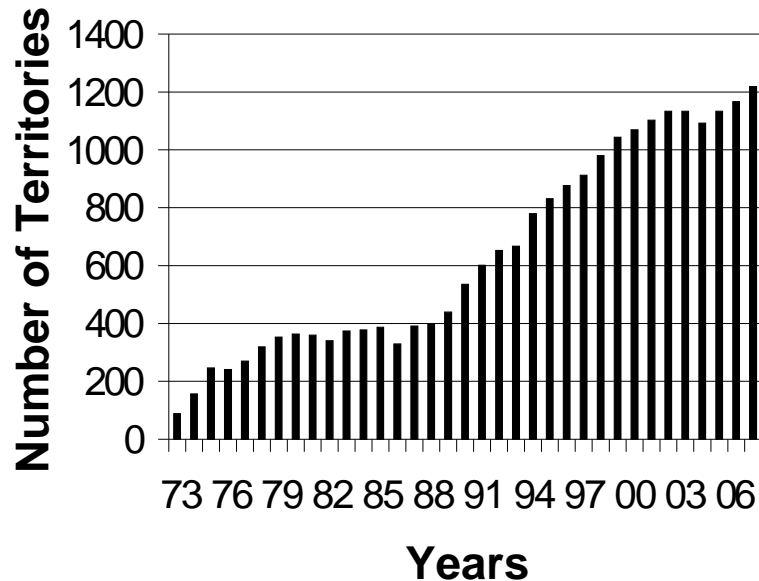


Figure 2. The number of bald eagle nesting territories in Florida, 1973–2007.

By 1997, Florida's bald eagle population was thought to exceed 4000 individuals, including sub-adults and other non-breeders (Buehler 2000). The increase in the breeding population appears to have slowed recently, from 1,043 nesting territories in early 1999 to 1,218 territories in early 2007 (Nesbitt 2005, Figure 2). The actual number of territories present in Florida is not known; the USFWS will conduct a survey in Florida in 2009 to determine the proportion of nests that are undetected during annual surveys. The Biological Status Report for the Bald Eagle (Sullivan *et al.* 2006) reported that "recent studies indicate 24% of bald eagle nests go undetected" and that "based on this correction factor, it is estimated there were 1,405 active nests in Florida in 2005." However, the analysis on which this figure was based was flawed (M. Otto, pers. comm.). A new analysis is currently being conducted at Patuxent Wildlife Research Center to develop an accurate estimate of the number of nests.

The apparent slower growth of the number of bald eagle nesting territories in Florida since 1999 (Figure 2) may suggest that eagles are reaching their current carrying capacity in the state. If this is the case, then a slight population decline in the future might eventually be expected as the population adjusts to carrying capacity. However, because carrying capacity diminishes with habitat loss, it may be difficult to distinguish a decline caused by habitat loss from a decline due to an adjustment of carrying capacity.

Current Distribution

Bald eagles reclaimed their entire historic range by the late 1990s (Buehler 2000). Recovery in the Lower 48 states has been dramatic, increasing from an estimated 417 pairs in 1963 to an estimated 9,789 pairs by 2007 (USFWS 2007a). Bald eagles have met or exceeded the population goals established in all five regional recovery plans, and on 8 August 2007, the USFWS removed the species from the list of federally endangered and threatened species.

Bald eagles were known to breed in 59 of Florida's 67 counties by 2005, the exceptions being Baker, Broward, Calhoun, Gilchrist, Holmes, Lafayette, Madison, and Nassau (Nesbitt 2005; Figure 1). Most nests are found on privately-owned lands (67% in 2003; Nesbitt *et al.* in review; unpublished GIS data), underscoring the importance of private lands in the conservation of eagles in Florida. The growth of the state's eagle population during the 1990s, when the human population grew at a high rate, shows that bald eagle populations can flourish even when faced with development pressures, if appropriate habitat protections are in place.

Bald eagles were breeding in 59 of Florida's 67 counties by 2005.

Concentrations of nesting territories are clustered around several significant wetland systems. The FWC has identified 16 areas of concentrated bald eagle nesting activity that contain a majority of the known nesting territories in Florida (Figure 3, Table 1). Many of these "core nesting areas" have persisted for decades, suggesting the presence of high-quality breeding and foraging habitats (Nesbitt *et al.* in review). These core nesting areas are located along the Gulf coast from St. Vincent Island to Lee County, and inland from the lower St. Johns River to Lake Okeechobee (Figure 3). Changes in the size, configuration, and location of these core nesting areas are monitored, and their importance to the overall population of bald eagles in Florida will be determined as new data become available.

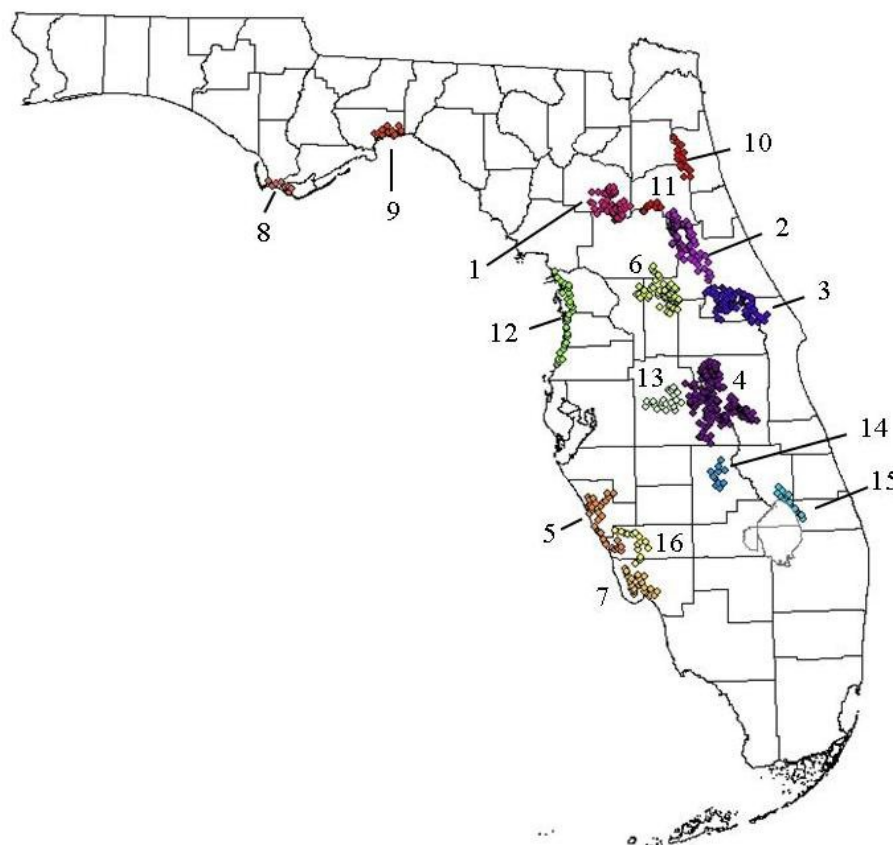


Figure 3. Location of bald eagle core nesting areas in Florida, 2005–2006. These core nesting areas, which are numbered chronologically from their discovery, are found in the following sites: (1) lakes Lochloosa, Newnans, and Orange; (2) Lake George; (3) the middle St. Johns River; (4) the Kissimmee chain of lakes; (5) the Placida Peninsula; (6) the Harris chain of lakes; (7) the Lee County coast; (8) St. Vincent National Wildlife Refuge; (9) St. Marks National Wildlife Refuge; (10) the lower St. Johns River; (11) Rodman Reservoir; (12) the central Gulf coast; (13) central Polk County; (14) Lake Istokpoga; (15) northeast Lake Okeechobee; and (16) coastal Charlotte County.

Table 1. The number of bald eagle nesting territories in the top 10 counties in Florida, 2004–2005. Data source is Nesbitt (2005).

County	Territories	County	Territories
Osceola	113	Seminole	45
Polk	112	Lee	42
Volusia	68	Brevard	41
Lake	63	Monroe	40
Putnam	56	Alachua	39

Historic and Ongoing Conservation Efforts

Substantial monitoring, management, and research activities have been conducted on Florida's bald eagles for more than 60 years, and many journal articles and reports have been produced. Since the 1972–1973 nesting season, all known nesting territories are monitored annually by use of aircraft to determine reproductive parameters such as territory occupancy, brood size, breeding productivity, and reproductive success. Eggs laid by eagles in Florida were used to successfully reestablish populations in other states during the 1970s and 1980s (Nesbitt and Collopy 1985). Wildlife rehabilitation centers in Florida have successfully treated and released hundreds of sick or injured bald eagles, while eagles with permanent injuries have provided opportunities for public education, lobbying, and fund-raising. Many of these conservation activities are anticipated to continue following delisting.

Several federal and state laws have directly or indirectly protected bald eagles. The most important laws include the federal Migratory Bird Treaty Act, the federal Bald and Golden Eagle Protection Act, and the federal Endangered Species Act, as well as state regulations noted in this document. The bald eagle was first protected nationally in 1918 under the Migratory Bird Treaty Act (16 U.S.C. 703–711), which protected nearly all native birds and their nests. The Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668a–668c) offered additional protection against take and disturbance of bald eagles and their nests. In 1972, the U.S. Environmental Protection Agency banned all domestic use of DDT, and this prohibition allowed bald eagle populations to recover from pesticide poisoning. The following year, the Endangered Species Act of 1973 (16 U.S.C. 1531–1544) was passed, and the bald eagle was added to the list of federally endangered and threatened species in 1978.

Bald eagle nesting habitats in Florida have been protected primarily through the Endangered Species Act in accordance with habitat management guidelines in the southeastern United States (USFWS 1987). These federal guidelines created buffers around eagle nests in which activities such as development or logging were restricted. Two buffer zones were recommended: a primary zone (0 to 750–1500 feet from the nest) and a secondary zone (1,500 feet to one mile beyond the end of the primary zone). Recently, the USFWS (2007b) published new federal guidelines that recommend a buffer zone that extends up to 660 feet from the nest depending upon whether a visual screen of vegetation exists around the nest, and the presence of existing activities in the vicinity of the nest, with additional recommendations for proposed activities occurring during the nesting season.

Florida also had state regulations that protected the bald eagle. The eagle was listed as threatened and therefore received protections afforded it by Rule 68A-27.004 of the Florida Administrative Code (F.A.C.), which prohibited the non-permitted take or harassment of eagles or their nests. There are local and state regulations tied to the listing category of a species. The Florida Land and Water Management Act of 1972 indirectly protected some eagle habitats by establishing two state programs: Development of Regional Impact and Area of Critical State Concern. The Area of Critical State Concern Program regulates development in areas of regional or statewide natural significance, such as Apalachicola Bay, the Green Swamp, Big Cypress Swamp, and the Florida Keys. The bald eagle is listed as a species of “greatest conservation need” in the Florida Comprehensive Wildlife Conservation Strategy (FWC 2005). This is not a legal designation but

rather makes conservation work on the bald eagle eligible to receive State Wildlife Grant funds to address the need for continued management and monitoring activities.

State water management districts and local governments provided additional layers of protection for bald eagles. Local regulations emphasize listed species (endangered, threatened, or species of special concern) and their habitats when considering comprehensive planning, zoning, development review, and permitting activities. Prioritization of listed species, requirements for surveys and documentation, increased buffer zones, protection of upland habitats, additional mitigation requirements, more intensive levels of review, and coordination and compliance with appropriate federal and state wildlife agencies are some of the procedures that local governments and state wildlife agencies apply to listed species.

During 2006, the USFWS proposed removing the bald eagle from the list of federally endangered and threatened species, and this action was finalized in August 2007. Although the bald eagle is no longer protected under the Endangered Species Act, it is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The USFWS (2007b) has redefined some of the terminology included in the Bald and Golden Eagle Protection Act, which prohibits the unpermitted “take” of bald eagles, including their nests or eggs. The act defines “take” to mean to “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” an eagle. The new definition of “disturb” is to “agitate or bother a bald or golden eagle to the degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior” (USFWS 2007b). This management plan adopts the federal definition of “disturb” in 50 C.F.R. § 22.3 and Florida’s definition of “take” in Rule 68A-1.004, F.A.C.

CHAPTER 2: THREAT ASSESSMENT

Reasons for Delisting

In response to a petition filed in 2002, the FWC convened a panel to review the biological status of the bald eagle in Florida (Sullivan *et al.* 2006). The panel concluded that bald eagles in Florida did not meet the criteria for listing at any level and had not met the criteria for the previous five years. Consequently, the panel unanimously recommended that the bald eagle be removed from Florida's list of imperiled species. This decision was based on the following facts: (1) the bald eagle population occurs throughout Florida; (2) the population has not experienced extreme fluctuations in range or numbers; (3) the estimated number of adults had increased >300% during the past three eagle generations (defined here as a total of 24 years); and (4) the population is not projected to experience significant declines over the next 24 years (Sullivan *et al.* 2006).

Present and Anticipated Threats

Threats to the bald eagle in Florida include both natural and human-related causes that individually or in combination could cause reductions in reproductive or survival rates. This section highlights the most serious threats known to impact bald eagles in Florida currently, as well as a few threats that may potentially affect Florida's eagles in the future. This section emphasizes human-caused threats, which are more likely to be controlled via a management plan. Some sources of eagle mortality in Florida—natural as well as human-caused—have no clear remedy. Forrester and Spalding (2003) is an excellent reference for causes of injury and mortality to Florida's eagles. Other than intraspecific aggression, most natural mortalities probably go undetected. Human-related mortality is known from sick or injured eagles or eagle carcasses examined by the National Human Health Center, eagles brought to Audubon's Center for Birds of Prey, or other veterinary or rehabilitation centers (Forrester and Spalding 2003), as well as recent radio-telemetry studies of eagles in the wild (*e.g.*, Millsap *et al.* 2004, Mojica 2006).

The greatest cause of documented mortality to bald eagles in Florida during 1963–1994 was trauma, representing 59% of diagnosed mortalities (Forrester and Spalding 2003). Other causes of eagle mortality were electrocution (16%), poisoning (10%), infectious diseases (6%), emaciation (4%), and other (2%). Among 182 eagle deaths from trauma, vehicle collision accounted for 44%, gunshot 10%, intraspecific aggression 7%, powerline collision 4%, six other causes accounted for a total of 9%, and the causes of 26% of deaths were unknown (Forrester and Spalding 2003).

Human-caused Threats

Although the bald eagle population has grown concurrently with the growth of the human population in Florida, the continued conversion of nesting or foraging habitats to development can be expected to reduce the amount and quality of eagle habitats. Some of the most intense development pressure in peninsular Florida is occurring along the shores of large inland lakes that support core nesting areas (Figure 3), such as Lake Tohopekaliga in Osceola County.

Some eagles in Florida have shown great tolerance for nesting in suburban or urban areas—in some cases even establishing new territories in these habitats (Millsap *et al.* 2004). In one study, survival rates were similar for juveniles from rural and suburban nests, however mortality of those from suburban areas was almost always a result of direct or indirect human interactions while no mortality of rural birds were known to be associated with human interactions. Bald eagles raised in suburban habitats seem to become acclimated to human-related landscape features and do not regard these features with the same amount of caution that is shown by eagles raised from rural nests (Millsap *et al.* 2004). Nevertheless, more research is needed to determine effects of human activities in close proximity to eagle nests (Millsap *et al.* 2004).

Bald eagles often scavenge road-kills along roadways and are therefore susceptible to being struck by vehicles. Collision with motor vehicles represents the most frequent cause of documented eagle mortality in Florida, representing 19–44% of all eagles' deaths due to trauma, 1963–1994 and 1997–2001 (Forrester and Spalding 2003, Millsap *et al.* 2004).

Although protected from direct persecution for more than 50 years, bald eagles are occasionally still shot in Florida. Audubon's Birds of Prey Center received seven bald eagles with gunshot wounds during 2001–2006 (L. White, pers. comm.).

Powerlines cause eagle mortality in two ways, by electrocution and collision. Powerlines accounted for 19% of the mortality of bald eagles in Florida during 1963–1994, with electrocution representing more than 86% of this total (Forrester and Spalding 2003). Power companies in Florida have not yet retrofitted older distribution lines with modern features to reduce the incidence of eagle electrocutions.

The deaths of 19 bald eagles in Florida during 1973–1994 were attributed to lead poisoning, which usually affects eagles after they feed on waterfowl imbedded with lead shot. The use of lead shot for waterfowl hunting was banned in 1991. Pentobarbital poisoning of eagles occurs mostly at landfills, where eagles feed on the carcasses of euthanized animals, such as from a veterinary clinic or animal shelter. Forrester and Spalding (2003) discussed eight such eagle deaths in Florida, mostly at landfills. Bald eagles that breed in Florida forage heavily at landfills throughout the eastern United States, and are therefore exposed to this threat over a wide area (Millsap *et al.* 2004). Mercury contamination is another threat to eagles, although no known mortality has occurred (Forrester and Spalding 2003). However, the bioaccumulation of mercury in fish ingested by eagles suggests that sub-lethal effects will continue to be a potential threat.

Natural Threats

Bald eagles are extremely territorial when establishing or defending their nesting territories and may be badly injured or even killed during territorial battles. Intraspecific aggression accounts for 7% of documented eagle mortality in the state (Forrester and Spalding 2003). Along with food availability and inclement weather, intraspecific aggression is thought to be one of the primary regulators of eagle populations where human interactions are limited, especially in areas that are close to their carrying capacity (Buehler 2000). Mortality from intraspecific aggression may be expected to increase as Florida's eagle population approaches carrying capacity.

Hurricanes and other severe storms can damage or blow down eagle nests or nest trees, and storms that occur during the eagle nesting season can break eggs or kill nestlings. Forrester and Spalding (2003) detail several instances of storm-related mortality of bald eagles in Florida. Nesbitt (2005) determined that more than one-third of all eagle nesting territories monitored in Florida during 2004–2005 were within the paths of Hurricanes *Charley*, *Frances*, and *Jeanne*. Although there was significant local damage (*e.g.*, five of the six nests in DeSoto County were destroyed), overall effects of the storms were minimal. Fewer than 10% of the nests within the paths of the storms showed any lasting impacts, and most destroyed nests were rebuilt in the same or a nearby tree within weeks (Nesbitt 2005). Nevertheless, the loss of trees large enough to support eagle nests may cause local shortages of nesting sites in developed areas, where such trees may be scarce. Meteorologists are warning that we have recently entered a 25- to 50-year cycle of greater hurricane activity and intensity (Landsea *et al.* 1996), and, coupled with anticipated longer-term climate change associated with global warming (McCarthy *et al.* 2001), inclement weather may in the future have a greater impact on Florida's bald eagle population.

Forrester and Spalding (2003) list 112 diseases or parasites that have been found on or in the bodies of bald eagles in Florida. Most parasites are not lethal, but several infectious diseases have been implicated in the deaths of bald eagles. One suburban-raised eagle fledgling from Florida died from a chlamydial infection that was most likely transmitted by non-native monk parakeets (*Myiopsitta monachus*) that built their nest at the bottom of the eagle's nest (Millsap *et al.* 2004). Avian vacuolar myelinopathy (AVM) is a recently discovered neurological disease that attacked bald eagles and American coots in Arkansas during 1994. It has since been implicated in more than 100 bald eagle deaths in Georgia, North Carolina, and South Carolina (Wilde *et al.* 2005). AVM has yet to be detected in Florida, but it may eventually spread here, or Florida's eagles may contract the disease while summering out of state. West Nile virus colonized much of the continental United States within a few years of its discovery in 1999, and has been documented in 285 species of birds in North America, including bald eagles (Centers for Disease Control and Prevention 2006). However, the degree to which West Nile virus is a threat to Florida's eagles is unknown. Likewise, avian influenza is another potential threat to Florida's eagles.

CHAPTER 3: CONSERVATION GOAL AND OBJECTIVES

Conservation Goal

The goal of this management plan is to establish conservation actions that will maintain a stable or increasing population of bald eagles in Florida in perpetuity. To achieve this goal, a decline of 10% of the number of eagle nesting territories in Florida over a period of 24 years (three eagle generations) must be prevented through science-based management, regulations, public education, and law enforcement. The FWC anticipates that without continued protection of eagle nesting habitats, the number of nesting territories in Florida could decline by 10% or more over the next 24 years, which could trigger a relisting effort. The FWC has therefore set a conservation goal for bald eagles that is higher than the minimum threshold to avoid a need for relisting.

The data for the conservation objectives are from the annual nest surveys conducted by FWC biologists for the past 35 years.

Conservation Objectives

Conservation objectives are benchmarks used to measure progress toward the conservation goal. The following conservation objectives have been met or exceeded in Florida, and maintaining these objectives will help to ensure that the conservation goal is sustained. Annual nest surveys conducted by FWC biologists since 1972 provide the data used to establish the following objectives. Determining annual reproductive success will provide the information needed to monitor the population and to measure the success of the objectives. The FWC listing process has five criteria—three based on population size or trend, one on geographic range, and one on quantitative analysis of the probability of extinction (see Sullivan *et al.* 2006). The first three conservation objectives below provide a means by which changes in population size or trend can be detected, while the fourth objective is intended to ensure that the bald eagle maintains its current geographic distribution. Maintaining a stable or increasing population of eagles throughout their current distribution will ensure a healthy bald eagle population in Florida, and will prevent the need to relist eagles under FWC's imperiled-species regulations. The following conservation objectives will be calculated annually from five-year running averages, beginning with data collected during the period 2002–2006. We use five-year averages to avoid the possibility that one or two years of poor reproductive success might trigger a relisting effort. These numbers are subject to revision based on changes in monitoring data and/or methods.

The conservation objectives will be calculated annually from five-year running averages of bald eagle population data.

1. Maintain a minimum of 1020 active territories per year over the next 24 years (i.e., through 2032).

The listing criterion that seems most likely to trigger a future listing petition for the bald eagle in Florida is Criterion C: Small Population with Compounding Problems. To trigger this criterion, a species must be below the threshold of 10,000 mature individuals **and** must meet one of two possible sub-criteria, more likely sub-criterion C1 (a 10% decline over three generations). The Biological Status Report for the Bald Eagle (Sullivan *et al.* 2006)

defined 8–12 years as the length of one bald eagle generation. The FWC believes that it is acceptable to use eight years as the generation length, as this number is compatible with USFWS's Draft Post-delisting Monitoring Plan (2007c). The Biological Status Report estimated that the population in Florida numbered 3,372 mature individuals during 2005. That same year, there were 1,133 active bald eagle nesting territories in the state (Nesbitt 2005), so Florida must maintain a breeding population of ≥ 1020 nesting territories (*i.e.*, 90% of 1,133) to avoid triggering sub-criterion C1 of the listing process.

2. Maintain an average of 68% of the active territories producing ≥ 1 nestling per year.

Because bald eagles require 4–5 years to reach sexual maturity, it is important to monitor breeding productivity to determine potential future impacts to the population. A decrease in reproduction may provide an early warning for a pending population decline. The value of 68% represents the current five-year average of bald eagle nesting territories in Florida producing ≥ 1 nestling per year. As it appears that the eagle population has slowed its increase since 2000, it is appropriate to use the most recent five-year average available (2002–2006) of breeding productivity as the benchmark, since this level has resulted in an apparently stable population.

3. Maintain an average reproductive success of ≥ 1.5 fledglings per active nest over five years.

Since FWC surveys began in 1972, reproductive success of bald eagles in Florida has averaged 1.54 fledglings per active nest. Five-year running averages were calculated for all survey years, and fledgling production never dropped below 1.5 fledglings per nest, so this number was chosen to ensure a stable population.

4. Maintain the current area of occupancy ($>770 \text{ mi}^2$) and extent of occurrence (52,979 mi^2) of bald eagles statewide.

Maintaining the current area of occupancy and extent of occurrence of bald eagles statewide will help maintain a stable or increasing population. Further, the Biological Status Report (Sullivan *et al.* 2006) indicated that bald eagles in Florida may be near the threshold for listing as a species of special concern, based on which figure is used for the Area of Occupancy. While this criterion can be triggered only in combination with two sub-criteria, the FWC believes that the prudent benchmark is to maintain an area of occupancy in excess of the threshold, as calculated in the Biological Status Report (Sullivan *et al.* 2006).

CHAPTER 4: RECOMMENDED CONSERVATION ACTIONS

Strategies to Achieve the Conservation Objectives

This chapter describes the strategies to be undertaken to maintain Florida's bald eagle population at or above the levels specified by the conservation objectives. Virtually all of the conservation actions address each of the objectives. These actions are best accomplished by using an adaptive management approach that allows for adjustments to policies, guidelines, and techniques based on science and observed responses to implemented conservation measures. New biological information will be used to adjust bald eagle conservation actions as it becomes available. The FWC will monitor the eagle population and will study the effects of human activities near eagle nests. Results of this research will be evaluated and the FWC will propose adjustments in regulations, minimization, and conservation measures as appropriate. Any substantive changes to FWC policies or guidelines will be made with stakeholder involvement and Commission approval.

Habitat Management

This management plan relies in part on the ability of public lands to support bald eagles. Currently, approximately 33% of all known bald eagle nests in Florida occur on public lands (Sullivan *et al.* 2006, Nesbitt *et al.* in review). Public lands provide a high level of security for wildlife because of statutory provisions for long-term management funding and for guiding habitat management on those lands (Florida Statutes 259.105 and 259.032).

The FWC encourages land management practices that benefit bald eagles by decreasing the risk of catastrophic wildfire, by maintaining healthy forests, and by providing suitable nest trees. These management practices include the use of prescribed fire, removal of exotic species, reduction of excess fuel loads, thinning of overstocked stands, replanting with native species (primarily pines), and uneven-aged timber management. Retaining large-diameter native pines will ensure that suitable potential nest trees may be available in the future. All of these land-management activities should use the appropriate protections outlined in the Permitting Framework. The FWC recommends siting high-impact recreational activities away from any active or alternate bald eagle nest and restricting activity and/or posting signs during the nesting season, where appropriate. The FWC will provide to managers of Florida's public lands the resources to identify bald eagle nests on lands they manage. The FWC will also provide technical assistance in managing habitats within nest buffers, and will ensure that future Conceptual Management Plans of lands managed by FWC include a component that follows recommended management practices of habitats surrounding bald eagle nests.

The FWC encourages land management practices that decrease the risk of catastrophic wildfire or an outbreak of timber disease, and that retain old-growth native pines.

Nesting Habitat

The USFWS (2007b) Bald Eagle Management Guidelines help the public comply with the Bald and Golden Eagle Protection Act by avoiding activities that disturb bald eagles. These federal guidelines serve as the basis for the FWC Habitat Management Guidelines recommended in this management plan to ensure compliance with Florida wildlife laws concerning bald eagles (see Permitting Framework), and to minimize potentially harmful activities conducted within 660 feet of active or alternate bald eagle nests. In addition, the FWC recommends that nesting habitat be managed as described in the preceding section on habitat management.

Foraging Habitat

Aquatic habitats that support fish and waterfowl are essential to maintaining healthy prey populations for bald eagles. The FWC monitors and manages freshwater habitats and fish populations in more than one million acres of lakes, rivers, and streams, and provides funding to restore and enhance these habitats. Several federal and state agencies in Florida work together to maintain quality aquatic habitats. The U.S. Environmental Protection Agency, Florida Department of Environmental Protection (DEP) and the five water management districts monitor and regulate water quality (nutrient input) and quantity (minimum flows and levels) to maintain healthy conditions for aquatic plants, fish, and other wildlife. The FWC and DEP also work together to monitor, restore, and control aquatic plants through permit reviews, chemical, mechanical, or biological control of invasive exotic species, and through enhancement projects to improve habitats for fish and other wildlife. These combined habitat management efforts are expected to provide suitable eagle foraging habitats in Florida in perpetuity.

Bald eagles frequently feed at landfills, and some eagles have been killed by secondary pentobarbital poisoning from feeding on carcasses of euthanized animals. For this reason, it is imperative to incinerate or quickly bury the bodies of euthanized animals.

Land Acquisition

Continued acquisition of private lands is one of several strategies for preserving bald eagle habitats in Florida. Approximately 28% of Florida's land area is publicly owned or protected under perpetual conservation easements, and these lands support about 33% of the bald eagle nests in the state. Conservation easements can be used to set aside private lands from future development and are an important component of the conservation of bald eagles. The FWC, local governments, other state agencies, and private organizations acquire habitat through a variety of programs. The FWC will support legislation as part of the Florida Forever successor program to allocate sufficient funds necessary to acquire and manage suitable or potentially suitable habitat for imperiled species and bald eagles. Acquiring, managing, and restoring additional lands that support bald eagle habitats should remain a state priority so long as the acquisitions are compatible with priorities for imperiled species.

Private Lands Incentives

Private lands play an important role in the long-term conservation of bald eagles in Florida, currently supporting about 67% of all currently known nests. To promote the enhancement of bald eagles and eagle habitats on private lands in Florida, the FWC will:

1. **Inform private landowners of existing land-use incentive programs.** Incentive programs that can be used to promote conservation of bald eagles are listed in Table 2 (following page). FWC staff will work with owners of private lands who wish to manage their lands for the benefit of bald eagles to determine the most appropriate incentive programs.
2. **Inform private landowners of opportunities to sell conservation easements around bald eagle nests on their properties.** A developer whose activity is not conducted consistent with the FWC Eagle Management Guidelines (page 23) may elect to purchase a conservation easement around an eagle nest offsite or other suitable bald eagle habitat as a conservation measure. This action will provide another landowner the opportunity to be compensated for permanently conserving a bald eagle nest or nesting habitat.
3. **Work with local governments to encourage expedited permit-review and/or reduced development-review fees in exchange for voluntarily following the FWC Eagle Management Guidelines.** The FWC recommends that developers who voluntarily avoid potential disturbance of bald eagles by following the FWC Eagle Management Guidelines be granted financial incentives or expedited project review. This recommendation will require the cooperation of local governments.

Table 2. Landowner assistance programs that may be used to promote the conservation of bald eagles in Florida.

Program	Description	Contact
Common Species Common (CSC)	Administered by FWC. Improves wildlife habitat by focusing conservation on high-priority habitats outlined in FWC's Comprehensive Wildlife Conservation Strategy.	FWC Habitat Conservation Scientific Services (HCSS) biologist*
Conservation Reserve Program (CRP)	Administered by U.S. Department of Agriculture's (USDA) Farm Service Agency (FSA). Provides annual payments and cost-share assistance to establish long-term, resource-conserving landcover on eligible farmland.	Local FSA office through the nearest USDA center
Environmental Quality Incentives Program (EQIP)	Administered by USDA's Natural Resources Conservation Service (NRCS). Provides technical assistance and up to 50% of the cost to farmers and ranchers who face threats to soil, water, air, or natural resources.	USDA district conservationist
Forest Stewardship Program (FSP)	Administered by FWC. Helps landowners to increase the economic value of their forestland while maintaining its environmental integrity. Stewardship is based on the multiple-use land strategy.	Local forester or a HCSS biologist
Partners for Fish and Wildlife Program (PFW)	Administered by USFWS. Provides technical assistance and up to 50% of the cost-sharing to landowners who conduct habitat restoration or improvement activities on their lands. The focus in Florida is on restoration of native habitats, restoration of degraded streams or other wetlands, and eradication of exotic species.	HCSS biologist
Wetlands Reserve Program (WRP)	Administered by NRCS. Provides technical and financial assistance to restore wetlands and purchase conservation easements.	USDA district conservationist
Wildlife Habitat Incentives Program (WHIP)	Administered by NRCS. Provides technical assistance and up to 75% of the cost-sharing to establish or improve wildlife habitat.	USDA district conservationist

* Regional HCSS biologists can be contacted through FWC's regional offices.

Law Enforcement

The FWC's Division of Law Enforcement, in conjunction with federal, state, and local partners, is responsible for enforcing Florida's wildlife and fisheries laws. From 2003 through 2006, FWC officers responded to more than 400 incidents involving bald eagles, and this effort will not diminish upon delisting. Efforts to protect bald eagles include the following actions: patrolling areas where eagles and eagle nests occur; responding to calls of illegal activity in progress; investigating reports of illegal activity; documenting and referring illegal acts for prosecution; picking up sick or injured eagles for transport to rehabilitation facilities; retrieving and storing carcasses of non-evidentiary eagles; and providing proactive, public guidance about bald eagle conservation.

One of the most important components of the enforcement strategy is ensuring compliance through education. The FWC's law enforcement officers understand the importance of explaining wildlife laws to the public to avoid unintentional violations. However, FWC law enforcement officers actively pursue and refer for prosecution those who intentionally violate wildlife laws.

The FWC law enforcement officers also educate the public on how to identify and report violations. The FWC's Division of Law Enforcement administers the Wildlife Alert program, which receives information via a toll-free number (1-888-404-3922) that is answered 24 hours a day, seven days a week. Cash rewards are offered to callers who provide information about any illegal activity that results in an arrest. Callers may remain anonymous and are not required to testify in court.

Potential wildlife violations should be reported to FWC's Wildlife Alert toll-free number (1-888-404-3922), which is answered 24 hours a day.

The FWC law enforcement officers and USFWS special agents partner to protect Florida's wildlife and fisheries resources via a Cooperative Law Enforcement Agreement. This Agreement grants FWC officers the authority to enforce federal laws, including the Bald and Golden Eagle Protection Act. Additionally, FAC 68A-13.002 adopts the federal Migratory Bird Treaty Act as state law and applies state penalties for violations. The FWC officers provide most of the routine patrol of eagle habitats and nests. Agents from USFWS and FWC often jointly investigate wildlife violations to decide whether to prosecute in state or federal court.

Proposed Regulations

Even though the FWC proposes to remove the bald eagle from the state's list of imperiled species under Rule 68A-27.004 (F.A.C.), management of bald eagles remains important to maintain the recovered status of the species. The FWC will gradually modify protections and conservation measures, if population trends warrant such actions, while monitoring the impacts of these actions.

Management guidelines established for bald eagles by the U.S. Fish and Wildlife Service (1987) consisted primarily of recommending that buffer zones be established around active and alternate eagle nests, and then providing biological opinions and technical assistance under provisions of Section 7 of the Endangered Species Act regarding land-use activities within these zones. These

buffer zones were effective in assuring that development activities did not significantly affect nesting eagles in Florida. When reproductive success was compared between rural eagle nests and nests subject to regulated development (recommendations were followed within 750 feet of the nest), no differences were detected, regardless of whether the development was residential or commercial (Nesbitt *et al.* 1993). This study demonstrates that when management guidelines were followed, bald eagle nesting was not significantly affected, and therefore the 750-foot buffer zone around eagle nests was considered effective and sufficient for minimizing the effects of development. Two other reviews of eagle nests in Florida have suggested that occupation rates of nests by eagles did not change following construction activities (T. Logan, S. Godley, pers. comm.). Nevertheless, observations by others have suggested that eagles have been substantially affected by construction activities (L. White, pers. comm.).

The National Bald Eagle Management Guidelines (USFWS 2007b) recommend the establishment of a single buffer zone 660 feet or less from the nest, depending on the presence or absence of existing activities (of “similar scope”) and the visibility of the activity from the nest. The guidelines also recommend minimization measures to reduce the potential for human activities to affect nesting bald eagles. When the bald eagle was listed by the USFWS as threatened, the recommended buffers around bald eagle nests were larger than those now adopted under the National Bald Eagle Management Guidelines (USFWS 2007b). The Southeastern Bald Eagle Habitat Management Guidelines (USFWS 1987) recommended against most activities within 750 feet of an active or alternate bald eagle nest (the primary zone), and added a suite of seasonal recommendations for activities up to 1,500 feet (the secondary zone).

The USFWS and FWC have approved the installation of infrastructure and external residential/commercial construction within the secondary zone (750–1,500 feet) of bald eagle nests during the nesting season in Florida since the mid-1990s, with the provision that monitoring be conducted to evaluate the response of the eagles to authorized activities. These joint monitoring guidelines were formalized in 2002 to ensure that nest monitoring was conducted consistently, and to serve as a database for evaluating the ongoing and future changes in management recommendations. Results of this monitoring indicate that actions that occurred in the secondary zone were not likely to have a direct negative impact on bald eagles. The Bald Eagle Monitoring Guidelines subsequently were modified on three occasions to obtain data used to evaluate eagles’ response to the revised buffer-zone distances already implemented in Florida and incorporated into the National Bald Eagle Management Guidelines (USFWS 2007b) and to reflect current USFWS policy and regulatory changes in Florida. Initial review of the information in these more recent monitoring reports suggests the current USFWS guidelines are appropriate.

Some bald eagle pairs in Florida tolerate disturbance much closer than 660 feet from the nest, and the behavior of eagles nesting close to or within developed areas seems to be increasing in Florida. Bald eagle use of urban areas is a relatively new event, and the long-term stability of urban eagle territories has not been documented fully. Although some eagles have demonstrated tolerance for intensive human activity, this does not mean that all eagles will do so (Millsap *et al.* 2004). A minimum of five years of post-impact data is needed to study the long-term effects of development within regulated nest buffer zones (Nesbitt *et al.* 1993). Both studies described above (Nesbitt *et al.* 1993, Millsap *et al.* 2004) recommended retaining buffer zones around bald

eagle nests. Therefore, the conservation of active or alternate bald eagle nests and the retention of recommended buffer zones (USFWS 2007b) are recommended to sustain the bald eagle population in Florida at or above its current level.

To better organize existing rules and to provide a location for eagle-specific rules, the FWC proposes to establish a new section within F.A.C. Chapter 68A for nongame birds (Rules Relating to Birds. F.A.C. 68A-16). Currently there are specific sections of Chapter 68A that regulate the “take” of game species, freshwater fish, fur-bearing animals, reptiles, amphibians, and many saltwater species. F.A.C. 68A-16 will create one location for existing rules pertaining to all non-listed, nongame birds. The FWC proposes moving F.A.C. 68A-13.002, “Migratory Birds; Adoption of Federal Statutes and Regulations,” to this new section (Rules Relating to Birds. F.A.C. 68A-16.001). A review of current FWC rules will likely identify other rules that should be moved to this new section. Other than the eagle specific rule proposed below, the FWC is not proposing any new rules, only the reorganization of existing rules.

One rule change is necessary to implement the removal of the bald eagle from the list of threatened species (68A-27.004 F.A.C.). This management plan recommends that 68A-27.004 F.A.C. be amended by removing the bald eagle from the list simultaneously with the addition of the bald eagle rule language proposed below.

Following is draft language for a proposed Florida regulation to protect bald eagles:

F.A.C. 68A-16.002 Bald Eagle (*Haliaeetus leucocephalus*).

(1) No person shall take, feed, disturb, possess, sell, purchase or barter, or attempt to engage in any such conduct, any bald eagle or parts thereof, or their nests or eggs, except:

- (a) As authorized from the executive director by specific permit, which will be issued based upon whether the permit would advance the management plan goal and objectives;
- (b) When such conduct is consistent with the FWC Eagle Management Guidelines;
- (c) When such conduct is consistent with a previously issued permit, exemption, or authorization issued by the FWC under imperiled species regulations (Chapter 68A-27, F.A.C.) or by the USFWS under the Endangered Species Act (U.S.C. 1531 et seq.)

(2) For purposes of this section, the term “disturb” is defined as, “To agitate or bother a bald eagle to the degree that causes, or is likely to cause (a) injury to an eagle, (b) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (c) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

(3) On public land, it is unlawful for any person to knowingly enter any area posted as closed for the protection of bald eagles, their nests, or their nest trees, except the staff or authorized agents of the managing public entity for that area, or as authorized pursuant to subsection 1.

(4) The section of the Bald Eagle Management Plan entitled “Permitting Framework April 2008,” which includes the FWC Eagle Management Guidelines, is incorporated herein by reference.

Permitting Framework April 2008

To advance the conservation goal and objectives of this management plan, the proposed regulations listed above and this Permitting Framework are intended to assist land-use planning to minimize the potential for certain actions to disturb or “take” nesting bald eagles. This Permitting Framework clarifies (1) those activities that are not likely to result in a “take” or disturbance of bald eagles, and (2) those activities for which permits are available to assure compliance with the rules. A FWC Eagle Permit is not required to conduct any particular activity occurring near a bald eagle nest, but such a permit may be necessary to avoid liability for “take” or disturbance caused by the activity. Because the rule standard for any permit issued is “would advance the management plan goal and objectives”, this section establishes criteria that meet the standard. This Permitting Framework and the FWC Eagle Management Guidelines, contained herein should be used together. Individuals who cannot follow the Guidelines and want to avoid liability for a possible disturbance or take can apply for a permit. A FWC Eagle Permit can only be issued when acceptable minimization and conservation measures are provided as permit conditions.

The Permitting Framework applies to all activities within 660 feet of any active or alternate bald eagle nest.

The FWC intends for this management plan to be compatible with the USFWS Bald and Golden Eagle Protection Act (BGEPA) and the associated National Bald Eagle Management Guidelines (USFWS 2007b). The FWC will work with the USFWS to implement a single permit framework for bald eagles. The FWC is already coordinating with the USFWS on an agreement that will clarify under what circumstances federal authorization will be required to conduct activities that cannot be conducted consistent with the Bald and Golden Eagle Protection Act. Development of such an agreement will take time in part because the USFWS has not yet developed a draft permitting framework under BGEPA. Additionally, as new information becomes available on the effectiveness of the proposed conservation measures, this permitting framework may be revised. Changes to this Permitting Framework section will require stakeholder involvement and Commission approval. Any change in policy, including any revisions to this Permitting Framework, will be posted to the FWC website <<http://myfwc.com>>, after consultation with stakeholders and the public and upon approval by the Commission.

Unless otherwise specified, this section provides guidelines for activities that occur within 660 feet of any active or alternate bald eagle nest. The framework does not apply to lost or abandoned nests. An **active** nest shows evidence of breeding by a bald eagle pair during the current or most recent nesting season. An **alternate** nest has been used for nesting during the past five nesting seasons, but was not used during the current or most recent nesting season. An **abandoned** nest has not been used for nesting for more than five consecutive nesting seasons. The recommendations in the FWC Eagle Management Guidelines (below) no longer apply to abandoned nests, but the nest itself cannot be altered. A nest is considered **lost** if the nest tree is destroyed, or if the nest is destroyed by natural causes and is not rebuilt in the same tree within two nesting seasons. The USFWS (2006b) recommends protecting lost nests for three years, but the FWC uses a two-breeding-season period because this duration has been in place in Florida for several years. Future research on nest reactivation may provide information to justify revising these recommended protection periods.

The bald eagle nesting season is 1 October–15 May unless the young fledge before or after 15 May. The following sections identify activities that should not occur within 660 feet of a bald eagle nest during the nesting season unless monitoring is conducted. Nest monitoring must follow the protocol outlined in the Bald Eagle Monitoring Guidelines (USFWS 2007d), or subsequent versions.

A. FWC Eagle Management Guidelines (Activities That Do Not Require a FWC Eagle Permit)

Activities that can be undertaken consistent with the FWC Eagle Management Guidelines do not require a FWC Eagle Permit. A process map (Figure 4) clarifies when application for a permit is recommended. Activities that do not require a permit include (1) those conducted at any time more than 660 feet from an eagle nest, (2) any temporary activity (defined below) conducted at any distance from a nest outside the nesting season, or (3) any activity conducted consistent with the FWC Eagle Management Guidelines.

Activities that do not require a FWC eagle permit include (1) those conducted more than 660 feet from a bald eagle nest, (2) any temporary activity conducted outside the nesting season, or (3) any activity that follows the FWC Eagle Management Guidelines.

The FWC recommends that the FWC Eagle Management Guidelines be followed unless a permit is issued. The FWC will not issue citations to or seek prosecution of persons whose activities are conducted consistent with the FWC Eagle Management Guidelines, even if the activity results in a “take” or disturbance of bald eagles. If it is unclear whether a proposed activity can be undertaken consistent with the FWC Eagle Management Guidelines, then the local FWC regional nongame biologist should be contacted for guidance.

The FWC will not seek to prosecute persons whose activities are conducted consistent with the FWC Eagle Management Guidelines, even if the activity results in a “take” or disturbance to bald eagles.

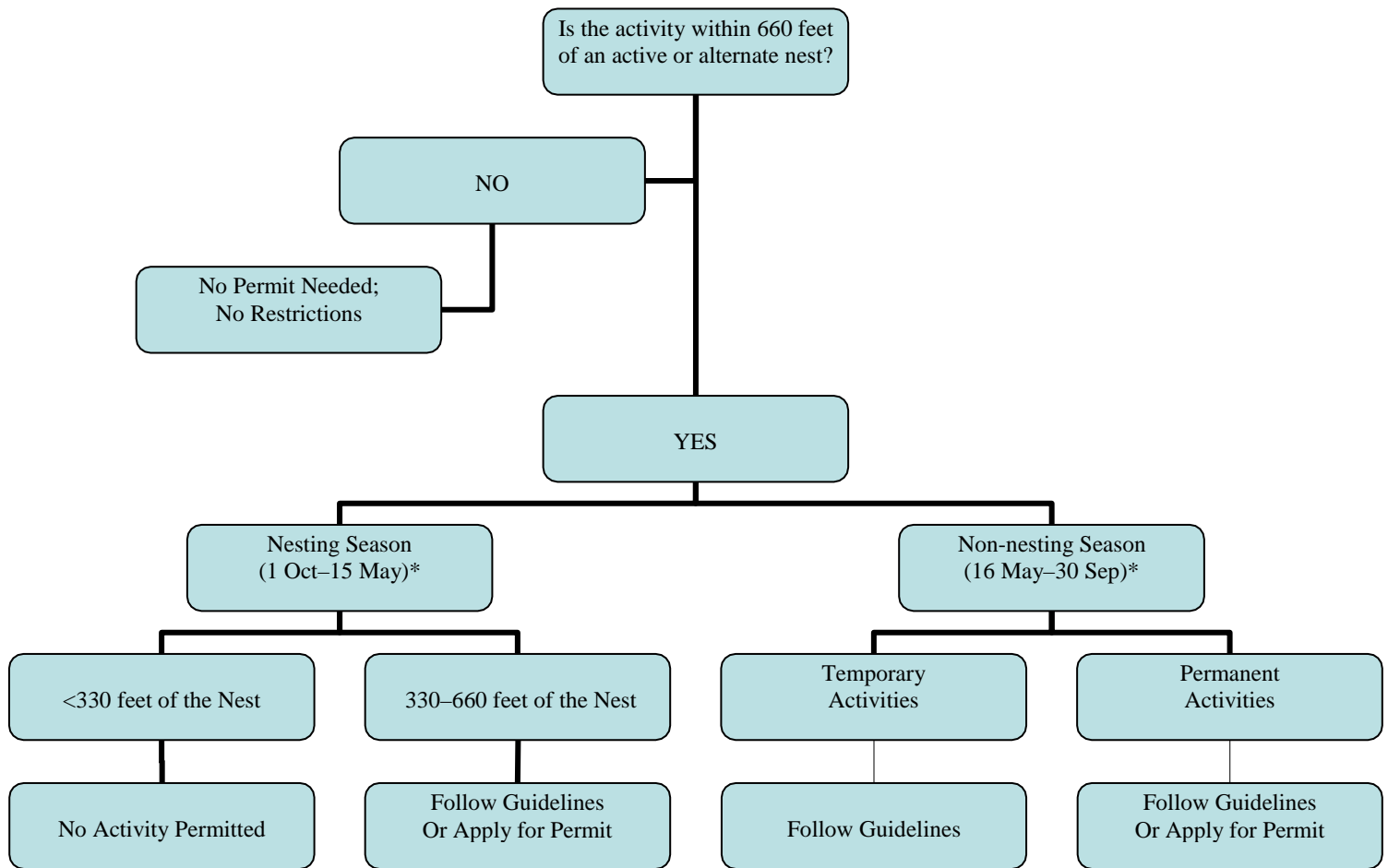


Figure 4. Process map for determining whether or not a FWC Eagle Permit would be recommended for a proposed activity near a bald eagle nest. For ongoing activities that are conducted at the historic rate, or for activities that may fall under similar scope to existing activities, refer to the FWC Eagle Management Guidelines for more detail.

* Unless nestlings fledge before or after these dates.

Existing Uses Within 660 Feet of an Eagle Nest.—Eagles are not likely to be disturbed by routine use of roads, homes and other infrastructure, routine agricultural operations, or pre-existing vegetation management of linear utilities occurring within 660 feet of an active or alternate bald eagle nest.

Existing activities can continue at the same intensity with little risk of disturbing eagles.

Therefore, in most cases, existing activities of the same degree (“similar scope”) may continue with little risk of disturbing nesting bald eagles and a FWC Eagle permit is not needed. However, some *intermittent, occasional, or irregular* activities may disturb eagles. For example, activities associated with auctions, field dog trials, or other sporting events may disturb a pair of bald eagles even though the events have been held at the same location for several years. In such situations, the activity should be adjusted or relocated to minimize potential disturbance to the eagles.

Any artificial structure that contains a bald eagle nest may be maintained, repaired, or upgraded when conducted consistent with the guidelines if: (1) the work will not remove or substantially alter the nest to the extent that further use for nesting is affected; **and** (2) the work is conducted outside the nesting season or when nest monitoring in accordance with the Bald Eagle Monitoring Guidelines (2007d) documents that the nest is not being used by eagles when the work occurs.

New Activities Proposed Within 660 Feet of an Eagle Nest.—The FWC Eagle Management Guidelines provided here describe measures to avoid disturbing bald eagles caused by new activities. To determine if an activity can be conducted consistent with these Guidelines, the FWC proposes to design a system to provide voluntary, self-service technical assistance through a web-based format. This format will provide data that will assist the FWC in evaluating the effectiveness of current rules and Guidelines. If proposed activities cannot be conducted consistent with the FWC Eagle Management Guidelines, then the local FWC regional nongame biologist should be contacted for guidance.

If special circumstances that might increase or diminish the likelihood of disturbing nesting bald eagles apply to a project, or if these FWC Eagle Management Guidelines cannot be followed, then the local FWC regional nongame biologist should be contacted for guidance.

The buffer zones around eagle nests that are provided in this section are based on those recommended in the National Bald Eagle Management Guidelines (USFWS 2007b). A distance of 1,500 feet is used to evaluate the degree to which a nesting pair of bald eagles has been exposed to human-related activities (Table 3). The National Bald Eagle Management Guidelines (USFWS 2007b) use a distance of one mile from the nest to evaluate this distance, but the FWC uses 1,500 feet because this distance has been used in Florida for several years. Recommendations for nests that are distant from human activities are subject to larger buffer zones (660 feet) because eagles in these nests are more likely to be disturbed by activities near the nest.

Activities that may disturb nesting bald eagles are divided into nine categories (A–I) based on their nature and magnitude:

Category A

- Building construction of one or two stories, and with a project footprint of ≤ 0.5 acre;
- Construction of roads, trails, canals, powerlines, or other linear utilities;
- New or expanded agriculture or aquaculture operations;
- Alteration of shorelines, aquatic habitat, or other wetlands;
- Installation of docks or moorings;
- Water impoundment.

Category B

- Building construction of one or two stories, and with a project footprint of >0.5 acre;
- Building construction of three or more stories;
- Installation or expansion of marinas with a capacity of six or more boats;
- Mining;
- Oil or natural gas drilling or refining.

Table 3. The minimum allowed distances from an active or alternate bald eagle nest that a Category A or Category B activity can occur without the need for a FWC bald eagle permit. Activities proposed to occur closer to an eagle nest than the distances designated here should apply for a FWC Eagle Permit.

	<i>No Similar activity within 1,500 feet of the nest</i>	<i>Similar activity closer than 1,500 feet from the nest</i>
<i>There is no visual buffer between the nest and the activity</i>	Categories A and B: 660 feet.	Categories A and B: 660 feet, or as close as existing activities of similar scope.
<i>There is a visual buffer between the nest and the activity</i>	Category A: 330 feet. Site work and exterior construction between 330-660 feet should be conducted outside the nesting season unless the Bald Eagle Monitoring Guidelines (USFWS 2007d) are followed. Category B: 660 feet.	Categories A and B: 330 feet, or as close as existing activity of similar scope. Site work and exterior construction between 330-660 feet should be performed outside the nesting season.

For projects in categories A or B, exterior construction activities and site work within 330 feet of an active or alternate bald eagle nest should be conducted during the non-nesting season (16 May–30 September). Site work and exterior construction activities between 330 and 660 feet from the nest may be conducted during the nesting season when the Bald Eagle Monitoring Guidelines (USFWS 2007d) are followed. The use of dump trucks within 660 feet of an eagle nest should occur during the nesting season only when the Bald Eagle Monitoring Guidelines (USFWS 2007d) are followed. Minimize noise and human activity associated with interior construction during the nesting season.

Construction activities may occur during the nesting season if nest monitoring, following the Bald Eagle Monitoring Guidelines (USFWS 2007d), confirms that eagles have not returned to the nest by 1 October, or that nestlings have fledged before 15 May. In either situation, the regional FWC nongame biologist should be notified.

Managers of any project that follows these guidelines and use nest monitoring to allow construction within 660 feet during the nesting season must provide monitoring reports to the FWC. In addition to ensuring that the eagles are not disturbed while nesting, this will also provide data to analyze the appropriateness of the protective measures.

Category C: Land Management Practices, including Forestry

Certain land management practices benefit bald eagles and their habitats. Land management practices that retain old-growth native pines and that decrease the risk of catastrophic wildfire or an outbreak of timber disease are recommended. However, some management practices could “take” or disturb nesting bald eagles. A FWC Eagle Permit is not needed for land management practices occurring near an active or alternate bald eagle nest when undertaken consistent with the following guidelines.

The FWC encourages land management practices that decrease the risk of catastrophic wildfire or an outbreak of timber disease, and that retain old-growth native pines.

- Avoid clear-cutting within 330 feet of the nest at any time. This restriction may be lifted outside the nesting season for emergency provisions, such as to control disease outbreak or an insect infestation, especially when the health of the nest tree may be at risk. The regional FWC nongame biologist should be notified prior to initiating any emergency activities within 330 feet of the nest.
- Avoid construction of log transfer facilities and in-water log storage areas within 330 feet of the nest. Use of any existing road may continue at the historic rate, but avoid routing logging traffic within 330 feet of an active nest during the nesting season.
- Avoid timber harvesting, replanting, or other silvicultural operations, including road construction and chain saw and yarding operations, within 660 feet of the nest tree during the nesting season. If the Nest Monitoring Guidelines (USFWS 2007d) are applied, then activities between 330 and 660 feet may be allowed during the nesting season. If nest monitoring confirms that the nest is inactive, then the seasonal restrictions would not

apply. Selectively thin to retain at least 50% of the total canopy and the largest native pines within 660 feet of the nest. Take precautions to protect the nest tree.

- Prescribed burning within 330 feet of the nest or the installation or maintenance of firelines within 660 feet of the nest should be undertaken outside the nesting season. Precautions such as hand-raking of leaf litter and hand removal of excess fuel loads near the nest tree should be taken to decrease the threat of crown fire or fire climbing the nest tree, but these actions should not occur when eagles are present. If it is determined that a burn during the eagle nesting season would be beneficial, then these activities must be conducted when eagles are absent (*e.g.*, before eggs are laid or after the young have fledged). When appropriate to reduce fuel loads, land managers should consider mechanical treatment of the area within 330 feet outside the nesting season to allow for a safer growing-season burn. Smoke screening should be implemented to avoid impacting an active nest.
- Contact the regional FWC biologist if the use of heavy equipment within 50 feet of the nest tree is planned for an activity.

Category D: Agriculture and Linear Utilities (Existing Operations)

No buffer is necessary outside the nesting season. During the nesting season, routine agriculture or linear utility vegetation management are not anticipated to result in disturbance as long as those activities are conducted consistent with these guidelines (also see “Existing Uses Within 660 of an Eagle Nest”). For new or expanded agricultural operations, see Category A.

Category E: Off-road Vehicles

No buffer is necessary outside the nesting season. During the nesting season, off-road vehicles should not be operated within 330 feet of the nest or within 660 feet where visibility and exposure to noise are increased.

Category F: Motorized Watercraft

No buffer is necessary outside the nesting season. During the nesting season, loud vessels and concentrations of vessels (*e.g.*, commercial fishing boats or tour boats) should not be operated within 660 feet of the nest. Other motorized boat traffic within 330 feet of the nest should be minimized, and stopping should be avoided.

Category G: Non-motorized Recreation such as Hiking, Camping, Birding, Fishing, Hunting, or Canoeing

No buffer is necessary outside the nesting season. Activities visible or highly audible from the nest should not occur within 330 feet of the nest during the nesting season.

The bald eagle nesting season in Florida is 1 October–15 May, unless the young fledge before or after 15 May.

Category H: Aircraft (Including Helicopters)

No buffer is necessary outside the nesting season. During the nesting season, aircraft should not be intentionally operated within 1,000 vertical or horizontal feet of an eagle nest, except for authorized biologists trained in survey techniques and aircraft at airports or operating in prescribed landing and departure patterns. This guidance also does not apply to through-flights operating within FAA rules that unintentionally encounter eagle nests, but rather to intentional harassment of nests and eagles such as repeated passes of a nest for sight-seeing.

Category I: Blasting or Other Loud, Intermittent Noises

No buffer is necessary outside the nesting season for blasting activities that do not alter the landscape. During the nesting season, no blasting should occur within 660 feet of an active nest. Loud noises (including Class B fireworks) or blasting activities that alter the landscape within 660 of the nest should not occur during the nesting season, except where eagles have demonstrated tolerance for such activity.

B. Activities That Do Not Require a FWC Eagle Permit if Federally Authorized

In 2007, the USFWS proposed a draft permitting process under the Bald and Golden Eagle Protection Act. Because the FWC seeks to avoid duplication of effort, then the following actions permitted by USFWS will not need a FWC bald eagle permit provided that the federal permit is available for inspection while the permitted activity is being conducted. If federal rules defer to states or require proof of state authorization, then the actions listed below may need to be reevaluated.

1. *Modifications within the buffer zone of a lost nest.*—The FWC Eagle Management Guidelines prescribe protection buffers for lost nests for two consecutive nesting seasons. If federal authorization in the form of a “take” permit is obtained for an activity within the recommended buffer of a naturally-destroyed bald eagle nest prior to the nest being declared lost (*i.e.*, prior to two nesting seasons post-destruction), then no state permit will be required. Once a nest meets the definition of lost (see Glossary, p. ix: has been missing for more than two consecutive nesting seasons), then the buffer zone no longer applies, and therefore no eagle permit is necessary.
2. *Destruction of a bald eagle nest.*—Notwithstanding anything to the contrary herein, no state permit is needed if a federal “take” permit is obtained to destroy an abandoned nest.
3. *Previously permitted projects.*—The FWC will not refer the “take” of a bald eagle or parts thereof, or its nests or eggs, for prosecution if such “take” is in compliance with the terms and conditions of any USFWS bald eagle Technical Assistance Letter or any Biological Opinion or Incidental Take Permit issued under Sections 7 or 10 of the Endangered Species Act of 1973, as amended. Such letters, opinions, and permits shall serve as state authorization provided that the authorizations are issued prior to the effective date of the proposed state bald eagle rule, and that the FWC is provided with a copy of the federal authorization upon request.

4. *Salvage*.—Federal authorization to handle bald eagle carcasses, parts, or eggs for salvage purposes functions as state authorization, provided that the authorized individual carries a copy of the federal authorization.
5. *Possession for religious or cultural purposes*.—Federal authorization for the possession of bald eagles or their parts for religious or cultural purposes functions as state authorization, provided that the authorized individual carries a copy of the federal authorization.
6. *Possession of eagle parts for educational purposes*.—Federal authorization for the possession of bald eagle parts, nests, or eggs for educational purposes functions as state authorization, provided that the authorized individual carries a copy of the federal authorization, and all requirements of the federal authorization are being fulfilled.
7. *Airports*.—If federally authorized, eagles that pose an imminent jeopardy to aircraft safety and human life may be harassed by persistent, non-injurious disturbance without physical capture or direct handling by airport operators or their agents on airport property in order to prevent collisions.

C. Activities That Require a FWC Eagle Permit

Except for the federally-authorized actions listed above, any action that cannot be undertaken consistent with the FWC Eagle Management Guidelines may require a FWC Eagle Permit to avoid a violation of rule. As such, any action that results in the taking, feeding, disturbing, possessing, selling, purchasing, or bartering of eagles or eagle parts requires a permit. As defined in 68A-1.004, F.A.C., “take” includes pursuing, hunting, molesting, capturing, or killing. Under the appropriate conditions (described in this section) the FWC will issue several types of permits for bald eagles including disturbance, scientific collection, and nest removal. Other, more general permits may be issued for certain activities listed below.

Eagle Depredation at Agriculture or Aquaculture Facilities.—Non-injurious disturbance of bald eagles that are depredating agriculture or aquaculture resources requires a FWC Eagle Permit. These permits will be issued solely in accordance with appropriate federal law. Permit provisions should include required husbandry techniques that reduce or prevent future problems when applicable or reasonable. No conservation measures are required, as these permits authorize only non-injurious harassment. Permits should be issued solely for persistent depredations rather than occasional events. If federal rules adequately protect bald eagles at agriculture or aquaculture facilities, then the need for a state permit will be reevaluated.

Activities That Involve Possession

The following activities involve possession and therefore require a FWC permit. Existing rules and permitting programs for possession will not change. Applicants should be aware that federal permits for these actions are required unless federal rules or a FWC/USFWS agreement defers

the need for a federal permit when the action is authorized by the state. No conservation measures are necessary for educational display, rehabilitation, or scientific collection because these activities provide a conservation benefit to eagles.

1. *Educational Display*.—Any facility that wishes to possess live bald eagles for educational purposes must abide by caging requirements (Rule 68A-6, F.A.C.) and obtain a license for exhibition/public sale (372.921 Florida Statutes). Federal authorization for the possession of bald eagle parts, nests, or eggs for educational purposes functions as state authorization, provided that the authorized individual carries a copy of the federal authorization, and that all requirements of the federal authorization are met.
2. *Rehabilitation*.—Wildlife rehabilitators who possess a FWC Wildlife Rehabilitation permit (Rules 68A-6 and 68A-9, F.A.C.) for migratory birds also require federal authorization to possess bald eagles for rehabilitation purposes. No eagle nestling or fledgling that is attended by adult eagles should be handled for rehabilitation without first consulting the FWC regional nongame biologist, except when an emergency exists and inaction may endanger the nestling or fledgling.
3. *Scientific Collection*.—Research that might result in disturbance to bald eagles requires a Scientific Collection permit (Rule 68A-9.002, F.A.C.). Scientific Collection permits will be issued solely for projects with a sound scientific design and those that demonstrate scientific or educational benefits to the bald eagle. Federal authorization may also be required.
4. *Falconry*.—Rules pertaining to the use of birds of prey in Florida for falconry purposes are found in 68A-9, F.A.C. While the bald eagle currently may not be used in falconry, its status in falconry may change upon delisting. If the joint federal-state falconry rules provide for the possession of bald eagles for falconry purposes, then a falconry permit will be required. Conservation measures, if any, will be determined at a later date.

Activities That Require Emergency Authorization

Declared emergency.—Emergency activities associated with recovery from a federal- or state-declared disaster will require an after-the-fact FWC Eagle Permit if the activities cannot be undertaken consistent with the FWC Eagle Management Guidelines. Such activities may include operation of equipment associated with rescue, road or utility repair, or clearing of debris in transportation or utility corridors. The FWC regional non-game biologist should be contacted within 30 days to discuss possible minimization measures, and conservation measures will be assessed on a case-by-case basis on the extent of the emergency and the impacts to eagles.

Activities That Require Nest Removal

Except for the federally-authorized activities listed above, a FWC nest removal permit is required for authorization to remove or destroy any bald eagle nest, even when eagles are not present. Nest removal may be necessary because the nest presents a threat to human safety or a threat to the safety of bald eagles or their eggs or nestlings. Minimization and conservation

measures for these permits will be based on the extent of the emergency and the impacts to eagles.

An abandoned nest as defined in this management plan is still considered a nest by FWC for the purposes of state rule and it also remains protected under the Bald and Golden Eagle Protection Act. If the federal permitting process adequately provides for the conservation of Florida's bald eagles, then the need for a state nest-removal permit could be waived.

A FWC Eagle Permit is required to remove or destroy any bald eagle nest, even an abandoned nest.

Airports.—Bald eagle nests on or adjacent to airports could increase the risk of an aircraft/avian strike, and are therefore considered hazardous to human safety and to nesting bald eagles and their young. Federal law requires airports to develop and implement a Wildlife Hazard Management Plan (WHMP) to manage and control wildlife that presents a risk to public safety from aircraft collisions. These plans include techniques to avoid attracting eagles, and non-injurious harassment to prevent eagles from frequenting the property. Both a FWC nest removal permit and federal authorization are required for the removal of eagle nests on or adjacent to airports.

Nest removal from artificial structures.—When maintenance of an artificial structure requires the removal of an active or alternate bald eagle nest that is *not* an immediate threat to human safety, then the nest may be removed only outside the nesting season and only after a FWC nest-removal permit has been issued. Federal authorization may also be required. Minimization and conservation measures will be assessed on a project-by-project basis.

D. Activities That May Require a FWC Eagle Permit

A permit is not required to conduct any particular activity, but is necessary to avoid liability for take or disturbance caused by the activity. Therefore, any land-altering activity within 660 feet of an active or alternate bald eagle nest that cannot be undertaken consistent with the FWC Eagle Management Guidelines may require a FWC eagle permit. Activities beyond 660 feet do not ever require a FWC Eagle Permit. The FWC will issue an eagle permit where the applicant provides minimization and/or conservation measures that will advance the goal and objectives of this management plan.

No FWC Eagle Permit is required for any activity that is conducted consistent with the FWC Eagle Management Guidelines.

Minimization Measures

The following minimization measures are intended to reduce the potential for disturbing eagles and may be required as part of a FWC Eagle Permit.

Construction-related Activities Within 660 Feet of an Eagle Nest

For projects that receive a FWC Eagle Permit, the following minimization efforts may be required:

1. Implement the Bald Eagle Monitoring Guidelines (USFWS 2007d) for all site work or exterior construction activities. Avoid exterior construction activities within 330 feet of the nest during the nesting season.
2. Avoid construction activity (except those related to emergencies) within 100 feet of an eagle nest during any time of the year except for nests built on artificial structures, or when similar scope may allow construction activities to occur closer than 100 feet.
3. Avoid the use or placement of heavy equipment within 50 feet of the nest tree at any time to avoid potential impacts to the tree roots. This minimization does not apply to existing roads, trails, or other linear facilities near an eagle nest, or to nests built on artificial structures.
4. Schedule construction activities so that construction farther from the nest occurs before construction closer to the nest.
5. Shield new exterior lighting so that lights do not shine directly onto the nest.
6. Create, enhance, or expand the visual vegetative buffer between construction activities and the nest by planting appropriate native pines or hardwoods.
7. Site stormwater ponds no closer than 100 feet from the eagle nest, and construct them outside the nesting season. Consider planting native pines or hardwoods around the pond to create, enhance, or expand the visual buffer.
8. Incorporate industry-approved avian-safe features for all new utility construction <www.fws.gov/migratorybirds/issues/APP/AVIAN%20PROTECTION%20PLAN%20FINAL%204%2019%2005.pdf>.
9. Retain the largest native pines for use as potential roost or nest sites.

Land-Management Activities Within 660 Feet of an Eagle Nest

Most land management activities can be planned to comply with the FWC Eagle Management Guidelines and will not require a permit. For land management activities that receive a FWC Eagle Permit, the following minimization efforts are recommended:

1. Avoid the use or placement of heavy equipment within 50 feet of the nest tree to avoid potential impacts to tree roots. This minimization does not apply to existing roads, trails, or other linear facilities near an eagle nest or to nests built on artificial structures.
2. Plan the activity to avoid the nesting season to the greatest extent possible. Avoid disruptive activities when eagles are incubating eggs or when nestlings are close to fledging.
3. Schedule activities so that activities farther from the nest occur before activities closer to the nest.
4. Maintain the greatest possible vegetative buffer between land management activities and the nest.
5. Retain the largest native pines for use as potential roost or nest trees.

Conservation Measures

The conservation measures listed below will advance the management plan goal and objectives by (1) continuing to provide suitable eagle nesting habitats throughout Florida, and (2) funding monitoring, research, and management activities.

When an activity cannot be undertaken consistent with the FWC Eagle Management Guidelines (*e.g.*, when disturbance or take may occur), then a FWC Eagle Permit is recommended to avoid a possible violation of the FWC eagle rule.

Conservation measures apply to any active or alternate bald eagle nest.

When construction activities are planned inside the recommended buffer zone of an active or alternate bald eagle nest, then issuance of a FWC Eagle Permit will require conservation measures. The following conservation measures are considered to advance the goal of the management plan; alternatives submitted under option 5 will be reviewed by FWC staff to determine if they will advance the goal of the management plan. The number of conservation measures will depend upon the distance that the activity will occur from a bald eagle nest. For activities between 330 and 660 feet, one conservation measure is sufficient. For activities within 330 feet of a nest, two conservation measures should be included with the application and one of the two measures should be a \$35,000 contribution to the Bald Eagle Conservation Fund (#1, below). When activities would likely cause disturbance during only one nesting season, conservation measures need not be provided if they would only affect an alternate nest, but conservation measures should be provided if they will affect an active nest.

1. Contribute \$35,000 to the Bald Eagle Conservation Fund to support bald eagle monitoring and research.
2. Provide a financial assurance (such as a bond) in the amount of \$50,000.
3. Grant a conservation easement over the 330-foot buffer zone of an active or alternate bald eagle nest within the same or an adjacent county, or within the same core nesting area (Figure 3). When the buffer is only partially owned by the applicant, contribute an onsite easement over the portion of the 330-foot buffer zone to which the applicant holds title.
4. Grant a conservation easement over suitable bald eagle nesting habitat (see #5, below) onsite or offsite.
5. Propose an alternate conservation measure that advances the goal of the management plan based upon the particular facts and circumstances presented by the applicant.

Conservation measures are based on the following guidelines:

1. Conservation easements and financial assurances can be terminated, released, or returned to the landowner if the nest for which an activity is permitted is successful (produces at least one fledgling) for at least one of the three years after the permitted activity is completed; the burden of proof is upon the applicant. If a nest is lost to natural causes (*i.e.* strong winds, fire), the easement or bond may be released on the third year if eagles have not built a new nest within the buffer. Financial assurances that

are not returned to the landowner will be turned over to the Bald Eagle Conservation Fund.

2. Fee structure is based on the likelihood of disturbance to eagles; activities closer to a nest provide more conservation measures than activities farther away. As such, activities permitted within 330 feet of an active or alternate bald eagle nest should contribute \$35,000 to the Bald Eagle Conservation Fund as one of two conservation measures **and** provide an additional conservation measure.
3. The amount of fees paid outright is lower than fees paid as a bond because costs for FWC administration (including site visits) are less.
4. The fee amount is for calendar year 2008; the fee will be adjusted in subsequent years as specified below in the Monetary Contribution section (next page).
5. Suitable habitat for bald eagles will be evaluated based upon the following characteristics: within 1.86 miles of a permanent water body ≥ 0.2 square miles in size; contain a canopy of mature native pines or cypresses with several perch trees and an unimpaired line of sight (habitat in southern Florida may include mangrove or other native species); few land-use features (low density housing, industrial, etc.) and linear and point features (roads, powerlines, railroads, etc.) within 0.5 mile; ideally should be located in a previously identified bald eagle core nesting area.
6. Conservation easements must include at least the 330-foot buffer around an active or alternate eagle nest. Where the buffer is only partially owned by the applicant, an onsite easement may be placed over that portion of the property to which the applicant holds title. Easements may be placed only around nests that are in suitable habitat as described above.
7. Conservation easements must include provision of funds for management practices for the life of the easement. Management practices should include all activities listed under “Category C: Land Management Practices, including Forestry” and must be conducted by the landowner or other entity. The FWC will hold all easements and will ensure compliance with minimization and conservation measures.
8. Bald eagles often build multiple nests that are used alternately. Projects that either avoid potential take by avoiding impacts within the buffer zone or that receive a permit to conduct activities within the buffer zone may later be affected if an eagle pair initiates construction of a new nest within the project boundary. The FWC believes that projects that follow proper procedures for bald eagles should not have to provide additional conservation measures for any new eagle nest built on the site after the planning and permitting procedures have been completed. Therefore, other than the fact that the nest itself cannot be destroyed, such projects will not be expected to provide further conservation measures if bald eagles choose to move their nest location within the project site.

Monetary Contribution

The Conservation Measures portion of this management plan references a contribution to the Bald Eagle Conservation Fund. The fund was created by a Memorandum of Understanding between the USFWS, the FWC, and the Wildlife Foundation of Florida. The fund collects monetary contributions from the issuance of FWC Eagle Permits to applicants whose projects impact the buffer zones of active or alternate bald eagle nests. Funds may be spent on surveys,

monitoring, other research needs, or any other activity that promotes the conservation goal of bald eagles. The contribution amount will be adjusted over time to ensure that conservation funding keeps pace with inflation. Tying the change to the Consumer Price Index will ensure the contribution is adjusted relative to actual price increases or decreases. The FWC will use the “All Urban Consumers Consumer Price Index” (CPI-U), which is a reflection of the highest percentage of the population, and the CPI-U for the Southeast region. Information on the Consumer Price Index is available at <www.bls.gov/cpi>.

In the first year following the effective date of the FWC bald eagle rule, the monetary contribution will be as specified above. In each subsequent year, this amount will change by an amount equal to the annual CPI-U for the Southeast region, and will be based on changes during the CPU calendar year (1 January–31 December). Adjustments to the contribution amount should take effect on 1 March of each year because the CPI for the previous year is usually not available until mid-February. The contribution will be calculated based on the date that a completed application is received by FWC.

For example, if the FWC bald eagle rule takes effect during April 2008, and if the appropriate contribution to the Bald Eagle Conservation Fund through February 2009 is \$35,000, then on 1 March 2009, the amount would change at the same rate as the CPI-U for the Southeast Region for the 2009 calendar year. If the CPI-U for the Southeast Region increased by 3%, then the appropriate contribution would be \$36,050 (3% of 35,000 = 1,050; 35,000 + 1,050 = 36,050).

The amount of the monetary contribution is due prior to conducting the permitted activities. Contributions may be applied toward annual monitoring surveys, research, purchase of eagle habitat, or other conservation activities. To offset local impacts of projects, preference will be given to land purchases within the same county or core nesting area.

Local Government Coordination

The FWC has the constitutional authority and duty in Florida to manage wildlife in the state. The role of local government and other agencies in the regulation and management of wildlife must be well-defined. Local governments are statutorily required to include a conservation element in their comprehensive plans for the conservation, use, and protection of natural resources, including fisheries and wildlife, pursuant to Chapter 163, F.S. Coordination between the FWC and local governments in implementing components of this plan is essential for the successful conservation and management of bald eagles in Florida.

Local governments and regional or state agencies (e.g. water management districts) often are the first to conduct site inspections of properties where land-clearing or building permits are sought. These on-site inspections typically occur early in the permit process and provide the opportunity to confirm the presence or absence of bald eagles, and to inform landowners and developers about required FWC permits and authorizations. This action by local governments or other agencies provides a mechanism to assure that necessary FWC permits can be issued earlier in the permit approval process, prior to issuance of local government land-clearing or building permits.

Local governments and other agencies also play a substantial role in bald eagle conservation and management by providing protected and managed areas for eagles. Many local governments have created habitat-acquisition and management programs, which can provide important assistance in achieving the goal and objectives of this management plan. The FWC will coordinate with local governments and other agencies to help ensure that local land-acquisition programs and their implementing ordinances and policies are: (1) consistent with the goal and objectives of this management plan; and (2) focus on acquisition priorities for bald eagles and other important wildlife species.

Coordination between the FWC and local governments is crucial in efforts to increase funding for land acquisition and management. The FWC will encourage local governments and other agencies to support the FWC's efforts to assure adequate funding within the successor to the Florida Forever program.

Effective cooperation between the FWC and local governments can streamline the permit review process, improve regulatory compliance, and improve management of locally owned or managed lands that support bald eagles and other species of conservation concern. The FWC will assist and encourage local governments to perform the following activities:

- Remain current with FWC regulations related to the management of the bald eagles.
- Provide information to landowners, builders, and the general public about this management plan and regulatory prohibitions and permit options. These efforts will help promote compliance with FWC regulations and understanding of FWC incentives available to landowners.
- Include on permit applications for land-clearing or building activities a questionnaire to determine whether surveys have been conducted for bald eagles.
- Inspect parcels that are undergoing development review for the presence or absence of bald eagles, and when eagles are present (as confirmed through site visits by trained county staff, or environmental consultant reports/data) notify FWC staff to assure compliance with FWC eagle rules and guidelines.
- Consider requiring the issuance of a FWC Eagle Permit early in a project's permit-approval process before issuing local land-clearing or development permits.
- Notify the FWC of wildlife complaints or potential FWC rule violations through the Wildlife Alert number (1-888-404-3922). Coordinate with FWC law enforcement in providing supporting information for law enforcement investigations.
- Use Memoranda of Understanding with FWC to implement any of the above actions.

The FWC will:

- Create outreach materials for local governments, landowners, and the general public to foster better understanding of and compliance with this management plan and with other FWC regulations.
- Provide to managers of Florida's public lands the locations of all active and alternate bald eagle nests to allow for proper management of surrounding habitats.

- Cooperate with the Prescribed Fire Strike Team program set up as part of implementation of the Gopher Tortoise Management Plan and other fire strike teams to assist with management of bald eagle habitats on public lands.
- Lead efforts to attain additional funding through the successor to the Florida Forever program to allow local and state governments to acquire and manage additional conservation lands for bald eagles.
- Identify and prioritize through the FWC management-needs database potentially suitable sites on publicly owned or controlled lands that are in need of habitat restoration.
- Assist in establishing incentives in land development codes to better manage and restore publicly owned or controlled land to provide habitat for bald eagles and other wildlife.
- Schedule workshops with local governments and other agencies to provide information on this plan and FWC regulations applicable to bald eagles and information on the role of local governments and other agencies in providing compliance assistance with FWC rules.

Monitoring Plan

Population Monitoring

FWC staff and others have monitored bald eagle nests in Florida since 1972. The information gathered during the past 35 years includes the locations of thousands of eagle nests and nesting territories, breeding productivity, core nesting areas, reproductive success, and population trends. Current information pertaining to the status and trends of the eagle population in Florida, as well as the current status of all known active eagle nests, is available online at www.myfwc.com/imperiledspecies/eagle. An online database for reporting new or previously undiscovered eagle nests in the state is anticipated to be available during spring 2008. Continued monitoring of bald eagle nests in Florida will provide the scientific data necessary to evaluate whether the objectives of this management plan are being achieved, and to determine whether future modification of this management plan and its guidelines may be warranted.

A survey of all known bald eagle nests in Florida is conducted annually between November and March of each nesting season. Surveys are flown by FWC biologists or contractors, and, for Everglades National Park, by National Park Service staff. New or previously undiscovered nests are searched for opportunistically during the regular survey flights. Replication of the survey methodology ensures that effort is comparable among years. All nesting and productivity data for bald eagles in Florida are compiled and analyzed to generate annual population estimates that are used to determine population trends.

Additional surveys were conducted during the 2006–2007 nesting season to determine the efficiency of the current protocol for finding previously undiscovered bald eagle nests and to locate new nests in potential bald eagle habitat.

FWC researchers have identified 16 core areas of bald eagle nesting activity (Figure 3). Changes in size, configuration, and location of these areas will be monitored, and their importance to the overall bald eagle population in Florida will be determined as new data become available.

The Draft Post-Delisting Monitoring Plan (USFWS 2007c) recommends that bald eagle nests be monitored every five years for three eagle generations (24 years). Monitoring eagle nests and nesting territories in Florida at a five-year interval would not provide adequate information to verify that the conservation objectives of this plan were being maintained. Additionally, annual surveys provide to contractors, consultants, land owners, and other interested parties the status of all known active and alternate eagle nests in the state, and provide a basis for declaring nests to be lost or abandoned. To ensure that the conservation objectives of this management plan are being maintained, the FWC recommends that annual surveying continues for the next 24 years (*i.e.*, until 2032). In addition to existing information about the status of eagle nests, biologists characterize the habitat and land-use changes within each nesting territory in Florida. This information may help to identify the factors that affect population changes, movements patterns, habitat changes, and other trends.

The continuation of FWC surveys of all known eagle nests and nesting territories is dependent on securing funding. If funding is limited, then the FWC may choose to survey only a sample of the eagle nests and nesting territories statewide annually, and to develop methods to estimate the overall population. This sub-sampling approach, if developed, will reduce funding costs while continuing to monitor the status of bald eagle nests and nesting territories statewide on an annual basis.

The FWC may partner with other agencies, colleges or universities, or non-governmental organizations in Florida (*e.g.*, Audubon's Eagle Watch program) to assist in the monitoring of bald eagle nests and nesting territories. Such partnering would be another way to possibly reduce monitoring costs while assuring that the appropriate data are collected. Every five years, the FWC will ensure that the data collected in Florida are comparable with data from other states to contribute to the national breeding population estimate.

Project-Specific Nest Monitoring

The Bald Eagle Monitoring Guidelines (USFWS 2007d) recommend monitoring an eagle nest if construction activities occur within 660 feet of the nest during the nesting season (1 October–15 May). These federal guidelines standardize the method for gathering data to evaluate eagle responses to activities that may cause disturbance. The guidelines are designed to: (1) describe normal nesting behavior of bald eagles; (2) identify specific behavioral responses of adult and young eagles that may warrant cessation of development activities; (3) propose the type and level of monitoring necessary to detect a change in normal eagle behavior; (4) prescribe a procedure for reporting to the USFWS and the FWC the observations that may be used to halt or modify construction activities; and (5) provide data to the FWC to evaluate the effectiveness of the current FWC Eagle Management Guidelines. The FWC has adopted the Bald Eagle Monitoring Guidelines (USFWS 2007d). To ensure compliance with these guidelines, the FWC may conduct random spot-checks of projects that are following the guidelines, as resources allow. The information obtained from these monitoring efforts may provide additional insight into the tolerance of bald eagles to human activities near their nests.

Mortality Monitoring

The FWC will evaluate the sources and extent of bald eagle mortality in Florida. These data, coupled with population monitoring, will aid in determining the cause or causes of any decline in the eagle population. An increased mortality rate or a rapid change in the causes of mortality may trigger a management action to address the problem. The FWC's Division of Law Enforcement and the USFWS have worked cooperatively to develop protocols for salvaging and storing eagle carcasses that are sent to the National Eagle Repository in Denver, Colorado. The USFWS has purchased freezers for FWC to store these carcasses until shipments to Colorado can be made. The FWC and USFWS have developed a mortality database that includes the cause of each eagle death.

Education and Outreach

An active conservation education and outreach program will help ensure that the public understands the status of the bald eagle's recovery, knows what protections and management strategies maintain the population, and, most importantly, what citizens can do to aid the eagle's recovery.

Key messages for education and outreach efforts include:

- The bald eagle is an Endangered Species Act success story that is no longer threatened with extinction;
- Delisting does not mean that the bald eagle is no longer protected—state and federal regulations will continue to protect bald eagles, their nests, and their nesting territories; and
- The bald eagle's recovery is a result of prescribed management efforts that will continue, so that a population decline does not occur and trigger a need for future relisting of the species.

This education and outreach plan includes an emphasis on the following audiences:

- Local government planning and permitting staff
- Other federal or state governmental agencies
- Development professionals and private land owners
- Environmental consulting firms
- Conservation-oriented public and groups
- Media representatives
- Local, state, and federal law-enforcement personnel
- Managers of public lands
- Land-acquisition organizations
- Agricultural, silvicultural, ranching, and aquacultural interests
- Power companies
- Communication tower managers
- Landfill managers
- Veterinary associations
- Airport managers and Federal Aviation Authority representatives

Although some of these efforts may be concentrated within bald eagle core nesting areas, efforts will be statewide when possible to maximize benefits to eagle conservation in Florida. All education and outreach efforts such as handbooks, brochures, and PowerPoint presentations will be available for downloading from the FWC's bald eagle website www.myfwc.com/imperiledspecies/eagle. Bald eagle interest groups, stakeholders, and the media will be notified when these materials are available online. FWC staff will give presentations about bald eagle conservation in Florida to various interest groups.

All Audiences:

- Create and distribute a brochure that contains key messages about bald eagle recovery, provisions of this management plan, and actions that citizens can take to continue the conservation of eagles in Florida.
- Develop and maintain web pages that contain popular, scientific, legal, and permitting information on bald eagles.
- Create a PowerPoint presentation that is adaptable to different audiences.
- Create a 2-minute video about bald eagle recovery.
- Promote FWC's Wildlife Alert Program in all materials.

Developers, Consultants, Government Agencies, Private Landowners, and Land-Use Planners:

- Create a handbook that describes new regulations, permit options, and management guidelines. This will include bald eagle biology and recovery status, effects of development on nesting eagles, conservation and minimization measures of this management plan, landowner stewardship incentives, and how to comply with state and federal laws and guidelines.

Conservation-oriented Citizens:

- Publish articles in appropriate print and electronic media that highlight key messages about bald eagle biology, recovery status, new rules and guidelines, how and where to observe eagles, and what citizens can do to aid eagle conservation.

Law Enforcement Personnel:

- Provide information on the management implications of federal and state delisting efforts on conservation of bald eagles in Florida. Emphasize that regulations and guidelines will continue to protect eagles, their nests, and their nesting territories.

Land Managers and Land-Acquisition Agents:

- Provide information on the need for continued acquisition of bald eagle habitats, particularly parcels within core breeding areas. Give presentations to inform managers about the FWC's bald eagle website <www.myfwc.com/imperiledspecies/eagle> and technical assistance available from the FWC to properly manage habitats around eagle nests.

Agricultural, Silvicultural, Ranching, and Aquacultural Interests:

- Prepare a fact sheet that includes information on land-use regulations, industry-specific management recommendations, and stewardship incentives.

Power Companies and Communication Tower Managers:

- Provide information on threats posed to eagles by powerlines and communication towers from electrocution or collision, and include recommendations for retrofitting utilities with "avian-friendly" hardware. Provide information on how to discourage eagles and other large raptors from perching on or near hazardous towers. Focus on areas with high raptor mortality, and near core bald eagle nesting areas

Landfill Managers and Veterinary Associations:

- Provide information about the importance of incinerating or quickly burying the carcasses of euthanized animals to prevent the deaths of eagles from secondary barbitol poisoning.

Airport Managers, Federal Aviation Administration Officials:

- Provide information on rules and regulations pertaining to bald eagles and their nests on or adjacent to airports. Provide information on how to discourage eagles from frequenting areas around airports.

Research

Much information concerning the life history and habitat requirements of the bald eagle is known from previous studies. Among numerous other topics published from Florida are the following: research on bald eagle nesting requirements (Broley 1947, McEwan and Hirth 1979, Wood *et al.* 1989); effects of habitat protection (Nesbitt *et al.* 1993); analyses of setback distances and disturbance levels (Nesbitt *et al.* 1993, Millsap *et al.* 2004); and habitat use and movements (Wood 1992, Wood *et al.* 1998, Mojica 2006). Despite the wealth of information gathered previously, much information remains to be obtained or refined to ensure the long-term conservation of bald eagles in Florida.

Current or Planned Research

The FWC has already secured funding for the following projects.

Maximize effort to locate new or previously unreported bald eagle nests.

The FWC is using Geographic Information System (GIS) software to evaluate potential bald eagle nesting habitat to locate new nesting territories. This project will determine the precision of the current survey and what modifications need to be made.

Determine the number of nests on properties that are protected.

Although only about 33% of all known bald eagle nesting territories in Florida occur on public lands (Sullivan *et al.* 2006, Nesbitt *et al.* in review), it is thought that many more territories are located on privately-owned lands that are protected via perpetual conservation easements or similar instruments. The FWC will analyze the protection status of lands surrounding all bald eagle nesting territories in the state.

Evaluate the effectiveness of the FWC Eagle Management Guidelines and determine the long-term effects of development near eagle nests.

As additional residential, commercial, or industrial developments encroach on previously undisturbed bald eagle nesting territories, it would be beneficial to test not only the proximate effects of encroachment on eagle nests, but also the long-term post-construction history of nesting territories. Data supplied via nest monitoring and through the self-service, technical assistance website will assist in this effort. The FWC will determine the population trends and demographic characteristics of bald eagles in Florida, and will assess the long-term effects of human activities on eagle productivity and survivorship. Results of these and other analyses will

guide future research, and may result in lessening of regulations related to buffer zones around eagle nests, should population trends warrant such changes.

Future Research

The FWC needs to identify funding sources for the following proposed projects.

Determine the appropriateness of the FWC Eagle Management Guidelines.

Upon delisting the bald eagle in Florida, the FWC proposes to determine the level of protection needed to ensure a stable or increasing eagle population. This would include evaluating the need for and if needed, the required size of buffer zones around active or alternate bald eagle nests, and how many nesting territories need to be protected to ensure a stable or increasing population.

Determine the frequency of nest reoccupation.

Current guidelines provide for buffer zones to be maintained around abandoned eagle nests for five consecutive nesting seasons. The FWC proposes to determine to what degree abandoned eagle nests may be reoccupied.

Determine success of the delisting protection measures.

The FWC proposes to compare bald eagle data from Florida collected post-delisting with data collected pre-delisting to determine changes in population trends, management effects, and territory occupancy potentially resulting from the delisting protections or modifications.

Investigate the utility of a population viability analysis (PVA) to address specific questions about bald eagles in Florida.

A PVA can be of great use to modeling anticipated threats to bald eagles, such as those from continued encroachment of nest buffers by human activities. A PVA may also allow the determination of a conservation “end point,” after which regulation of land-use of private lands that support eagle nests may no longer be necessary. Many components and parameters need to be considered to conduct an accurate PVA, including data on bald eagle survivorship, movements, and reproductive rates. The usefulness of a PVA will be evaluated based on questions that may be answered with available data.

Test the Bald Eagle Habitat Index of Viability (BEHIV) model to determine its value and accuracy as a tool for management.

The BEHIV analysis (Nesbitt *et al.* in review) uses GIS to score bald eagle nests in Florida based on several site-specific parameters. This analysis may identify the long-term stability of eagle nesting habitats, and could be used to aid the decision-making process when considering whether to regulate land-use within eagle nesting territories.

Study use of landfills by bald eagles in Florida.

Many eagles forage or loaf at landfills, where they may be exposed to secondary pentobarbital poisoning or other dangers. The FWC proposes to monitor the use of landfills by bald eagles in Florida, examining non-nesting roost populations, temporal use, age-class, land use, and other topics.

Study the use of artificial nesting structures by bald eagles in Florida.

The use of artificial structures as nesting substrates by bald eagles in Florida seems to be increasing. The FWC proposes to monitor the use and success of bald eagles nesting on these structures, and will determine if this behavior is a result of the increased availability of artificial substrates, an increasing willingness of bald eagles to nest in urban areas, and/or a decrease in the availability of suitable natural structures. Because most structures are not built to support bald eagle nests, and the nests may be considered hazards to human safety or property (as well as to the eagles and their eggs or nestlings), then the FWC will also examine ways to discourage eagles from nesting on these structures.

Study the movements of post-breeding adult bald eagles from Florida.

The FWC proposes to identify areas that support Florida's breeding bald eagles during the non-nesting season. This information is not well known and is important for understanding the risks and hazards posed to Florida's nesting eagles during migration and on their summering grounds. The FWC will partner with wildlife agencies in other states because most of Florida's nesting eagles summer outside the state.

Study how, when, and where Florida-produced eagles enter the breeding population.

The FWC proposes to study the tendency of eagles to return to their natal areas, sex ratios of adult eagles in the population, and habitat choices of eagles during their initial breeding attempt.

CHAPTER 5: IMPLEMENTATION STRATEGY

Priority Actions

A prioritized approach to this management plan will help maintain the conservation objectives and will facilitate the coordination necessary to successfully implement the plan. The actions in the summary list below are described in more detail in Chapter 4.

Priority Actions to be Undertaken by the FWC

- Approve and implement the proposed rule to protect bald eagles (68A-16.002, F.A.C.), simultaneously with removing the bald eagle from 68A-27.004 F.A.C.
- Implement the proposed permitting framework.
- Design a technical assistance system that operates effectively and efficiently to minimize FWC staffing requirements and provides optimal customer service and conservation benefit.
- Prepare press releases and print- or web-based materials to communicate to the concerned, conservation-oriented public and other stakeholders the new protection rules and FWC Eagle Management Guidelines.
- Develop and maintain a website to centralize information on bald eagles.
- Create a handbook for development professionals, local governments, water management districts, and private landowners that describes new regulations, stewardship incentives, and FWC Eagle Management Guidelines to be followed upon delisting of the bald eagle in Florida. Concentrate efforts to circulate the handbook and other presentations in regions that support bald eagle core nesting areas.
- Work with local governments to make them aware of FWC wildlife regulations.
- Work with water management districts and DEP to make them aware of FWC's regulation and habitat management guidelines for eagles.
- Work with Florida state agencies such as the Department of Transportation to develop agreements to streamline permitting and provide suitable conservation actions when needed.
- Apply for grants to fund implementation of additional conservation actions.
- Continue aerial surveys to monitor the reproductive success of bald eagles in Florida and the locations and status of their nests, and convey this information annually to stakeholders and other interested parties.

- Increase efforts to locate new or previously undiscovered bald eagle nests.
- Reevaluate the distance at which nesting bald eagles are disturbed.

Priority actions to be undertaken by other agencies with assistance from FWC

- Adopt language in land development codes and/or comprehensive plans to include wildlife protected under FWC rules, whether or not classified as imperiled.

Priority actions for private citizens

- Report new or previously undiscovered bald eagle nests to the FWC.
- Report violations of the bald eagle rule to the Wildlife Alert number (1-888-404-3922).
- Manage habitats on private lands to benefit bald eagles and other species of conservation concern.
- Support bald eagle conservation actions.

Required Resources and Other Costs Associated with Implementation

Many of the conservation actions identified in this management plan have been in place for many years; the FWC has been actively managing Florida's bald eagle population since the early 1970s. Ongoing conservation actions include annual monitoring of all known bald eagle nests and nesting territories, investigating and prosecuting illegal activities, recovering eagle carcasses, and maintaining a website for inquiries about bald eagles, their nests, and their nesting territories. The FWC will continue these activities upon delisting of the bald eagle.

Many FWC staff will assist with implementation of this plan. The FWC may require additional staff and funding to perform some or all of the following activities: continue the annual aerial nest surveys; update and expand the bald eagle website to provide information on permitting, the FWC Eagle Management Guidelines, and nest locations; implement incentive programs; work with local governments; and provide public education and outreach. Funds paid into the Bald Eagle Conservation Fund to compensate for permitted activities within buffer zones around eagle nests will provide the funding necessary for some of these activities. Expected annual costs of implementing the plan (in 2007 dollars) are as follows:

- \$ 6,950 – salary and benefits for Avian Taxa Coordinator for 10% time
- \$ 8,700 – salary and benefits for 5 Regional Nongame Biologists for 2.5% time each
- \$ 13,900 – salary and benefits for Avian Research Biologist for 25% time
- \$ 17,300 – salary for OPS Biological Scientist II 50% time
- \$ 14,800 – salary for OPS Fish and Wildlife Technician 50% time
- \$ 14,000 – salary for OPS Biological Scientist (database manager) for 25% time
- \$ 40,800 – salary and benefits for one new Law Enforcement officer

\$ 60,000 – salary and expenses for OPS Biological Scientist III to lead plan implementation
\$ 80,500 – aerial survey costs (two years of funding is secured)
\$ 5,000 – field and office equipment and supplies
\$ 5,500 – salary for one Public Information Coordinator for 10% time
\$ 8,000 – salary for Conservation Stewardship Coordinator for 20% time
\$315,080 – Total Annual Recurring Cost

Expected one-time costs over five years are as follows:

\$ 17,500 – development and production of brochures, handbooks, and fact sheets
\$ 25,000 – startup costs for plan implementation

Efforts to effectively implement the plan will be greatly enhanced by cooperation with and active participation of external agencies. In particular, local governments, water management districts, DEP, and the USFWS will play important roles in implementing this plan, and numerous other stakeholders have expressed an interest in bald eagle issues.

Implementation Schedule

As noted above, conservation of the bald eagle through implementation of this management plan requires the cooperation of an array of agencies, managers, universities, landowners, and stakeholders. The following list is divided into priorities to be initiated in the first year and those to be initiated within the next five years to maintain the conservation goal and objectives for bald eagles.

Actions that the FWC should begin within the next 12 months

- Approve and implement the proposed rule to protect bald eagles and their nests;
- Implement a permitting framework as described in Chapter 4;
- Prepare press releases and print -or web-based materials to communicate to all audiences the key messages, new protection rules and guidelines, and ways that citizens can contribute to maintaining recovery;
- Continue law enforcement activities such as patrol, enforcement, and education;
- Develop a website to centralize all available information on bald eagles;
- Create resources (*e.g.*, a handbook or PowerPoint presentation) for development professionals, county governments, water management districts, and private landowners that describe new regulations, stewardship incentives, and FWC eagle management guidelines developed to protect bald eagles upon delisting. Concentrate efforts to circulate the handbook and make presentations in regions that support bald eagle core nesting areas (Figure 3, page 7);

- Continue aerial surveys to monitor the reproductive success of bald eagles in Florida and the locations and status of their nests and nesting territories;
- Expand efforts to locate new and previously undiscovered eagle nests;
- Reevaluate the distance at which some nesting bald eagles may be disturbed;
- Work to enhance and manage bald eagle habitats on state-owned and state-managed lands;
- Apply for grants to fund priority actions/research;
- Initiate random spot-checks of construction projects that are following the FWC Eagle Management Guidelines;
- Review the information provided during nest-monitoring events and evaluate the annual nest-monitoring protocol to ensure that the information collected can assist in answering some of the most pressing management questions.

Actions that local governments and other state agencies should begin within the next 12 months with assistance from the FWC

- Adopt procedures within ordinances to assist and assure consistency with management guidelines and policies for bald eagles.
- Work to enhance and manage bald eagle habitat on state-owned and state-managed state-owned lands.

Actions that the FWC should continue or implement during the next five years with assistance from outside entities

- Continue aerial surveys to monitor the reproductive success of bald eagles in Florida and to update the locations and status of eagle nests and nesting territories;
- Determine the percentage of bald eagle nests that are protected on public lands or by perpetual conservation easements, or otherwise unlikely to be further developed;
- Continue to monitor and manage fish populations and aquatic habitats;
- Continue law enforcement activities such as patrol, enforcement, and education;
- Develop and maintain funding sources for continued monitoring and data analysis of bald eagle nests and nesting territories;
- Study long-term trends in the statewide bald eagle population;

- Study the frequency at which bald eagles reactivate an abandoned nest, and after how many years of non-use;
- Study the effectiveness of post-delisting regulations and recommendations;
- Test the value and accuracy of the BEHIV model (Nesbitt *et al.* in review) as a tool for habitat management;
- Study the long-term effects of development near bald eagle nests;
- Study the use of artificial nesting structures by bald eagles in Florida;
- Study the movements of post-breeding bald eagles after they migrate out of Florida;
- Study how, when, and where Florida-produced bald eagles enter the breeding population;
- Monitor the sources and extent of bald eagle mortality;
- Prepare a fact sheet that describes the need for continued acquisition of bald eagle habitats, particularly within core nesting areas;
- Create and distribute a brochure with key messages about bald eagle biology and recovery status, observing eagles, and what citizens can do to aid recovery;
- Prepare a fact sheet that includes information on land-use regulations, the threat posed to eagles by power lines, industry-specific management recommendations, and stewardship incentives;
- Create a video highlighting key messages and citizen involvement, and post this to FWC's website.

Priority action to be undertaken by local governments with assistance from the FWC within the next five years

- Offer expedited permit review and/or reduced development review fees to developers who voluntarily follow the FWC Eagle Management Guidelines.
- Adopt procedures within ordinances to assist and assure consistency with science-based management guidelines and policies for bald eagles.

Management Plan Review and Revision

To ensure that the conservation goal of this management plan is maintained, the FWC will review the status of Florida's bald eagle population based upon annual surveys of nests and nesting territories. This management plan will be reviewed and revised after five years (*i.e.*, in 2013). Significant changes to the management plan will be made with public input and Commission approval.

CHAPTER 6: ANTICIPATED IMPACTS

Economic Impacts

This preliminary assessment of economic impacts of delisting the bald eagle in Florida was based on the conservation strategies and actions proposed in this management plan.

Estimated cost to the FWC of implementing proposed conservation strategies and actions.

Resources required to implement this bald eagle management plan are described in Chapter 5. The conservation actions proposed in the management plan will require a commitment of staff time to review applications for FWC Eagle Permits, develop landowner-incentive programs, coordinate research and monitoring programs, and develop and implement appropriate education and outreach programs. One-time costs associated with producing informational brochures over five years are estimated to be \$17,500. Annual costs for staff to implement the management plan are estimated to be \$315,080. Of these totals, the one-time cost to produce brochures (\$17,500), start-up costs (\$25,000), and approximately \$60,000 of annual costs represent new costs to the FWC, for which funding sources must be secured.

It is unlikely that the FWC can conduct additional activities with existing staff and resources. Management actions proposed in this plan will need to be prioritized along with other agency programs, species needs, and available resources. New funding and personnel dedicated to implementation of this plan are necessary to accomplish all outlined strategies and tasks. The exact costs will depend on the amount of resources that local governments and landowners can devote to bald eagle conservation in Florida.

Estimated cost to potentially affected parties of implementing the proposed conservation strategies and actions.

The permits required under the proposed rules are no-cost permits. Conservation and minimization measures recommended under FWC Eagle Permits may increase costs incurred by permit applicants. The exact costs would vary from site to site depending on the size of the project, the size of the recommended buffer, and potential impacts to bald eagles. Sale of conservation easements around an active or alternate bald eagle nest will financially benefit some owners of private lands, and may also increase their eligibility to receive funds through state and federal land-management incentive programs.

Actions listed in the FWC Eagle Management Guidelines may lower costs to private landowners. By providing the option of following these guidelines instead of applying for a FWC Eagle Permit, developers can conserve bald eagle habitats rather than having to compensate for construction activities.

Social Impacts

The bald eagle was chosen as the national symbol of the United States on 20 June 1782 because of its longevity, great strength, and majestic bearing. The bald eagle appears on the Great Seal of

the United States and represents freedom. President John F. Kennedy wrote that, “The Founding Fathers made an appropriate choice when they selected the bald eagle as the emblem of the nation. The fierce beauty and proud independence of this great bird aptly symbolize the strength and freedom of America.”

During the public comment period of this management plan, one social theme was repeatedly expressed: That delisting of the bald eagle could create the perception that there is less need for conservation and management. This misperception could potentially lead to an increase in the illegal take of or disturbance to eagles, which may negatively impact the population. If this were to happen, it would erode public confidence in the FWC’s ability to manage the state’s wildlife.

Conversely, successfully managing the public’s perception about the delisting of bald eagles in Florida will help to accomplish the goals of this management plan, and will enhance public confidence in the agency. The bald eagle has successfully recovered from its imperiled status. The FWC has the opportunity to make the public aware of this success story, and to assure the public that conservation of bald eagles will continue.

This management plan includes an Education and Outreach section that identifies the need to explain to key audiences the rules and guidelines that remain in place for the protection of bald eagles, their nests, and their nesting territories. This plan also commits that the current level of law enforcement will not decrease upon delisting of the eagle. These actions should create public awareness of the continuance of actions that protect bald eagles in Florida, and should generate support for this management plan.

The delisting process will place responsibility on local governments to remain involved with regulations and guidelines that protect bald eagles and their habitats under the guidance of this management plan. This responsibility will create a closer working relationship between FWC and local governments.

Ecological Impacts

Upland and aquatic habitats that support bald eagles in Florida also support a large number of other species. Acquiring lands that support eagle nests, or placing buffer zones around eagle nests into perpetual conservation easements, will benefit a host of other plant and animal species. Continued conservation and management of aquatic habitats will provide healthy feeding areas for bald eagles and will benefit a multitude of other species that depend on Florida’s aquatic environments. Electrocution-related mortality of bald eagles and other birds may be reduced as a result of power companies incorporating “avian-friendly” devices and fittings on their equipment.

LITERATURE CITED

- AOU [American Ornithologists' Union]. 1998. *Check-list of North American Birds*. 7th edition. American Ornithologists' Union, Washington, D.C.
- Bailey, H.H. 1925. *The Birds of Florida*. Williams and Wilkins, Baltimore, MD.
- Broley, C.L. 1947. Migration and nesting of Florida bald eagles. *Wilson Bulletin* 59:3–20.
- Broley, C.L. 1950. The plight of the Florida bald eagle. *Audubon* 52(1): 42–49.
- Buehler, D.A. 2000. Bald eagle (*Haliaeetus leucocephalus*). Number 506 in *The Birds of North America* (A. Poole, P. Stettenheim, and F. Gill, editors). The Academy of Natural Sciences, Philadelphia, PA, and the American Ornithologists' Union, Washington, D.C.
- Centers for Disease Control and Prevention. 2006. West Nile Virus website <www.cdc.gov/ncidod/dvbid/westnile/index.htm>. Accessed 11 May 2007.
- Cruikshank, A.D. 1980. *The Birds of Brevard County, Florida*. Florida Press. Orlando, FL.
- Curnutt, J.L. 1996. Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*). Pages 179–187 in *Rare and Endangered Biota of Florida, Volume V. Birds* (J.A. Rodgers, H.W. Kale, and H.T. Smith, editors). University Press of Florida, Gainesville, FL.
- Curnutt, J.L., and W.B. Robertson. 1994. Bald eagle nest site characteristics in south Florida. *Journal of Wildlife Management* 58: 218–221.
- Forrester, D.J., and M.G. Spalding. 2003. *Parasites and Diseases of Wild Birds in Florida*. University Press of Florida, Gainesville, FL.
- FWC [Florida Fish and Wildlife Conservation Commission]. 2005. Wildlife legacy initiative: Comprehensive wildlife conservation strategy. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.
- Gerrard, J.M., and G.R. Bortolotti. 1988. *The Bald Eagle: Haunts and Habits of a Wilderness Monarch*. Smithsonian Institution Press, Washington, D.C.
- Howell, A.H. 1932. *Florida Bird Life*. Coward-McCann, New York, NY.
- Landsea, C.W., N. Nicholls, and L.A. Avila. 1996. Downward trends in the frequency of intense Atlantic hurricanes during the past five decades. *Geophysical Research Letters* 23: 1697–1700.
- McCarthy, J.J., O.F. Canziani, N.A. Leary, D.J. Dokken, and K.S. White, editors. 2001. Climate change 2001: Impacts, adaptation, and vulnerability. Contributions of Working Group II

- to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK.
- McEwan, L.C., and D.H. Hirth. 1980. Food habits of the bald eagle in north-central Florida. *Condor* 82: 229–231.
- Millsap, B., T. Breen, E. McConnell, T. Steffer, L. Phillips, N. Douglass, and S. Taylor. 2004. Comparative fecundity and survival of bald eagles fledged from suburban and rural natal areas in Florida. *Journal of Wildlife Management* 68: 1,018–1,031.
- Mojica, E.K. 2006. Migration, home range, and important use areas of Florida sub-adult bald eagles. Master's thesis, University of Georgia, Athens, GA.
- Nesbitt, S.A. 2005. Bald eagle annual report 2005. Florida Fish and Wildlife Conservation, Tallahassee, FL.
- Nesbitt, S.A., and M.W. Collopy. 1985. Raptor research and management in Florida: Bald eagles. *Eyas* 8: 26–28.
- Nesbitt, S.A., G.L. Holder, D.A. Mager, and S.T. Schwikert. 1990. Use of aerial surveys to evaluate bald eagle nesting in Florida. Pages 207–210 in *Proceedings of the Southeast Management Symposium and Workshop*. National Wildlife Federation, Washington, D.C.
- Nesbitt, S.A., M.J. Folk, and D.A. Wood. 1993. Effectiveness of bald eagle habitat protection guidelines in Florida. *Proceedings of the Annual Conference of Southeastern Associated Fish and Wildlife Agencies* 47: 333–338.
- Nesbitt, S.A., J.L. Hatchitt, T.H. Logan, J.H. White, and P.S. Kubilis. In review. Geographic Information System used to score Florida bald eagle nest sites. Submitted to *Journal of Wildlife Management*.
- Peterson, D.W., and W.B. Robertson. 1978. Southern bald eagle. Pages 27–30 in *Rare and Endangered Biota of Florida, Volume 2, Birds* (H.W. Kale, editor). University Presses of Florida, Gainesville, FL.
- Robertson, W.B., and G.E. Woolfenden. 1992. *Florida Bird Species: An Annotated List*. Special Publication Number 6, Florida Ornithological Society, Gainesville, FL.
- Shea, D.S., R.E. Shea, and W.B. Robertson. 1979. Unusual observations of nesting bald eagles in south Florida. *Florida Field Naturalist* 7: 3–5.
- Stalmaster, M.V. 1987. *The Bald Eagle*. Universe Books, New York, NY.
- Stevenson, H.M., and B.H. Anderson. 1994. *The Birdlife of Florida*. University Press of Florida, Gainesville, FL.

- Sullivan, D., T.H. Logan, C.M. Martino, S.[A.] Nesbitt, and T. Steffer. 2006. Biological Status Report for the Bald Eagle. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.
- USFWS [United States Fish and Wildlife Service]. 1987. Habitat management guidelines for the bald eagle in the southeast region. United States Fish and Wildlife Service, Washington, D.C.
- USFWS. 1989. Southeastern states bald eagle recovery plan. United States Fish and Wildlife Service, Washington, D.C.
- USFWS. 1999. Proposed rule to remove the bald eagle in the Lower 48 states from the list of endangered and threatened wildlife. *Federal Register* 64: 36,454–36,464.
- USFWS. 2006a. Removing the bald eagle in the Lower 48 states from the list of endangered and threatened wildlife, 16 February 2006. *Federal Register* 71: 8,238–8,251.
- USFWS. 2006b. Clearance to proceed with construction activities adjacent to bald eagle nests – 2006 revision. FWS/R4/ES-JAFL, 5 June 2006. United States Fish and Wildlife Service, Jacksonville, FL.
- USFWS. 2007a. Questions and answers for Bald and Golden Eagle Protection Act actions. United States Fish and Wildlife Service, Washington, D.C.
- USFWS. 2007b. National Bald Eagle Management Guidelines. United States Fish and Wildlife Service, Washington, D.C.
- USFWS. 2007c. Draft post-delisting monitoring plan for the bald eagle (*Haliaeetus leucocephalus*). United States Fish and Wildlife Service, Washington, D.C.
- USFWS. 2007d. Bald Eagle Monitoring Guidelines. United States Fish and Wildlife Service, Washington, D.C.
- Wilde, S.B., T.M. Murphy, C.P. Hope, S.K. Habrun, J. Kempton, A. Birrenkott, F. Wiley, W.W. Bowerman, and A.J. Lewitus. 2005. Avian vacuolar myelinopathy linked to exotic aquatic plants and a novel cyanobacterial species. *Environmental Toxicology* 20: 348–353.
- Wood, P.B. 1992. Habitat use, movements, migration patterns, and survival rates of sub-adult bald eagles in north Florida. Ph.D. dissertation. University of Florida, Gainesville, FL.
- Wood, P.B., and M.W. Collopy. 1995. Population ecology of sub-adult southern bald eagles in Florida: Post-fledging ecology, migration patterns, habitat use, and survival. Nongame Wildlife Program. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.

- Wood, P.B., M.W. Collopy, and C.M. Sekerak. 1998. Postfledging nest dependence period for bald eagles in Florida. *Journal of Wildlife Management* 62: 333–339.
- Wood, P.B., T.C. Edwards, and M.W. Collopy. 1989. Characteristics of bald eagle nesting habitat in Florida. *Journal of Wildlife Management* 53: 441–449.

APPENDIX 1: LINKS TO ONLINE USFWS DOCUMENTS

USFWS.1999. Proposed rule to remove the bald eagle in the Lower 48 states from the list of endangered and threatened wildlife.

<fws.gov/southwest/es/arizona/Documents/SpeciesDocs/BaldEagle/baldeagledelisting99.pdf>.

USFWS. 2006. Removing the bald eagle in the Lower 48 states from the list of Endangered and Threatened wildlife, 16 February 2006.

<fws.gov/southwest/es/arizona/Documents/SpeciesDocs/BaldEagle/BE_Delisting_Reopening.pdf>.

USFWS. 2006. Bald eagle monitoring guidelines (Florida).

<fws.gov/northflorida/BaldEagles/2007-BE-Monitoring-Guidelines-without-figures.htm>.

USFWS. 2007. Protection of bald eagles; definition of “disturb.”

<fws.gov/pacific/eagle/definitions/disturb_def.html>.

USFWS. 2007. National Bald Eagle Management Guidelines.

<fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf>.

USFWS. 2007. Bald eagle monitoring guidelines.

<fws.gov/northflorida/BaldEagles/2007-BE-Monitoring-Guidelines-without-figures.htm>

USFWS. 2007. Draft post-delisting monitoring plan for the bald eagle (*Haliaeetus*

leucocephalus). <fws.gov/midwest/eagle/protect/DraftBAEAPDM.html>.

USFWS 2007. Proposal to create a permit process for bald and golden eagles.

<fws.gov/policy/library/07-2697.pdf>.

APPENDIX 2: LIST OF FWC STAKEHOLDERS

Individuals on the FWC's stakeholder contact list, some of whom provided comments or other assistance to the bald eagle management team. *A member of the "ad-hoc" bald eagle committee who participated in meetings, November 2007–January 2008.

STAKEHOLDER	AFFILIATION
Yvette Alger	St. Lucie County
Bonnie Basham	Standing Watch
Teresa Bishop	St. Johns County
Jan Brewer	St. Johns County
Karl Bullock	Golder Associates
Barbara Burgeson	Collier County
Gail Carmody	U.S. Fish and Wildlife Service
Resee Collins	U.S. Fish and Wildlife Service
Ron Concoby	Independent scientist
Lori Cunniff	Orange County
Amy Dierolf	Progress Energy
Seth Drawdy	Foley Land and Timber Company
Michael Drummond	Alachua County
Todd Engstrom	Florida Ornithological Society
Susan Farnsworth	Citrus County
Sammi Fitch	City of Cape Coral
*Monica Folk	The Nature Conservancy
Jerris Foote	Sarasota County Parks and Recreation
Shane Fuller	St. Joe Company
*Steve Godley	Biological Research Associates, Inc.
Phil Gornicki	Florida Forestry Association
Mary Ann Gosa	Florida Farm Bureau
Richard Hamann	Center for Governmental Responsibility
Dennis Hardin	Florida Division of Forestry
David Hartgrove	Halifax River Audubon Society
Clay Henderson	Holland and Knight LLP
Rob Hicks	Plum Creek Timber Company
Stephen Hofstetter	Alachua County
Wade Hopping	Wade Hopping Associates
Kim Iverson	South Atlantic Fisheries Management Council
Steve Kintner	Volusia County
*Tom Logan	Breedlove, Dennis & Associates, Inc.
*Laurie Macdonald	Defenders of Wildlife

*Candace Martino	U.S. Fish and Wildlife Service
Matt Osterhoudt	Sarasota County
Franklin Percival	Florida Cooperative Fish & Wildlife Research Unit
Barbara Jean Powell	Everglades Coordinating Council
*Doug Rillstone	FL Chamber Commerce/Developers Assoc.
Preston Robertson	Florida Wildlife Federation
Vicki Sharpe	Florida Department of Transportation
Arnette Sherman	West Volusia Audubon Society
Stan Simpkins	U.S. Fish and Wildlife Service
Parks Small	Florida Department of Environmental Protection
Caroline Stahala	U.S. Fish and Wildlife Service
*Tony Steffer	Raptor Management Consultants
Andy Stevens	Charlotte County
Becky Sweigert	Lee County
Tim Telfer	Flagler County
Kim Trebatoski	Lee County
Tom Trettis	Wilson Miller Engineering
Christina Uranowski	Osceola County
Carol Wehle	South Florida Water Management District
*Lynda White	Audubon of Florida
*Julie Wraithmell	Audubon of Florida