

**CONSERVATION STRATEGY FOR THE
BLACK BEAR IN FLORIDA**

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From input and comments by the

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EXECUTIVE SUMMARY

This Conservation Strategy identifies actions needed to perpetuate black bears in Florida over the long-term. It was developed from input by a diverse group of stakeholders representing 13 organizations, which ranged from state to federal agencies and from resource utilization associations to environmental groups. In this Conservation Strategy, the stakeholders establish goals for population management, habitat conservation, and public awareness and support. Further, they identify objectives and activities to achieve these goals.

The population management goal is to sustain enough black bears in Florida to exceed state listing criteria as a Species of Special Concern, as established on June 26, 1999. Population management objectives focus on 1) determining current status and desired conditions, 2) providing for an overall population with a minimum of five subpopulations, 3) scientific monitoring of subpopulations, 4) reducing transportation-related impacts, 5) understanding critical human impacts, 5) assessing the population status relative to the goal, and 6) maintaining bear populations within social carrying capacity.

The habitat conservation goal is to secure enough habitat for black bears in Florida to exceed state listing criteria as a Species of Special Concern, as established on June 26, 1999. The habitat conservation objectives generally mirror population management objectives and focus on 1) determining current status and desired conditions, 2) protecting adequate habitat to meet population objectives, 3) fostering improved bear habitat management, 4) understanding impacts of human-related activities, and 5) assessing the habitat status relative to the goal.

The public awareness and support goal is to attain broad-based appreciation for and tolerance of black bears in Florida and support for their conservation. Public awareness and support objectives focus on 1) developing and disseminating educational and media materials, 2) obtaining adequate funding for bear management efforts, 3) minimizing human/bear conflicts, 4) developing local bear conservation working groups, 5) ensuring public acceptance of bear densities and distributions needed to achieve conservation goals, 6) developing bear-specific curricula for grade levels kindergarten through college, 7) providing citizens' mechanisms to experience bears in favorable ways, and 8) exploring options regarding re-opening of hunting seasons in Florida.

All of the items listed in this Conservation Strategy are worthy of attention; however, the Working Group identified several key issues that must be addressed first. The inter-related nature of the three goals and their objectives and activities should be given special consideration. Maintaining a viable overall population of bears in Florida is paramount and cannot be achieved without protection of an adequate habitat base. Likewise, minimizing human/bear conflicts (i.e., roadkill and nuisance situations) will be critically important and will require establishment of cooperative conservation measures to be taken relative to new road and development projects. Lastly, local working groups are needed as the next step to integrate and facilitate bear conservation measures at the population level, and sufficient funding must be secured to enable implementation of key items.

More detailed action plans will be needed to complete many of the items identified in this Conservation Strategy. Such action plans should be developed by the appropriate organizations whose interest and/or responsibility encompasses each item. This Conservation Strategy is not intended to be a work or management plan for the Florida Fish and Wildlife Conservation Commission (FWC) or any other organization that took part in its development, instead it is intended to be a statewide overview of the integrated conservation efforts needed to sustain black bears in Florida.

INTRODUCTION

The Florida black bear (*Ursus americanus floridanus*) is a unique subspecies of the American black bear (*U. a.*), and historically ranged throughout Florida and the southern portions of adjoining states. Florida black bears may inhabit large tracts of forestland of any type, but thrive best in the presence of forested wetlands and/or bottomland hardwoods. The impacts of past, present, and future human activity on Florida black bears have led to concern regarding the status of and future outlook for remaining populations and the habitats upon which they depend.

Florida black bears represent one of two remaining large carnivores native to Florida. As such, they have both ecological and aesthetic importance. The wide-ranging nature of Florida black bears makes them efficient foragers and seed dispersers and causes them to be considered an “umbrella species” (i.e., meeting the life requirements of this species ensures the security of numerous other species as well) (Cronin-Jones 1999). Floridians have valued black bears over the years for a variety of reasons, including: their hide, meat, and oil for subsistence; their mystical and religious importance; their position as a worthy game animal; their ecological role; and their embodiment of wilderness. Perhaps most importantly, Florida black bears have intrinsic value as an irreplaceable large mammal within the unique ecosystems of the deep Southeast.

This document is the product of a two-year long Working Group process involving 13 stakeholder groups (Table 1) sharing the common goal of developing a strategy that will ensure the perpetuation of the black bear in Florida in the wild. Agencies and organizations were selected to represent the diversity of stakeholders concerned about bear conservation and management in Florida, provide a variety of perspectives and ideas necessary to develop a comprehensive conservation strategy, and include the major agencies and organizations that might play a role in implementing the resulting strategy. The scope of the Working Group and Conservation Strategy was statewide in nature, which required participants to focus on broad issues that affect bears across the state. Narrower issues of local or regional importance were not directly dealt with, although mechanisms to address them were considered.

Completion of this Conservation Strategy would not have been possible without the hard work and dedication of many people. Susan Millsap was instrumental in developing the process and in facilitating meetings, organizing mailings, and providing information. Upon Susan Millsap’s departure from the FWC, Jennifer Atchley seamlessly took over as organizer and facilitator for the fourth meeting. Terri Tiffany did an excellent job assisted with meetings and documenting discussions. All stakeholder representatives took the process seriously and provided excellent input. Tim O’Meara provided valuable assistance in review and comment on drafts of the Conservation Strategy.

BACKGROUND INFORMATION

Description and History

The Florida black bear is one of three subspecies of American black bear recognized in the southeastern United States. Although these subspecies are nearly indistinguishable in the field, they can be differentiated by slight variations in several skull measurements. Its highly arched forehead and long, narrow braincase generally characterize the Florida black bear. As with all American black bears, Florida black bears are large, powerful mammals with a shy, secretive demeanor. Adult males normally weigh 250 - 450 lbs., and adult females normally weigh 125 - 250 lbs. Both sexes have soft, black hair, often with blonde chest markings; small, round ears; short tails; stout, curved claws; and large canine teeth. Black bears are omnivores that mostly eat vegetation, nuts, berries, and insects, but also consume some meat. In Florida, black bears are dependent upon saw palmetto plants, black gum, and oak trees for a significant portion of their diet. They may prey upon animals such as armadillos, deer fawns, and hogs; but, overall, these food sources make up a small percentage of their diet.

Florida black bears are habitat generalists that utilize their surroundings at the landscape level. They are dependent upon forest vegetation, but are not limited to specific forest types. Forested wetlands and bottomland hardwoods provide optimal habitat, but any forested areas of large size with diverse foods and dispersed cover can support bears. Home range sizes vary greatly among individuals, age classes, and populations, but average approximately 37 km² (14.4 mi²) for females and 161 km² (62.1 mi²) for males. Florida black bears are not territorial in the strict sense of the word and tolerate considerable overlap in home ranges. Individuals tend to be solitary, except for females with young and groups at abundant food sites.

Florida black bears have relatively low reproductive potential. Females typically bear their first litters at age three or four and generally have two cubs every other year. Overall average age of bears in Florida usually varies between 4 – 6 years. Many bears die as cubs and yearlings, which lowers the average age considerably, but once bears reach adulthood (≥ 4 years), males generally live to be 8 – 12 years old and females live to be 10 – 15 years old.

Historically, black bears ranged throughout the Southeast, with the Florida subspecies inhabiting all of Florida, including the upper keys and portions of southern Georgia, Alabama, and Mississippi (Figure 1). This widespread distribution has been severely reduced and fragmented by human activity. Large-scale land clearing in the early 1900's along with unregulated killing, which occurred up to the mid 1900's, had the greatest negative impacts. Bear populations in Florida reached their low point between the 1950s and 1970s, with only several hundred to a thousand individuals estimated statewide (McDaniel 1974, Brady and Maehr 1985). Florida's bear population has since rebounded because of management actions and maturation of second growth forests across the state. More recently, however, development associated with Florida's burgeoning human population has begun to directly compete for space with the wide-ranging black bear.

Population and Habitat Status

The primary range of bears in Florida has been restricted to six large (Apalachicola, Big Cypress, Eglin, Ocala, Osceola, and St. Johns) and two small (Chassahowitzka and Glades/Highlands) populations (Figure 2). These populations range in abundance from a few individuals to several hundred bears and vary significantly in distribution, habitats occupied, and threats to existence. Dispersing bears may be found virtually anywhere in the state, and low numbers of bears inhabit lands surrounding the extant populations and some large undeveloped areas like the “Big Bend” region of the state. Although not under the jurisdiction of FWC, populations of Florida black bears in neighboring states, such as at Okefenokee Swamp in southern Georgia and Mobile Bay in Alabama, must be considered when evaluating the status of the Florida subspecies. The Osceola bear population is continuous with the larger Okefenokee bear population in southern Georgia, and bear populations in the western panhandle may play an important role in maintenance of small bear populations in Alabama. The distinct geographic nature of bear populations in Florida in conjunction with their limited connectivity via dispersal and low-density linkage zones represents a metapopulation, or overall population, that is influenced by both localized and regional factors. Consequently, because of their fragmented distribution, the individual populations are more vulnerable to impacts than a single large population of similar total size would be.

Currently, there is no accurate, scientifically generated estimate of the number of black bears in Florida. In 1998, FWC staff estimated the statewide bear population to be 1,282 bears based on density estimates from past studies and estimates of occupied range (Table 2) (Florida Game and Fresh Water Fish Commission Memorandum, December 18, 1998). Results from more recent studies and consistently increasing trends in bear roadkill, nuisance complaints, sightings, and sign suggest that bear abundance and distribution are increasing in many bear populations, particularly in Ocala and Apalachicola National Forests and surrounding areas. A recently initiated study funded by the Florida Department of Transportation (FDOT) and being implemented by the FWC is enumerating the present range and density of bears in the six large populations across Florida. Results from this research should be available by the end of 2004.

In 1998, FWC staff estimated the total area of available bear habitat in Florida to be 5,829,000 acres (9,108 mi²), or approximately 23,500 km² (Florida Game and Fresh Water Fish Commission Memorandum, December 18, 1998). Although it is apparent from sighting records that bear range has expanded in Florida over the past 50 years, no accurate data exist on the size and trends in bear habitat in Florida. However, as bears are inhabitants of forested lands, trends in forested acres in Florida can provide a crude indication of trends in bear habitat. Cox et al. (1994) described pineland, oak scrub, sand pine scrub, mixed hardwood-pine, upland hardwood forest, cypress swamp, mixed hardwood swamp, bay swamp, and bottomland hardwood forests as primary habitat and dry prairie, sandhill, tropical hardwood hammock, shrub swamp, and shrub and brush cover types as secondary habitat for bears in Florida. Because differences in forest quality can affect bear population health and density, using overall trends in forest coverage is not ideal, but it does provide some insight, particularly given the current lack of definitive data on bear-specific habitat trends. Kautz (1998) identified the loss of approximately 269,000 acres of forested lands between 1987 and 1995. This acreage converts to an average loss rate of 0.2 percent per year. Based on these data, loss of bear habitat (as represented by

forest cover trends) has occurred recently, but at a relatively slow rate, especially compared to previous loss rates that have averaged as high as one percent per year (Kautz 1998).

Strategic habitat conservation areas for the Florida black bear (i.e., additional lands that would need to be protected to meet minimum habitat conservation goals for the Florida black bear) were proposed in the report *Closing the Gaps in Florida's Wildlife Habitat Conservation System (Closing the Gaps)* based on 1985-1989 Landsat Thematic Mapper imagery (Cox et al. 1994). When *Closing the Gaps* was published in 1994, 6.6 million acres in Florida were in conservation lands. That figure has grown to 8.3 million acres now. Of the 1.6 million acres included in the strategic habitat conservation areas for the Florida black bear, 455,345 acres have since been acquired by the state, leaving 72 percent unprotected.

As for future trends, it seems inevitable that, with more than 700 new residents moving to Florida on average per day (U.S. Census Bureau 2002), bear habitat will continue to decline in Florida. A "population viability analysis" (projections of future population levels based on assumed survivorship, mortality, and reproduction) recently conducted by Maehr et al. (2001), however, suggests that the Florida black bear may be able to increase over the next 100 years despite habitat loss rates of one to three percent per year. Maehr et al. (2001) used Vortex Version 8.21 with the following assumptions regarding bear demographics: 1) age of first reproduction was 3 years; 2) maximum breeding age was 14; 3) gender ratio at birth was 50:50; 4) polygynous breeding with 50% of males and 50% of females in the breeding pool each year; 5) 25% of breeding females produced 1 cub, 50% produced 2 cubs, 20% produced 3 cubs, and 5% produced 4 cubs; and 6) survival based on estimated age-specific survival rates. Based on these assumptions and varying degrees of projected habitat loss, inbreeding depression, and metapopulation exchange, Maehr et al. (2001) predicted population growth rates ranging from 0.1% to 11.8% ($n = 27$, average = 9.74%, standard deviation = 2.71), with overall population size ranging from 4,033 to 4,816 ($n = 7$, average = 4,577, standard deviation = 361) for bears in Florida after 100 years. For more details about this analysis, see Maehr et al. (2001).

Legal Status

Black bears are protected by state statute as a threatened species throughout Florida except those in Baker and Columbia counties and Apalachicola National Forest and those held in captivity under permit. Bears in Baker and Columbia counties and Apalachicola National Forest were listed as a game mammal and hunted until seasons were closed in 1994. The USFWS has reviewed the status of the Florida black bear and, after initially indicating that federal listing was warranted but precluded by higher priority species (Federal Register 56[4]:596-600), concluded that they do not merit federal listing as a threatened or endangered species (Federal Register 63[235]:67613-67618). This decision was challenged in court by several conservation organizations. The outcome of the court case was that the listing decision was remanded back to the USFWS in December 2001 for further consideration and documentation of the adequacy of existing regulatory mechanisms to protect the Florida black bear. At the time of the writing of this Conservation Strategy, no final finding on this issue had been published.

Human/Bear Conflicts

The annual number of recorded vehicle/bear collisions has steadily risen from two in 1976, when records were first kept, to 109 in 2000, 105 in 2001, and 132 in 2002 (Figure 3). Similarly, the annual number of reported human/bear conflicts has risen from one in 1978 to 1,133 in 2000, 796 in 2001, and 1,340 in 2002 (Figure 4). Moreover, if current trends continue, numbers of both roadkill and human/bear conflicts will increase in the future. As Florida's human population continues to grow and encroach upon remaining bear habitat, and as black bear populations expand from historic lows, human/bear conflicts likely will continue to grow in number and intensity. Although no attacks on humans by bears have been documented in Florida, there have been numerous cases of bears in buildings, bears attacking livestock and pets, and other serious conflicts. Given these factors, management agencies and private landowners face a considerable challenge in attempting to balance the need to protect and preserve bear populations with the demand to ensure the safety and well being of Floridians.

Monitoring and Management

The majority of management responsibility for black bears in Florida falls on the FWC, but numerous agencies, organizations, and individuals share responsibility for various aspects, most notably habitat protection and management, resolution of human/bear conflicts, and education and outreach. Prior to 1994, when all hunting seasons on black bear were closed in Florida, management activities focused on harvest regulations. Regulations became more and more conservative as public concern over population viability grew. Bag limits were reduced to one bear per year, cubs and yearlings were protected, seasons were shortened and moved later in the year, and weight limits were established. These regulations had the desired effect of reducing overall harvest and, more importantly, decreasing the number and percentage of young bears and females in the harvest. Management during this period also included response to human/bear conflicts and documentation of roadkill and nuisance complaint numbers.

After 1994, management efforts concentrated on documentation of roadkill and nuisance complaints and response to dramatically increasing human/bear conflicts. Chronic roadkill areas were identified, signage was posted in appropriate areas, and underpasses and fencing were built at several locations. Habitat protection and acquisition became a salient management issue in the 1980s and has continued to be an important component of black bear management in Florida. More recently, the need for human outreach and education regarding coexistence with black bears has become an important management issue. Current management efforts include continued habitat protection, documentation of basic population parameters, detailed study of road impacts on bears, development of a "Be Bear Aware" education campaign, response to human/bear conflicts, and coordination among stakeholders.

Need for Action

The long-term future of black bears in Florida is uncertain because of their large spatial requirements, the fragmented nature of remaining populations, and increasing human development and activity. In order to maintain a secure overall population of bears in Florida, we must provide adequate habitats, promote viable populations, and manage human impacts.

Knowledge of changes in population status and how factors such as roadkill, habitat conversion, distribution, nuisance activity, and human attitudes affect Florida black bear populations is needed to ensure effective conservation efforts. To date, management of Florida's black bears has been diminished by a dearth of definitive information on bear population dynamics, lack of coordination among responsible parties, insufficient resources, and absence of an integrated strategy for conservation. This Conservation Strategy proposes integrated goals and objectives, and provides prioritized activities to be completed to address these needs.

PROCESS

Formation of a statewide Working Group was one of eight unanimous recommendations produced by the participants in a 1998 Florida Game and Fresh Water Fish Commission workshop on reducing human/bear interactions. The Working Group was intended to provide a forum for discussion and consideration of divergent yet equally important perspectives on the complex issues surrounding bear management in Florida. In 1999, the FWC coordinated with the U.S. Fish and Wildlife Service (USFWS) and Habitat for Bears Campaign (Defenders of Wildlife and Sierra Club) to define the scope of the working group and develop a process for its establishment. Having agreed upon a proposed working group mission and process, the FWC initiated the Working Group.

The process used to develop this Conservation Strategy was multipart and consisted of pre-work and scoping, intermittent meetings, and mailings (Figure 5). The concept was to gather and organize information and ideas through iterative mailings and synthesize and reach consensus on this information through facilitated meetings. Fifteen organizations with a statewide stake in Florida bear conservation were invited to join the Working Group, and 13 actively participated (Table 1). The Working Group met for the first time in Gainesville on May 2 - 3, 2000. At this meeting, the Working Group confirmed its purpose, consented to the proposed process and estimated time line for conservation strategy development, and established three goals under which to develop objectives and activities. Two rounds of mailings in which participants drafted proposed objectives, edited them, and provided importance scores, ranging from 1 (highest importance) to 5 (lowest importance), followed the first meeting. Because of the large number (178) and significant overlap of proposed objectives, a second meeting was then held in Gainesville on October 31 – November 1, 2000. At this meeting, the Working Group combined similar objectives and distilled them to a workable number. A third mailing in which participants provided final importance scores for objectives and submitted proposed activities followed. On August 28 – 29, 2001, participants met for a third time in Gainesville to finalize objective importance scores, address apparent contentious issues, and provide importance scores for activities. A fourth and final mailing was then conducted to finalize all objectives and activities and their importance scores. FWC staff then integrated all materials into a draft Conservation Strategy that was reviewed and discussed at a fourth meeting in Gainesville on June 25 – 26, 2002. Lastly, edits from the final meeting were incorporated into the draft document by FWC staff; the final draft Conservation Strategy then was mailed to participants for final approval and remaining edits were made.

CONSERVATION STRATEGY

Mission Statement: Identify goals, objectives, and activities that, when accomplished, will ensure the long-term perpetuation of the black bear in Florida in the wild.

The Working Group discussed particulars of the mission statement and defined “long-term” to be at least 100 years into the future. Similarly, “in the wild” was meant to indicate free-ranging individuals within a population with sufficient habitat base to enable normal interactions and dynamics. Specifically, bears in zoological parks or other fenced preserves were not considered to be “in the wild.” To avoid confusion with the conceptual nature of many ecological terms, the Working Group accepted definitions that were used throughout the Conservation Strategy (Appendix A).

Goals (see listings below) are listed in the order that the Working Group developed them and share equal importance. Within each goal, objectives are listed in order of importance as denoted by the average of participants’ scores. Likewise, within objectives, activities are listed in order of average importance scores. Objectives and activities were not rated across goals and objectives. Importance scores consist of a numeric rating of 1 – 5, with 1 indicating highest importance and 5 indicating lowest importance.

Goals, objectives, and strategies developed to achieve mission statement of the Statewide Bear Conservation Strategy.

Item	Content	Score
Goal 1	<p>Provide for an overall population of black bears in the wild in Florida that exceeds, over the long-term, the Florida Fish and Wildlife Conservation Commission’s minimum criteria for listing as a Species of Special Concern.</p> <p><i>The Working Group purposefully developed Goals 1 and 2 to be linked. Goal 1 focuses on population issues, whereas Goal 2 focuses on habitat issues. The form and structure of these goals and their associated objectives are intentionally similar. The listing criteria referenced herein are those adopted by the FWC on June 26, 1999 (Appendix B). The Working Group agreed that any future changes to these criteria should not affect the provisions of this Conservation Strategy. The Working Group also discussed the dispersed and fragmented nature of the extant bear populations in Florida, and how these populations comprise a metapopulation, or overall population. The Working Group agreed that this goal was directed at the overall population and not each subpopulation.</i></p>	---
Objective 1.1	<p>Determine the current status, expected future status, and desired future status for the subpopulations of bears in Florida.</p>	1.46
Activity 1.1.1	Determine how many bears can be sustained in existing Florida habitat.	1.54
Activity 1.1.2	Develop defensible and biologically sound base-line information on the size, demographics, and distribution of all subpopulations.	1.92
Activity 1.1.3	Determine the number of individuals needed for each sub population and for the overall population to achieve Goal 1.	2.31
Activity 1.1.4	Complete a quantitative analysis showing the probability of extinction for each subpopulation.	2.33

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Activity 1.1.5	Determine age distribution and contribution of individuals to each subpopulation and strategies for maintaining the long-term viability of subpopulations.	2.33
Activity 1.1.6	Determine population status and viability for public land parcels.	2.42
Activity 1.1.7	Determine what geographic scale satisfies maintaining bears “in the wild.”	2.75
Objective 1.2	Provide for an overall population of bears with a minimum of five subpopulations that has a greater than 90 percent probability of surviving for 100 years by maintaining appropriate bear distributions, densities, age distributions, sex ratios, survivorship, and reproduction in each subpopulation.	1.55
Activity 1.2.1	Identify bear management units and develop specific management plans for each, with consideration of contiguous populations in Alabama and Georgia.	1.55
Activity 1.2.2	Determine the ranges of breeding subpopulations of bears in Florida.	2.25
Activity 1.2.3	Obtain measures of parameters necessary for modeling and managing bear populations.	2.27
Activity 1.2.4	Develop a spatially explicit overall population (metapopulation) viability model for black bears in Florida.	2.45
Activity 1.2.5	Identify opportunities for repatriation of bears into suitable areas (e.g., the Big Bend, Blackwater River State Forest, and Green Swamp) and establish measurable, achievable objectives for repatriation.	2.69
Activity 1.2.6	Increase numbers of bears in isolated small populations to ensure viability over the long-term.	3.15
Activity 1.2.7	Determine the need for, and if needed, develop a genetic management plan for bears in Florida.	3.17
Objective 1.3	Monitor each black bear subpopulation by scientifically documenting annual changes in key demographic parameters (particularly abundance).	1.92

The Working Group discussed the feasibility and desirability of documenting demographic parameters each year. Some participants thought that this schedule might be unrealistic and undesirable. The Working Group agreed to leave the specifics up to the professionals who would be performing the monitoring, but noted that work could be done periodically (once every 3 – 5 years) and results reported as average changes per year.

Activity 1.3.1	Establish annual monitoring programs that utilize best methods and determine population trends for each bear subpopulation.	1.75
Activity 1.3.2	Work cooperatively with land management agencies, private landowners, and volunteer groups to implement monitoring programs using standard methodology.	2.15
Activity 1.3.3	Coordinate with Georgia, Alabama, and other states as needed to ensure complete and compatible monitoring of shared bear populations.	2.31
Activity 1.3.4	Identify and implement other monitoring activities that are needed to accurately interpret bear data (e.g., hard and soft mast surveys).	2.50
Activity 1.3.5	Include information from monitoring efforts in annual reports on the status of bears in Florida.	2.58
Objective 1.4	Reduce transportation-related impacts, specifically mortality, on bears.	2.62
Activity 1.4.1	Monitor and maintain a statewide database for roadkill.	1.85
Activity 1.4.2	Determine long-term highway use and traffic projections and their compatibility with large populations of bears.	2.23
Activity 1.4.3	Install signs on chronic roadkill highway segments that will inform the public of the number of bears killed to date on that and all roads in Florida.	2.54

Activity 1.4.4	Implement a cooperative agreement among FWC, FDOT, expressway authorities, and other agencies that specifies coordination procedures for new highway projects, determines minimum standards for projects in bear habitat, and specifies where new roads or highway expansion projects are prohibited.	2.62
Activity 1.4.5	Acquire funding and install underpasses, fencing, and bridge extensions at suitable chronic roadkill sites.	2.69
Activity 1.4.6	Determine conditions under which cleared road shoulders would be efficacious for conserving bear populations.	2.85
Activity 1.4.7	Determine the conditions under which underpasses are efficacious for conserving bear populations.	2.85
Activity 1.4.8	Determine the conditions under which speed zones may be efficacious for conserving bear populations, and implement speed zones where appropriate.	3.15
Objective 1.5	Understand the critical direct and indirect impacts of human activity (present and future) that affect bear population viability.	2.85
Activity 1.5.1	Determine the sustainable annual yield for each bear subpopulation from all sources (hunting, roadkill, illegal kill, natural mortality, etc.)	1.46
Activity 1.5.2	Determine if subpopulations are viable considering long-term human growth and development projections for Florida.	1.64
Activity 1.5.3	Determine effects of vehicle-caused mortality on population growth and viability presently and over the next 45 years.	2.38
Activity 1.5.4	Determine levels of illegal kill and increase law enforcement activities, if warranted, especially in areas where such mortality may be limiting bear population size.	2.50
Activity 1.5.5	Prepare annual reports on the status of bears in Florida.	2.69

Activity 1.5.6	Determine the effects of recreational public use of public conservation lands on bears.	2.85
Activity 1.5.7	Determine if the presence of apiary bees results in increased carrying capacity and bear numbers in an area, thus raising the potential for bear/beekeepers conflicts.	3.08
Activity 1.5.8	Determine the consequences that hunting baits and wildlife feeding have for bears and amend regulations as appropriate.	3.08
Activity 1.5.9	Determine the presence or absence and effects of inbreeding, hybridization, pathogens, pollutants, competitors, and parasites on each bear subpopulation.	3.08
Objective 1.6	Using the newly adopted listing criteria and process established in Rule 68A-27.0012, F.A.C., reassess the population component of the bear’s state threatened designation and reclassify the species to the appropriate level.	2.92
Activity 1.6.1	Evaluate each of the five listing criteria and subcriteria to determine what data need to be collected to make a determination that the Florida black bear meets or exceeds any specific listing criteria and how much time and money would be required to collect such data.	2.38
Activity 1.6.2	Petition the FWC to review the classification of the bear in Florida.	2.92
Activity 1.6.3	Determine if public land ownership at least meets or exceeds the “B” criteria under the species of special concern category.	3.08
Objective 1.7	Maintain bear populations at appropriate densities by increasing them if they are below social carrying capacity, decreasing them if they are above social carrying capacity, and always keeping them above the minimum viable population level.	2.92

The Working Group discussed the ramifications of this objective being linked to human tolerances. Some participants were concerned that if people thought of bears as a nuisance or threat to human safety, then bear populations might be extirpated. However, as stated in the objective, the management of bear numbers within social carrying capacity is limited at the lower end by the number that will sustain a viable population.

Goal 2 **Secure habitat for black bears in Florida that will provide for an overall population that exceeds, over the long-term, the Florida Fish and Wildlife Conservation Commission’s minimum criteria for listing as a Species of Special Concern.** **---**

As stated under Goal 1, the Working Group purposefully made Goal 2 similar to Goal 1 and discussed the importance of habitat. Without adequate habitat, no amount of population management will maintain bears in Florida. Participants emphasized the need for voluntary habitat conservation among private landowners in addition to less-than-fee and fee simple acquisition.

Objective 2.1 **Determine the current status and desired conditions for bear habitat in Florida.** **1.55**

Activity 2.1.1 Determine and map the acreage and distribution of current (i.e. breeding, occupied, unoccupied) and potential bear habitat on private lands and lands under public ownership. 1.85

15 Activity 2.1.2 Determine the minimum amount and distribution of habitat needed by calculating the carrying capacity of bear habitat for each subpopulation. 2.00

Activity 2.1.3 Describe critical habitat needs for each large population. 2.00

Activity 2.1.4 Determine the status (secure, insecure, imperiled) of bear habitat for each large population considering the extent, connectivity, and quality of habitat 2.08

Activity 2.1.5 Update the Cox et al. (1994) Florida black bear habitat analysis. 2.09

Activity 2.1.6 Define parameters of high quality bear habitat in Florida and review the quality of current and potential habitat for each subpopulation. 2.38

Activity 2.1.7 Determine/understand why bears do not occur in areas of unoccupied habitat (e.g., Blackwater River State Forest, Big Bend, Greenswamp). 2.85

Objective 2.2	Protect adequate current and potential bear habitat to meet population objectives for each bear subpopulation.	1.62
Activity 2.2.1	Prioritize potentially available habitat blocks for protection.	1.83
Activity 2.2.2	Establish a coordinated effort to use all available techniques (e.g., fee simple acquisition, conservation easements, management agreements) to identify specific lands and secure priority bear habitat.	2.08
Activity 2.2.3	Identify existing and potential habitat corridors between large populations and develop acquisition proposals and/or management agreements to maintain and enhance them.	2.33
Activity 2.2.4	Distribute habitat acquisition recommendations to private non-profit organizations working on land acquisition (The Nature Conservancy, local land trusts, etc.).	2.42
Activity 2.2.5	Catalog properties being purchased, and proposed for purchase, by the state, other agencies, and non-governmental organizations.	2.54
Activity 2.2.6	Establish a bear mitigation plan and banks in areas where conservation lands are a low percentage of the landscape and growth and development rates threaten bear populations.	2.55
Activity 2.2.7	Conduct public forums within each subpopulation to identify and garner support for all potential mechanisms for securing bear habitat.	2.62
Activity 2.2.8	Develop a cooperative agreement among state and federal agencies and private organizations involved in land acquisition and preservation for conserving bear habitats.	2.83
Objective 2.3	Foster improved bear habitat management on public and private lands.	2.31
Activity 2.3.1	Develop and utilize existing voluntary, incentive-based programs and agreements for private landowners that reward conservation and improvement of bear habitat on their lands.	1.62

Activity 2.3.2	Expound on successful private land initiatives showing compatibility of bear habitat with silvicultural operations and recreational activities.	2.00
Activity 2.3.3	Develop habitat management guidelines with best management practices and distribute them to land managers.	2.08
Activity 2.3.4	Ensure that bear habitat needs are considered in local planning efforts by working with local governments to incorporate specific action items and requirements into comprehensive land management and other land use plans.	2.38
Activity 2.3.5	Identify areas where restoration and acquisition of potential habitat should be undertaken to provide critical linkages between subpopulations or enhance suitability of habitat to allow population growth within subpopulations.	2.46
Activity 2.3.6	Provide technical assistance to public land managers and evaluate its effectiveness.	2.67
Activity 2.3.7	Develop general black bear habitat quality monitoring protocol and provide to land managers within existing and potential habitat areas.	2.77
Activity 2.3.8	Manage palmetto berry harvest as necessary to ensure that adequate food resources are available for bears.	2.83
Activity 2.3.9	Identify and address habitat management needs for bears on public lands and promote their implementation by assisting agencies in incorporating bears into their management plans.	2.85
Activity 2.3.10	Develop and implement bear management plans that will ensure the long-term security of habitat for each bear subpopulation. Secure signed multi-organizational agreements or memorandums of understanding to formalize these plans.	3.00
Activity 2.3.11	Ensure that public lands bought to protect bears are managed with bears as the primary species of importance.	3.45

Objective 2.4	Understand the critical direct and indirect impacts of human activity (present and future) that affect bear habitat.	2.62
Activity 2.4.1	For each bear subpopulation, assess the current and likely impacts of development, transportation corridors, land use conversion, and land management practices upon bear habitat.	2.15
Activity 2.4.2	Use change detection analyses and up-to-date Landsat Thematic Mapper imagery to quantitatively determine areas and rates of bear habitat loss.	2.42
Activity 2.4.3	Determine how currently proposed Florida Forever Act land purchases or less-than-fee acquisitions would affect bear habitat.	2.62
Activity 2.4.4	Determine the impacts of palmetto berry harvest on bear habitat quality.	3.08
Objective 2.5	Using the newly adopted listing criteria and process established in Rule 68A-27.0012, F.A.C., reassess the habitat component of the bear’s state threatened designation and reclassify the species to the appropriate level.	3.00
Activity 2.5.1	Evaluate each of the five listing criteria and subcriteria to determine what data need to be collected to make a determination that the Florida black bear meets or exceeds any specific listing criteria and how much time and money would be required to collect such data.	2.08
Activity 2.5.2	Petition the FWC to review the classification of the bear in Florida.	2.85
Goal 3	Attain broad-based appreciation for and tolerance of black bears in Florida and support for their conservation.	---

The Working Group identified the importance of raising Floridians’ awareness of bears and bear-related issues in Florida. Without broad based support, conservation efforts for wide ranging species like black bears will be difficult. Additionally, the bipolar nature of the Florida public was discussed. Conservation efforts must address the divergent beliefs and needs of rural versus urban communities regarding bears and bear conservation in Florida.

Objective 3.1	Develop and implement an educational and media campaign directed at specific publics to increase broad-based support for the bear and awareness of its biology, ecology, management, and conservation needs in Florida.	1.58
Activity 3.1.1	Using gap analysis information, work with planners, land-use decision makers, developers, and landowners to educate them about locations of existing bear habitat and to show them where linkages can be made and where acquisition priorities are.	2.08
Activity 3.1.2	Identify and use opportunities during field research to educate agency leaders and the media about bears and to build support for bear conservation.	2.17
Activity 3.1.3	Create a Web site incorporating new bear research information, interactive components of the Florida Black Bear Curriculum Guide, and linkages with other appropriate organizations.	2.42
Activity 3.1.4	Form outreach sub-teams on local population working groups that identify priority site-specific outreach needs and the most effective means to address them.	2.45
Activity 3.1.5	Develop information brochures on bear biology that are geared specifically for public and private land managers interested in implementing bear management strategies.	2.50
Activity 3.1.6	Demonstrate the relationship between bear management and the conservation of other listed species (i.e., the bear as an umbrella species).	2.58
Activity 3.1.7	Establish and monitor measurable criteria for documenting success (or failure) of increasing Floridians' knowledge of black bear behavior, ecology, and management needs.	2.58
Activity 3.1.8	Develop televised bear education public service announcements for broadcast throughout the state, particularly targeting locations in the vicinity of bear subpopulations.	2.69
Activity 3.1.9	Generate general public support for bears using appropriate media like newspapers, TV, radio, and web sites.	2.75

Activity 3.1.10	Develop multimedia packets to be made available to educators, media, conservation groups, and homeowners associations.	2.85
Activity 3.1.11	Seek opportunities through state programs and private sector activities (e.g., Division of Motor Vehicles drivers license tests, Bureau of Tourism, and Visit Florida materials, and educational support via major theme parks) to improve bear awareness in Florida.	2.92
Activity 3.1.12	Develop a list of audiences (such as county and regional planning departments, county commissioners, and DOT) and determine strategies to reach each audience regarding bear habitat needs in Florida.	3.00
Activity 3.1.13	Develop a billboard campaign to illustrate impacts of roads and roadkills on bears and place signs at chronic roadkill sites.	3.08
Activity 3.1.14	Develop a “Florida Bear Awareness” week statewide.	3.15
Activity 3.1.15	Create a “Florida Black Bear Education Project” modeled after the “Florida Bay Education Project.”	3.20
Activity 3.1.16	Develop an “FWC Cares for Bears” campaign.	3.23
Objective 3.2	Obtain additional funding and resources for bear management and conservation.	1.62
Activity 3.2.1	Pursue all potential sources of support including: legislative appropriations, Wildlife Foundation of Florida grants, license plate revenues, other state agency funds, federal grants, and private organization monies.	2.15
Activity 3.2.2	Establish dedicated funding for state agencies to implement bear conservation programs.	2.31
Activity 3.2.3	Obtain legislative authorization to charge a fee for a bear hunting permit should bear hunting be reinstated or chase-only bear hunting be instituted.	2.33
Activity 3.2.4	Partner with nongovernmental organizations (NGOs) to fund specific activities.	2.62

Objective 3.3	Minimize the number and intensity of human/bear conflicts in Florida.	1.69
Activity 3.3.1	Develop and implement programs (and materials) that are audience, age, and site appropriate that will teach people how to avoid creating human/bear conflicts and how to respond when they occur.	1.75
Activity 3.3.2	Improve coordination among state agencies and law enforcement departments in resolving and preventing human/bear conflicts.	1.92
Activity 3.3.3	Foster personal responsibility among people inducing nuisance-bear behavior.	1.92
Activity 3.3.4	Cooperatively identify areas of conflict between bears and various stakeholder groups (e.g., deer hunters, farmers, ranchers, beekeepers, homeowners, and tourists), determine main concerns and issues of each group, and develop strategies to address each.	1.92
Activity 3.3.5	Provide for response to human/bear conflicts within 24 hours of receiving a complaint.	1.92
Activity 3.3.6	Develop lists of police and sheriff departments in nuisance-bear areas and develop educational programs for their officers.	2.00
Activity 3.3.7	Document and understand the dynamics of historic and present human/bear conflicts.	2.08
Activity 3.3.8	Develop a better working relationship with beekeepers so that the beekeeper does not see the bear as an economic threat, i.e., fence, replacement of equipment, man hours of work.	2.08
Activity 3.3.9	Obtain additional manpower resources for responding to human/bear conflicts.	2.08
Activity 3.3.10	Provide bear-proofing equipment to people experiencing bear problems through cost-share, loan, or donation programs.	2.08
Activity 3.3.11	Develop and distribute model plans for bear proof deer feeders, trash receptacles, and electric fences.	2.15

Activity 3.3.12	Define the FWC’s current strategy and ability to deal with human/bear conflicts and list needs of the FWC to better address conflicts.	2.23
Activity 3.3.13	Foster public acceptance of the FWC’s Nuisance Bear Policy.	2.31
Activity 3.3.14	Develop and implement a strategy to stop intentional and inadvertent bear feeding.	2.38
Activity 3.3.15	Develop a protocol for responding to bear attacks on humans that provides for coordination among appropriate agencies, law enforcement departments, and media.	2.42
Activity 3.3.16	Develop media response materials and emergency media response training for all agency individuals likely to interact with the media during human/bear conflict situations.	2.54
Activity 3.3.17	Compensate landowners for damage or property losses. Develop a cooperative implementation plan / funding plan with an NGO – Wildlife Foundation or other.	2.75
Activity 3.3.18	Develop criteria for defining and certifying “bear friendly” communities and encourage participation in them both before and after their construction.	2.83

Objective 3.4 Develop local bear conservation working groups for each sub population of black bears in Florida. 1.85

The Working Group identified this objective as a logical step in the implementation of this Conservation Strategy. Local working groups should be developed and used to tailor conservation efforts to each subpopulation’s unique needs and circumstances.

Activity 3.4.1	Identify and secure participation of major landowners and other key stakeholder representatives on local working groups.	1.77
Activity 3.4.2	Develop plan, including communications strategy and other products, to address local issues and concerns.	2.00

Activity 3.4.3	Determine main concerns and issues of stakeholders in each working group.	2.08
Activity 3.4.4	Identify and obtain coordinators, staffing, and resources needed for each working group.	2.08
Activity 3.4.5	Develop an overview document that describes the objectives and operating procedures for the local working groups, and that would be used as guidance in setting up and implementing the groups.	2.50
Activity 3.4.6	Provide learning opportunities, good information, and pertinent experiences for enrichment for working groups.	2.62
Objective 3.5	Ensure public acceptance of bear densities and distributions necessary for achieving the stated conservation goals.	2.08
Activity 3.5.1	Develop criteria for determining the optimal density and status of each bear subpopulation relative to human tolerance levels.	2.58
Activity 3.5.2	Use human-dimensions research to ascertain human tolerance for bears in Florida.	2.80
Objective 3.6	Develop appropriate bear-specific curricula for use in various grade levels, kindergarten through college.	2.46
Activity 3.6.1	Promote use of the Florida Black Bear Curriculum Guide by using the internet to inform educators about it and by making teacher training sessions readily available, targeting counties where bear populations exist.	2.55
Activity 3.6.2	Integrate the Florida Black Bear Curriculum Guide into college/university pre-service teacher training programs.	2.55
Activity 3.6.3	Develop curricula for middle school, high school and college levels.	2.91
Activity 3.6.4	Develop “resource boxes” to supplement lessons in the Florida Black Bear Curriculum Guide.	3.09

Activity 3.6.5	Conduct a pilot “family science night” highlighting bear conservation at key elementary schools to work with teachers, students, and parents.	3.42
Objective 3.7	Provide citizens mechanisms to experience bears, demonstrate interest in them, and show support for conservation efforts.	2.85
Activity 3.7.1	Provide the public opportunities to see bears, bear habitat, and bear sign.	2.25
Activity 3.7.2	Promote the bear as an economic asset to communities through revenue generating events.	2.42
Activity 3.7.3	Develop a field trip component (in appropriate areas) for educator participants in expanded/advanced Florida Black Bear Curriculum Guide workshops.	3.00
Objective 3.8	Explore options regarding re-opening of bear hunting seasons in Florida.	2.92
Activity 3.8.1	Institute a nuisance bear lethal control permit program.	2.36
Activity 3.8.2	Foster public acceptance of bear hunting as a legitimate management tool.	2.38
Activity 3.8.3	Investigate the possibility of having limited, managed hunts in appropriate areas where current monitoring and modeling data support this action.	2.50
Activity 3.8.4	Evaluate effectiveness of hunting and chase only hunting for reducing nuisance-bear activity.	2.55
Activity 3.8.5	Develop the minimum criteria (both in terms of demographics and monitoring resources) required to implement a bear hunting program.	2.62
Activity 3.8.6	Determine if bear hunting promotes ecological balance and integrity.	3.08
Activity 3.8.7	Propose a bear hunting season only if the public supports it.	3.25

Some Working Group participants had concerns over the wording of this Activity. These concerns regarded the potential vagueness of the term “public” and the possible harm that hunting may have on bear populations. Because of these concerns, the Working Group clearly identified that “public support” related to a majority of Florida residents as documented by a scientifically conducted, representative poll. Additionally, the Working Group clarified, as stated in Goal 1, that the management of bear numbers, including possible hunting seasons, is limited at the lower end by the number that will sustain a viable population.

Activity 3.8.8 Determine the feasibility of, acceptability of, and demand for a chase-only season.

3.58

KEY CONCEPTS AND IMPLEMENTATION

This Conservation Strategy represents the collective efforts of representatives from 13 stakeholder organizations working together to improve future conservation efforts for the Florida black bear. While it was impossible for the participants to agree on every point, the Working Group unanimously concurred that this Conservation Strategy covered the major issues regarding black bears in Florida and laid out a comprehensive, integrated approach to management and conservation. The fact that individual stakeholders view the various components as having varying degrees of importance does not weaken the strategy, instead it provides the strength and depth that only can come from a diversity of interests and perspectives.

To help focus initial conservation efforts on core aspects of the Conservation Strategy, the Working Group identified several key concepts and items that must be addressed. Maintaining a viable overall population of bears in Florida is the over-riding objective of the entire Conservation Strategy and should be given due attention. The three goals and their objectives and activities are inter-related and should be treated accordingly. The tightest linkage is between Goal 1 and Goal 2. Both goals are different sides of the same coin, with habitat protection important because without adequate habitat to sustain bears, no amount of population work will preserve bears in the wild. Goal 3 addresses the human dimensions of bear conservation, and its objectives and strategies should be integrated with efforts for the other Goals. Floridians must value black bears and want to conserve them for population and habitat measures to be effective. Similarly, minimizing human/bear conflicts (i.e., roadkill and nuisance situations) will be critically important for maintaining public tolerance of bears. Cooperative initiatives that detail in advance the conservation measures to be taken relative to new road and development projects are needed. In all cases involving human/bear interactions, science, not emotion or politics should drive decision-making. Lastly, sufficient funding and resources must be secured to enable implementation of these key items.

Although the FWC sponsored the Florida Bear Conservation Working Group, this document is not intended as a management plan for that agency. Instead, it represents issues and strategies that transcend the domain of any single agency or organization and, consequently, must be addressed by all stakeholders. This strategy establishes goals and objectives for population and habitat management, and human/bear interactions. It also lists activities identified to guide conservation efforts and achieve the stated goals and objectives. Different agencies and organizations will place greater weight on various aspects of this Conservation Strategy, but, when taken in total, the fulfillment of individual activities will result in a more secure future for black bears in Florida.

FWC staff expects to present this Conservation Strategy to its Commissioners for consideration and the other participating stakeholder groups should similarly present it to their respective leaderships. The Conservation Strategy should serve as an overall template within which each organization can draft work plans and priorities that affect bear conservation. The Working Group suggested that it may be beneficial to reconvene at irregular intervals in the future as necessary to address resurgent issues and review progress made toward goals and objectives. With the new scientific data that will be available from the ongoing Ocala and statewide bear studies, reconvening of the Working Group in two years may be appropriate.

Agenda items for this meeting would include presentation of new data and information, identification of progress made to date, and determination of new opportunities and needs. The establishment of a website clearing house for measures completed to date would be a useful tool for tracking progress toward Conservation Strategy goals and objectives.

Multidimensional challenges such as statewide bear management require innovative solutions. A multilateral partnership of agencies, organizations, and individuals working toward the common goal of implementing a statewide bear conservation strategy will be needed. Convening of the Florida Bear Conservation Working Group to develop this Conservation Strategy was the first step in this process. To facilitate implementation of the strategy, local bear working groups for the subpopulations should be established. The function of these working groups will be to foster education; expedite cooperation among the public, organizations, and agencies involved in bear conservation; identify and address local problems and conservation opportunities; and coordinate management efforts at the local level. Where appropriate (e.g., the Osceola and Eglin populations), local working groups should foster coordination across state boundaries. Currently, the FWC is working toward the formation of a local working group for the Ocala bear population and is partnering with U.S. Forest Service and U.S. Fish and Wildlife Service on formation of local working groups for the Apalachicola and Okefenokee/Osceola bear populations, respectively. Once these working groups are established, they should facilitate implementation of this Conservation Strategy and should serve as models for other working groups across the state. Local working groups should utilize the extensive literature base for black bears in the Southeast (Appendix C) as a source of background information and to identify issues and possible solutions.

TABLES AND FIGURES

Table 1. Alphabetic listing of stakeholder groups* and participants comprising the Florida Bear Conservation Working Group.

Organization	Participant(s)
Florida Bear Hunters Association	Raymond R. Hamlin, Jr.
Florida Department of Community Affairs	Jeff Beilling
Florida Department of Environmental Protection	Parks Small, Brian Emmanuel (Alternate) Boyd Blihovde (Alternate)
Florida Department of Transportation	David L. Zeigler
Florida Division of Forestry	Dennis Hardin
Florida Farm Bureau	Dennis Emerson
Florida Fish and Wildlife Conservation Commission	Timothy E. O’Meara
Florida Forestry Association	Mike Branch
Florida State Beekeepers Association	Elmore Herman, David Westervelt (Alternate)
Defenders of Wildlife	Christine R. Small, Laurie Macdonald (Alternate)
The Nature Conservancy	Jora Young, Walt Thompson (Alternate)
United States Forest Service	Art Rohrbacher, Susan Millsap (Alternate)
United States Fish and Wildlife Service	John W. Kasbohm

*The Florida Home Builders Association and Florida Wildlife Federation were invited to join the Working Group, but did not participate.

Table 2. Black bear population size in Florida as estimated by Florida Game and Freshwater Fish Commission (GFC) staff based on best available information, 1998.

Population	*km ²	*Estimated Density (bears/ km ²)	Population Estimate
Apalachicola	7,652	0.05	378
Osceola (FL only)	3,279	0.05	162
Ocala	2,575	0.08	210
St. Johns	4,251	0.05	210
Big Cypress	4,858	0.05	240
Eglin	607	0.08	50
Chassohowitzka	174	0.08	15
Glades/ Highlands	202	0.08	17
TOTAL	23,599	---	1,282

*Estimates converted to metric units, therefore not all numbers total exactly.

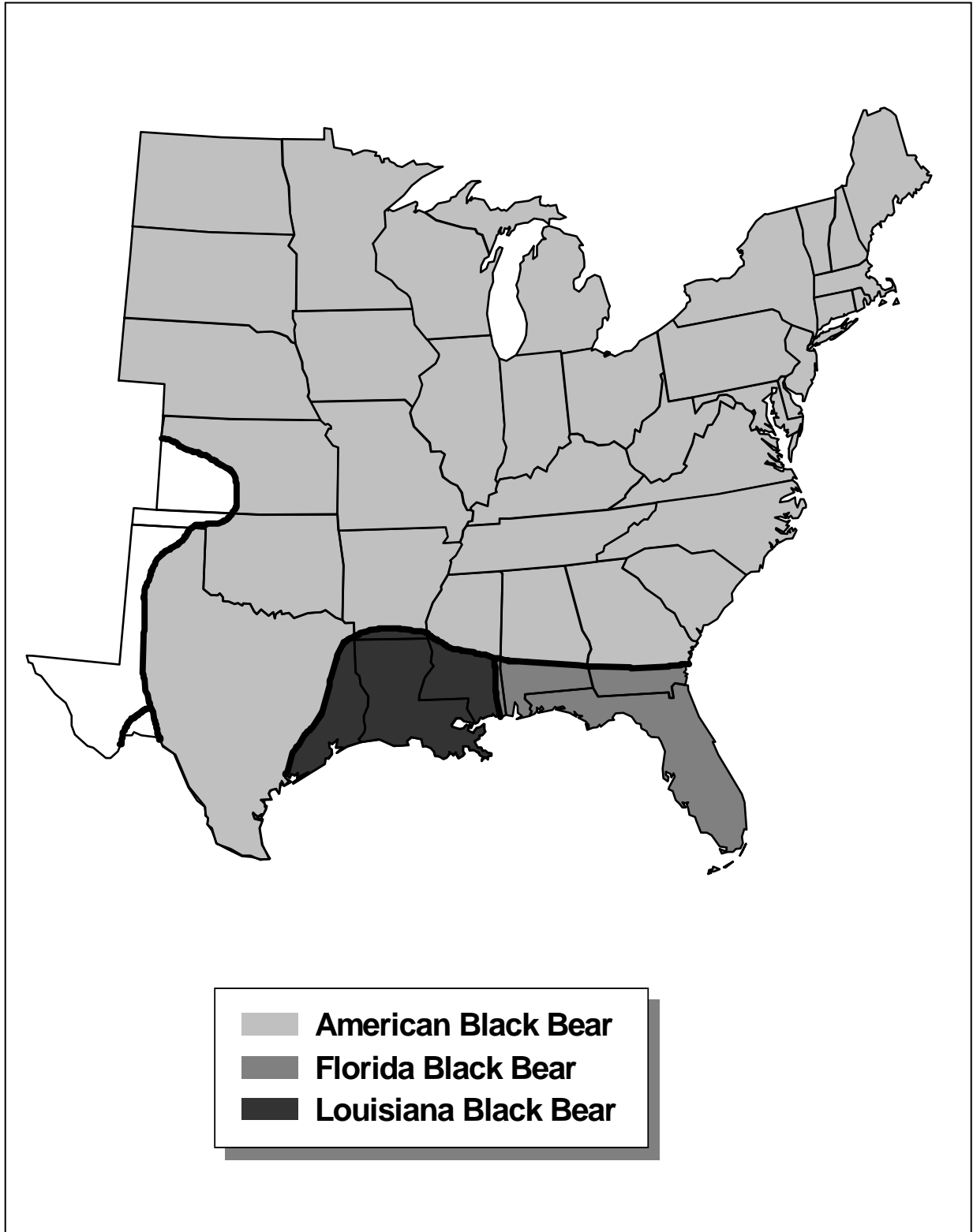


Figure 1. Subspecies ranges of black bears in the southeastern United States (from Hall 1981).

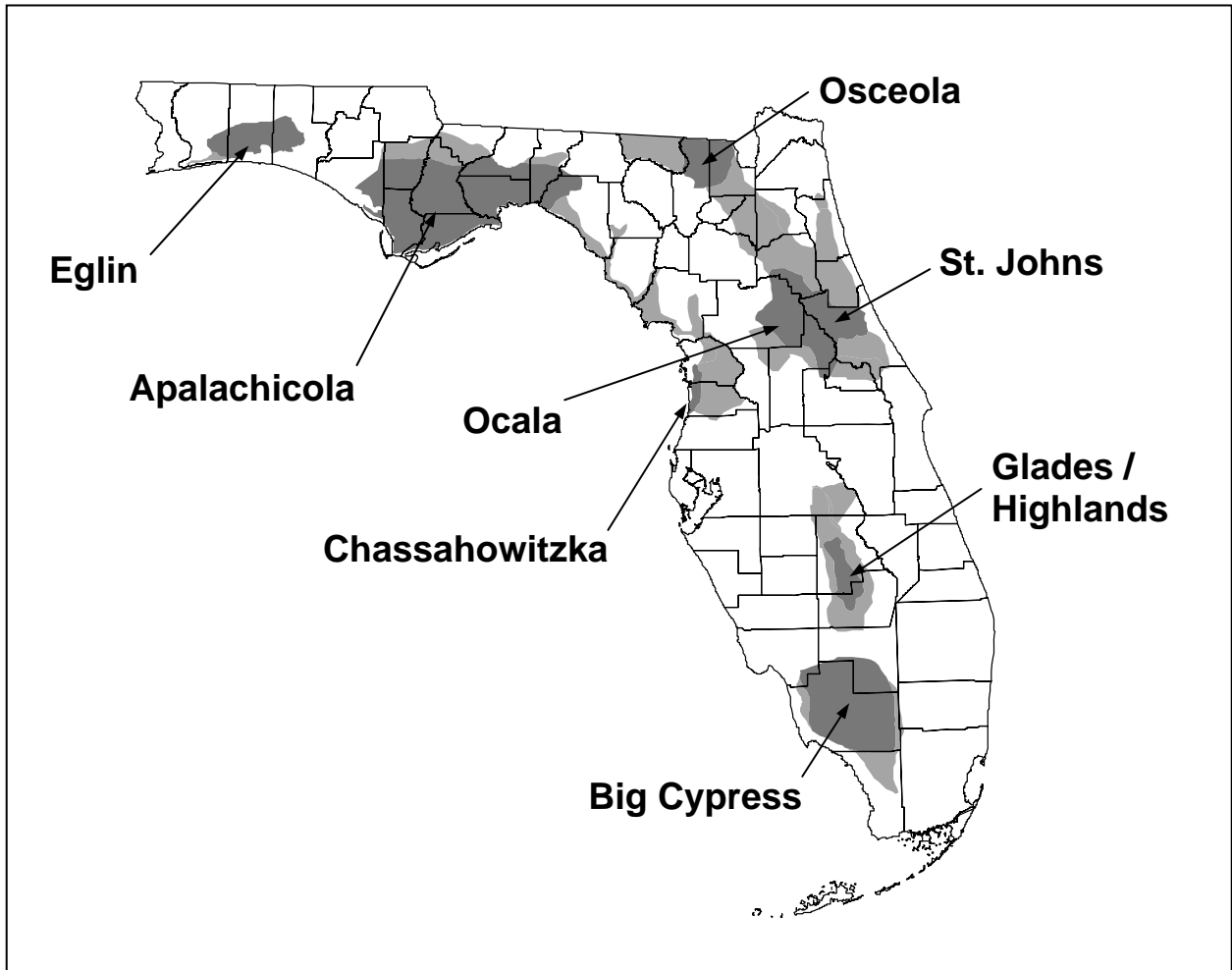


Figure 2. Range of black bear populations extant in Florida; dark gray areas are core range and light gray areas are peripheral range.

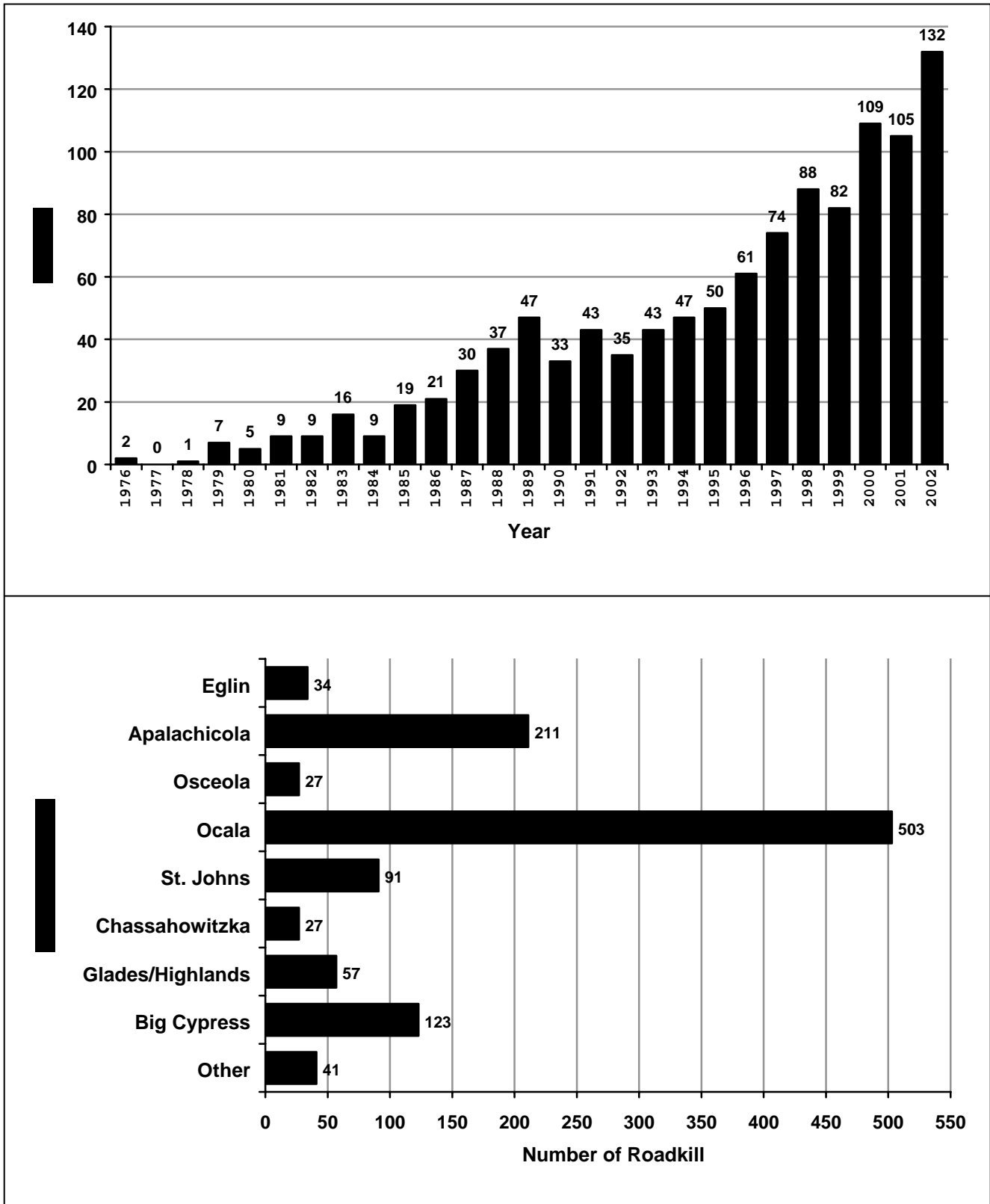


Figure 3. Trend in transportation-related bear deaths in Florida by year and bear population.

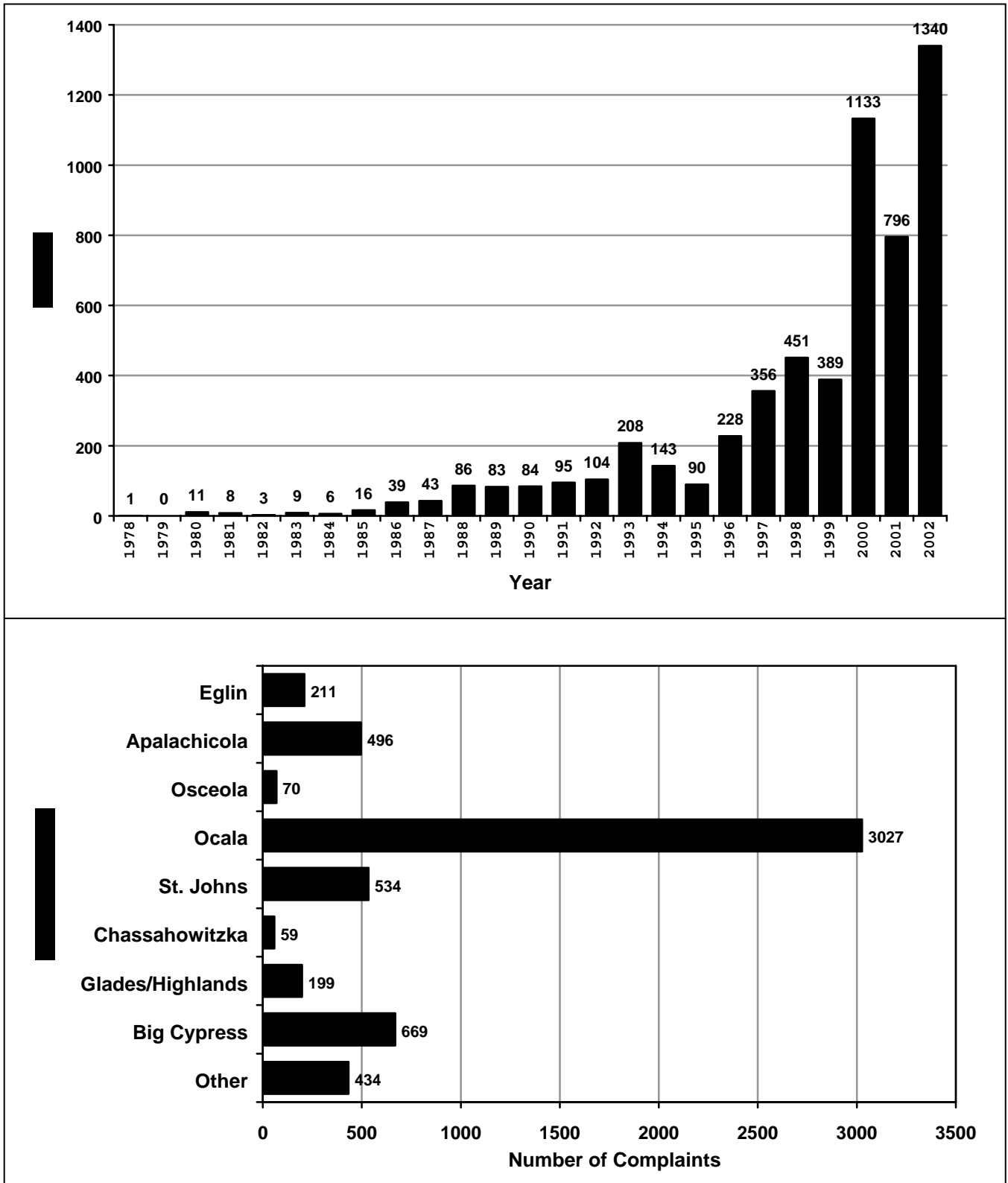


Figure 4. Trend in reported human/bear conflicts in Florida by year and bear population.

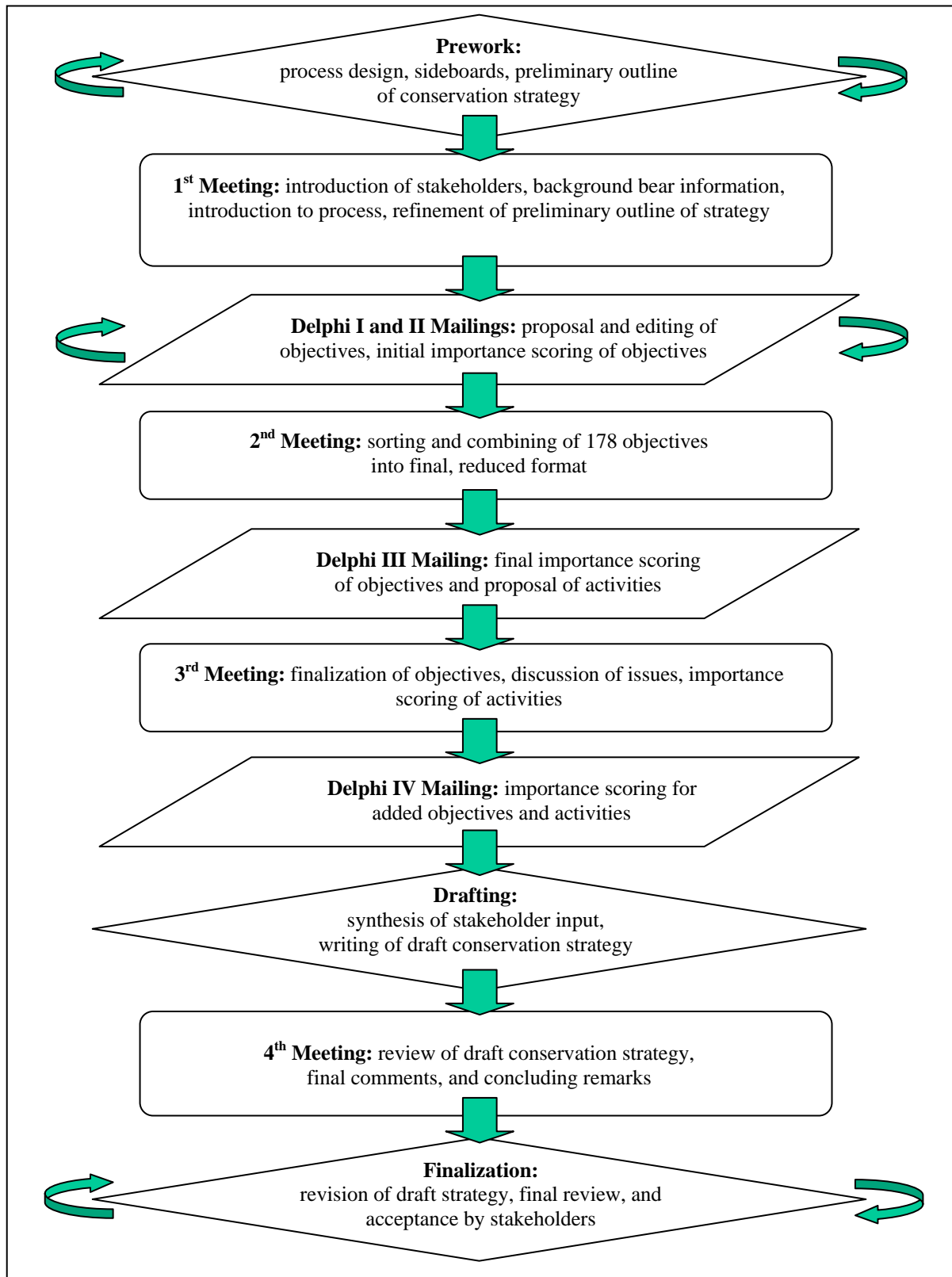


Figure 5. Flow chart of process used to develop the Bear Conservation Strategy.

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APPENDICES

Appendix A. Definitions of ecological terms adopted by the Florida Bear Conservation Working Group.

Habitat Related

- Essential Habitat: a specific area that is critical to the long-term survival of a bear population.
- Habitat: the resources and conditions present in an area that produce occupancy and allow bears to live and reproduce.
- Potential Habitat: areas unsuitable to bears that could become suitable (i.e., habitat) through natural processes, management intervention, or other means.
- Unoccupied Habitat: habitat that does not harbor bears.

Miscellaneous

- Carrying Capacity: the number of animals that a particular area of habitat can sustain without undesirable consequences; a dynamic level that will change through time and a concept that has many applications, such as social carrying capacity (the number of animals that humans will tolerate on a given area of habitat).
- Long-term: based on commonly used viability procedures and practicality, at least 100 years.
- Subspecies: a unique group of individuals within a species that share a distinct geographic range and phylogenetic history; there is one subspecies of black bear in Florida (the Florida black bear, *Ursus americanus floridanus*) and two other subspecies in the Southeast (the Louisiana black bear, *U. a. luteolus*, and the American black bear, *U. a. americanus*).

Population Related

- Large Population: populations whose habitat base and number of bears (approximately 100 or more individuals) are believed to be large enough to provide long-term viability; FWC staff currently recognizes 6 such populations (Eglin, Apalachicola, Osceola/Okefenokee, Ocala, St. Johns, and Big

Cypress). Note that, biologically, Ocala and St. Johns are a single population, but have sufficient numbers, area, and differences to be managed separately.

Overall population: (metapopulation) the aggregate of all populations that are close enough together to enable dispersal and gene flow between them and governed by the processes of colonization and extinction that accompany their distribution; the aggregate of Florida's bear populations is the overall population.

Population: a group of interacting individuals of the same species; because of its vagueness, the population unit should be specified when using this term (e.g., overall bear population, Chassahowitzka bear population, Ocala bear population, or other uses listed herein).

Small Population: populations whose habitat base and number of bears (less than 100 individuals) are believed to be small and may not be adequate to provide long-term viability; FWC staff currently recognizes two such populations (Chassahowitzka and Glades/Highlands).

Subpopulation: a single population within a meta-population; any of Florida's relatively distinct bear populations; FWC staff recognizes eight (six large populations and two small populations).

Viable Population: a population of bears with a high probability (>95%) of surviving long-term.

Range Related

Area of Occupancy: the area inhabited by all individuals of concern; in other words, the area of occupied habitat.

Extent of Occurrence: the total area encompassing all locations of individuals of concern; for bears in Florida the extent of occurrence is practically the entire state.

Appendix B. Definitions of the Florida Fish and Wildlife Conservation Commission Relative to Listed Species.

Rule 68A-1.004, Florida Administrative Code (F.A.C.), June 26, 1999

The following definitions are for the purpose of carrying out the provisions of the rules of the Fish and Wildlife Conservation Commission relating to wild animal life and freshwater aquatic life. As used herein, the singular includes the plural. The following shall be construed respectively to mean:

- (18) Candidate species — A species, subspecies, or isolated population of a species or subspecies, which has been determined by the Commission to warrant listing under Rules 68A-27.003, 68A-27.004 or 68A-27.005, F.A.C., but for which actual listing in the aforementioned rules is pending development of a management plan.
- (25) Direct take — Intentionally pursuing, hunting, capturing, killing, or destroying fish or wildlife or the nests, eggs, homes or dens of fish or wildlife.
- (26) Endangered species — As designated by the Commission, a species, subspecies, or isolated population of a species or subspecies which is so few or depleted in number or so restricted in range or habitat due to any man-made or natural factors that it is in imminent danger of extinction as determined by (a), (b), (c), (d) or (e) below:
 - (a) Population reduction in the form of either:
 - 1. An observed, estimated, inferred or suspected reduction of at least 80% over the previous ten years or three generations, whichever is longer, based on, and specifying, any of the following:
 - a. Direct observation
 - b. An index of abundance appropriate for the species
 - c. A decline in area of occupancy, extent of occurrence or quality of habitat
 - d. Actual or potential levels of exploitation
 - e. The effects of introduced species, hybridization, pathogens, pollutants, competitors or parasites
 - 2. A reduction of at least 80%, projected or suspected to be met within the next ten years or three generations, whichever is longer, based on, and specifying, any of 1.b., 1.c., 1.d. or 1.e. above.
 - (b) Extent of occurrence estimated to be less than 40 square miles or area of occupancy estimated to be less than 4 square miles, and estimates indicating any two of the following:
 - 1. Severely fragmented or known to exist at only a single location.
 - 2. Continuing decline, observed, inferred or projected, in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Area, extent and/or quality of habitat
 - d. Number of locations or subpopulations
 - e. Number of mature individuals
 - 3. Extreme fluctuations in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Number of locations or subpopulations
 - d. Number of mature individuals
 - (c) Population estimated to number fewer than 250 mature individuals and either:
 - 1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, or
 - 2. A continuing decline, observed, projected or inferred, in numbers of mature individuals and population structure in the form of either:
 - a. Severe fragmentation (that is, no subpopulation estimated to contain more than 50 mature individuals).
 - b. All individuals are in a single subpopulation.
 - (d) Population estimated to number less than 50 mature individuals.

- (e) Quantitative analysis showing the probability of extinction in the wild is at least 50% within ten years or three generations, whichever is longer.
- (73) Species of special concern — As designated by the Commission, a species, subspecies, or isolated population of a species or subspecies which is facing a moderate risk of extinction in the future, as determined by (a), (b), (c), (d) or (e) below:
- (a) Population reduction in the form of either:
1. An observed, estimated, inferred or suspected reduction of at least 20% over the last ten years or three generations, whichever is longer, based on, and specifying, any of the following:
 - a. Direct observation
 - b. An index of abundance appropriate for the species
 - c. A decline in area of occupancy, extent of occurrence and/or quality of habitat
 - d. Actual or potential levels of exploitation
 - e. The effects of introduced species, hybridization, pathogens, pollutants, competitors or parasites
 2. A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is longer, based on, and specifying, any of 1.b., 1.c., 1.d. or 1.e. above.
- (b) Extent of occurrence estimated to be less than 7,700 square miles or area of occupancy estimated to be less than 770 square miles, and estimates indicating any two of the following:
1. Severely fragmented or known to exist at only a single location.
 2. Continuing decline, observed, inferred or projected, in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Area, extent and/or quality of habitat
 - d. Number of locations or subpopulations
 - e. Number of mature individuals
 3. Extreme fluctuations in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Number of locations or subpopulations
 - d. Number of mature individuals
- (c) Population estimated to number fewer than 10,000 mature individuals and either:
1. An estimated continuing decline of at least 10% within ten years or three generations, whichever is longer; or
 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:
 - a. Severely fragmented (i.e., no subpopulation estimated to contain more than 1,000 mature individuals).
 - b. All individuals are in a single subpopulation.
- (d) Population very small or restricted in the form of either of the following:
1. Population estimated to number fewer than 1,000 mature individuals
 2. Population is characterized by an acute restriction in its area of occupancy (less than 40 square miles) or in the number of locations (fewer than 5)
- (e) Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.
- (77) Threatened species — As designated by the Commission, a species, subspecies, or isolated population of a species or subspecies which is facing a very high risk of extinction in the future, as determined by (a), (b), (c), (d) or (e) below:
- (a) Population reduction in the form of either of the following:
1. An observed, estimated, inferred, or suspected reduction of at least 50% over the last ten years or three generations, whichever is longer, based on, and specifying, any of the following:
 - a. Direct observation
 - b. An index of abundance appropriate for the species
 - c. A decline in area of occupancy, extent of occurrence and/or quality of habitat
 - d. Actual or potential levels of exploitation
 - e. The effects of introduced species, hybridization, pathogens, pollutants, competitors or parasites

2. A reduction of at least 50%, projected or suspected to be met within the next ten years or three generations, whichever is longer, based on, and specifying, any of 1.b., 1.c., 1.d. or 1.e. above.
 - (b) Extent of occurrence estimated to be less than 2,000 square miles or area of occupancy estimated to be less than 200 square miles, and estimates indicating any two of the following:
 1. Severely fragmented or known to exist at no more than five locations
 2. Continuing decline, observed, inferred or projected, in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Area, extent and/or quality of habitat
 - d. Number of locations or subpopulations
 - e. Number of mature individuals
 3. Extreme fluctuations in any of the following:
 - a. Extent of occurrence
 - b. Area of occupancy
 - c. Number of locations or subpopulations
 - d. Number of mature individuals
 - (c) Population estimated to number fewer than 2,500 mature individuals and either:
 1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer; or
 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:
 - a. Severely fragmented (i.e., no subpopulation estimated to contain more than 250 mature individuals)
 - b. All individuals are in a single subpopulation.
 - (d) Population estimated to number fewer than 250 mature individuals.
 - (e) Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is longer.

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