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2 **FLORIDA BLACK BEAR**
3 **MANAGEMENT PLAN**

4 *Ursus americanus floridanus*
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8 Approved June 27, 2012
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23 **Florida Fish and Wildlife Conservation Commission**
24 **620 South Meridian Street**
25 **Tallahassee, FL 32399-1600**
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33 Florida black bear management plan. Florida Fish and Wildlife Conservation
34 Commission, Tallahassee, Florida, 215 p.

35 **CREATION OF THE BEAR MANAGEMENT PLAN**

36 In May 2007, a team of staff from the Florida Fish and Wildlife Conservation
 37 Commission (FWC) were charged with developing a draft Bear Management Plan.
 38 Then FWC Division of Habitat and Species Conservation (HSC) Director, Tim
 39 Breault, sponsored the FWC team, which included staff from HSC, Division of Law
 40 Enforcement (LE), Office of Community Relations (CR), and Fish and Wildlife
 41 Research Institute (FWRI). HSC Deputy Director Thomas Eason led the team in
 42 completing its task to deliver a draft Bear Management Plan. The team consisted
 43 of the following FWC staff:

44	Mike Abbott – HSC	Brian Scheick – FWRI
45	Jack Daugherty – LE	Stephanie Simek ¹ – HSC
46	Judy Gillan – CR	David Telesco – HSC
47	Walter McCown – FWRI	Adam Warwick – HSC

48

49 A new team of FWC staff was formed in August 2009 to collect public input,
 50 revise the plan as needed, and deliver the draft to FWC Commissioners. The new
 51 team was lead by HSC Section Leader Kipp Frohlich and FWRI Section Leader Tim
 52 O’Meara and included a member from the Office of the Executive Director (OED).
 53 The team consisted of the following FWC staff:

54	Lee Beach – LE	Mike Orlando – HSC
55	Dennis David – OED	Brian Scheick – FWRI
56	Terry Doonan – HSC	Billy Sermons – HSC
57	Joy Hill – CR	David Telesco – HSC
58	Walter McCown – FWRI	

59

60 The teams were supported by FWC and University of Florida (UF) staff:

61 Sarah Barrett (HSC) – Administrative and editorial assistance

62 Brian Beneke (FWRI) – Geographic Information System assistance

¹ David Telesco replaced Stephanie Simek during the draft plan process.

63 Mark Endries (FWRI) – Geographic Information System assistance
 64 Karen Nutt (HSC) – Listing rule compliance and editorial assistance
 65 James Perran Ross (UF) – Stakeholder coordination, meeting facilitation
 66 Kelly Samek (OED) – Legal assistance

67

68 The teams consulted regularly with a Technical Assistance Group (TAG) to seek
 69 their input on various drafts of this plan. TAG was composed of representatives
 70 from various stakeholder groups and varied in number from 12 to 22 at different
 71 stages of the plan. TAG members did not necessarily endorse all components of the
 72 plan nor does FWC imply a consensus was reached by all members. TAG included:

73	Stephanie Boyles ²	The Humane Society of the United States
74	Austin Carroll	PBSJ Corporation
75	Amber Crooks	Conservancy of Southwest Florida
76	Chryl DeCrenza ²	Kleinfelder
77	Chuck Echenique	Florida Hunting Guides/Public Land Hunters
78	Jo Anna Emmanuel	St. Johns Water Management District
79	Manley Fuller	Florida Wildlife Federation
80	Phillip Gornicki	Florida Forestry Association
81	Raymond Hamlin ²	Florida Bear Hunters Association
82	Dennis Hardin	Florida Forest Service
83	John Hayes	University of Florida
84	Jennifer Hobgood	The Humane Society of the United States
85	Tom Hoctor	University of Florida
86	Joi Hosker	Central Florida Bear Hunters Association
87	Mickey Larkins	Florida Bear Hunters Association
88	Laurie Macdonald	Defenders of Wildlife
89	Jim Moyer	St. Joe Company
90	Carl Petrick	U.S. Forest Service

² Indicates TAG member who was replaced during the draft plan process with another representative from the same stakeholder group.

91	Ray Pringle	Safari Club International Florida Chapter
92	Marian Ryan	Sierra Club
93	Keith Schue	Friends of the Wekiva River, Inc.
94	Carrie Sekerak	U.S. Forest Service, Ocala National Forest
95	Vicki Sharpe	Florida Department of Transportation
96	Steve Shea ²	St. Joe Company
97	Parks Small ²	Florida Department of Environmental Protection
98	Dennis Teague	Eglin Air Force Base
99	Amy Townsend	Kleinfelder
100	Gregg Walker	Florida Department of Environmental Protection

101

102 The team began a public input phase on the first draft of the Florida Black Bear
103 Management Plan in May 2010. However, in September 2010, FWC passed
104 Florida’s Endangered and Threatened Species rule that required biological status
105 reviews and management plans for species currently listed as Threatened and
106 Species of Special Concern in Florida, including the Florida black bear. As part of
107 that process, FWC staff reviewed all available data and the listing criteria, and
108 recommended that bears be removed from the State’s threatened species list. The
109 Commission approved staff’s recommendation in June 2011; however, bears would
110 not be removed from the list until the Commission approved a management plan.
111 The public input process on the 2010 draft was suspended so that the plan could be
112 revised to include the results of the biological status review and conform to the new
113 listing rule requirements. The new draft plan and associated rule was open for
114 public comment from November 10, 2011 to January 10, 2012. Public workshops on
115 the plan were held in Bristol, Naples, Deland, and Gainesville. FWC received over
116 450 comments from 69 individuals and 17 stakeholder group representatives. In
117 addition, Florida members of the Humane Society of the United States sent over
118 2,000 form letters via email to FWC Commissioners regarding the plan. FWC
119 presented the plan and rule as well as a summary of the public comments to the
120 Commission on February 9. The Commission directed staff to revise the plan as

121 appropriate and move forward with advertising the associated rule. The rule and
122 revised plan were re-opened for public comment from April 13 to June 1, 2012.
123 FWC received over 100 comments from 12 individuals and 13 stakeholder group
124 representatives. Florida members of the Humane Society of the United States sent
125 over 3,400 form letters via email to FWC Commissioners as well. FWC staff revised
126 the plan based the comments they received and posted the plan with revisions on
127 the FWC website on June 11, 2012. FWC brought the revised plan to the
128 Commission for their consideration on June 27, 2012. FWC greatly appreciates all
129 the time and effort Floridians provided to improve the Florida Black Bear
130 Management Plan.

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EXECUTIVE SUMMARY

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The Florida black bear management plan is intended to create a common framework from which Florida Fish and Wildlife Conservation Commission (FWC) staff and stakeholders can work in a coordinated fashion to conserve bears and maintain their value to people. The goal of this plan is to **“Maintain sustainable black bear populations in suitable habitats throughout Florida for the benefit of the species and people.”** To accomplish this goal, objectives focusing on population, habitat, conflict management, and education were created.

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The population objective is to maintain a sustainable statewide bear population. Several components are identified to accomplish this objective, including managing one bear subpopulation to be at least 1,000 individuals, ensuring that the smaller subpopulations are increased to a minimum of 200 bears each, and increasing genetic exchange between subpopulations.

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The second objective is to maintain habitat in sufficient quantity, quality, and connectivity to meet the population objective. This will include habitat to accommodate at least one subpopulation of over 1,000 individuals and to provide sufficient habitat in the smaller subpopulations to allow for at least 200 bears each. In addition, the plan calls for increased connectivity between bear habitat areas to promote greater genetic exchange.

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The third objective is to reduce human-bear conflicts. A measure of success for this objective will be to reduce the number of bear-related complaints to FWC to below the average number of complaints received annually between 2008 and 2010 levels (1,949). This will be done by coordinating with local government officials in primary bear range to implement methods for reducing conflicts; revising bear policies to create a comprehensive approach to human-bear conflict management; developing protocols to capture institutional knowledge, standardize response, and improve effectiveness in management; and creating partnerships that will help FWC resolve human-bear conflicts.

159 The last objective of the plan is to help Florida citizens have a better
160 understanding of bears, support bear conservation measures, and contribute to
161 reducing human-bear conflicts. This will be done by education and outreach
162 programs; partnerships with government, non-governmental organizations, and
163 other stakeholders; and developing “Bear Smart Communities” in areas of high bear
164 activity. The objective’s aim is to have at least 75% of the people who contact FWC
165 comply with our conflict resolution advice.

166 Shared ownership and responsibility for bear management by FWC staff and
167 stakeholders, both regionally and within local communities, will be important to the
168 successful implementation of this plan. To achieve this end, the plan proposes to
169 divide the state into geographic areas known as Bear Management Units (BMUs).
170 The seven proposed BMUs will allow for management issues and actions to be
171 addressed differently across the state depending on the needs and characteristics of
172 the area. The plan also calls for the development of Black Bear Assistance Groups
173 across the state. Those groups would be composed of local stakeholders and would
174 assist in scoping issues and identifying and implementing actions for bears within
175 each BMU, thereby forming the basis for community co-management of bears.

176 In order to achieve the goal and objectives of the plan, appropriate rules and
177 regulations are needed to provide adequate protection for bears. The plan includes
178 a new rule to be adopted into the Florida Administrative Code that makes it
179 unlawful to injure or kill bears. The rule also states FWC will continue to engage
180 with landowners and regulating agencies to guide future land use so that it is
181 compatible with the bear management plan objectives. While bears have rebounded
182 from historic low numbers and no longer meet the biological criteria for designation
183 as a threatened species in Florida, many conservation challenges remain. This plan
184 is intended to address those challenges and ensure bears will never again need to be
185 listed as a threatened species. Through implementation of the many conservation
186 actions identified in this plan, Floridians can achieve a future that includes bears as
187 a secure and valued wildlife species in our state.

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401 (n = 147). 125

402

403

LIST OF ACRONYMS

404 **BBAG:** Black Bear Assistance Group

405 **BMU:** Bear Management Unit

406 **BRP:** Bear Response Program

407 **BSC:** Bear Smart Community

408 **DOT:** Florida Department of Transportation

409 **FWC:** Florida Fish and Wildlife Conservation Commission

410 **GFC:** Florida Game and Fresh Water Fish Commission (predecessor to FWC)

411 **LAP:** Landowner Assistance Program

412 **NF:** National Forest

413 **NWR:** National Wildlife Refuge

414 **TAG:** Technical Assistance Group

415 **USFS:** U.S. Forest Service

416 **USFWS:** U.S. Fish and Wildlife Service

417 **WMA:** Wildlife Management Area

418

419

GLOSSARY OF TERMS

420 **Black Bear Assistance Group (BBAG):** A group of stakeholders solicited by
421 FWC to provide local input on issues related to managing bears in Florida. This
422 plan envisions one local group per Bear Management Unit (BMU).

423 **Bear Management Unit (BMU):** These areas are geographically delineated by
424 county borders and divide the entire state (and subsequently the group of bears
425 living there) into smaller areas to more appropriately manage and conserve bears in
426 Florida based on the following criteria:

- 427 1) Commonality of geography and population dynamics for bears;
- 428 2) Human social components related to interactions and management;
- 429 3) Shared management characteristics, objectives, and response;
- 430 4) Logistics in oversight and management; and
- 431 5) Balance of geographic and issue scale – not so broad that the whole state is
432 included, not so fine that every bear is treated differently.

433 **Bear Smart Community (BSC):** An area of human habitation (such as a
434 subdivision, a municipality or a rural collective) within occupied bear range where
435 the residents, businesses and government act to prevent human-bear conflicts and
436 reduce risks to human safety and private property by eliminating access to human
437 food sources, encouraging education and using appropriate waste management.

438 **Biological Carrying Capacity:** The maximum number of animals that a habitat
439 in a specific area can sustain without negative impacts.

440 **Carbon Banking:** Carbon banking is the process of growing trees to capture and
441 store carbon dioxide from the atmosphere. Energy companies pay money to
442 landowners to create carbon banks so they can receive carbon credits that are
443 traded on the open market.

444
445 **Carnivore:** 1. A species placed in the Order Carnivora by taxonomy, based on
446 dentition and other skeletal characteristics. Although black bears are behaviorally
447 omnivores, they are taxonomically classified as Carnivores. Note: references to the
448 taxonomic order are always capitalized. 2. An animal whose diet consists almost
449 entirely of meat. Note: references to the dietary term ‘carnivore’ are not capitalized.

450 **Conservation Lands:** Long term stability in habitat quantity or quality,
451 regardless of whether publicly or privately owned, as measured by the managed
452 lands category of the Florida Natural Areas Inventory in 2009.

453

454 **Core Complaints:** A subset of the all bear-related calls received by FWC that are
455 thought to be complaints, used in this plan to measure change in complaint levels.
456 Core complaints will consist of the following categories: Apiary, Attacked animal, In
457 building, In crops, In feed, In feeder, In garbage, Killed animal, Property damage,
458 Threatened animal, and Threatened humans. Categories of human-bear
459 interactions not included as core complaints include: Dead bear, In area, In tree, In
460 yard, Sick/injured bear, and Other.

461 **Food Conditioned:** The term describes the behavior of a bear which indicates it
462 has had previous contact with people and was rewarded with food, resulting in the
463 bear seeking human-sources of food.

464 **Habitat:** An area with sufficient food, water, cover, and security to support
465 wildlife, including bears.

466 **Habituated:** The term describes the behavior of a bear which tolerates close
467 proximity to people and has apparently lost its natural fear of humans.

468 **Landscape Connection/Connectivity:** Lands that allow several biological
469 processes to occur, including movements among disjunct subpopulations that allow
470 for genetic interchange as well as the necessities of finding food, cover, and mates.

471 **Mast:** A general term for edible fruit when eaten by wildlife. Hard mast includes
472 acorn, hickory, pecan and other nuts while soft mast includes fleshy berries such as
473 palmetto berries, blueberries, and grapes.

474 **Metapopulation:** A group of subpopulations that are separated from one another
475 geographically but still interact at some level.

476
477 **Occupied Range:** The area of Florida where bears consistently occur, mapped at a
478 state-wide scale as **primary** or **secondary** range. These areas have sufficient food,
479 water, and cover to support bears but having bears in this location may not be
480 desirable to people (i.e., **Suitable**). For example, bears live in neighborhoods with
481 wooded areas scattered throughout towns close to Wekiva State Park, because they
482 have access to trash and other human-provided foods. Normally such areas would
483 not be considered bear habitat, but maps of occupied range may include some
484 portions of it.

485 **Omnivore:** An animal whose diet consists of a mix of plant material and animals
486 (i.e., insects or meat).

487 **Phenology:** The time when plants flower and bear fruit in response to climate and
488 local weather patterns. Because Florida has highly variable seasonal and annual
489 rainfall, the amount and distribution of fruiting plants is also highly variable.

490 **Population:** In this plan, the term population refers to all black bears living in
491 Florida, as opposed to **subpopulation**, which are smaller groups of bears living and
492 interacting in specific areas that, combined, make up the statewide population (see
493 **Subpopulation** definition below).

494 **Potential Bear Habitat:** Areas with characteristics that make them more likely
495 to have bears living there. As the name implies, however, potential bear habitat is
496 not necessarily occupied by bears. The four characteristics of potential bear habitat
497 are: 1) land cover type, 2) habitat size, 3) distance from high quality habitats, and 4)
498 connectivity and size of large habitats across the landscape (see Appendix V).

499
500 **Primary Bear Range:** The portion of occupied range within Florida representing
501 breeding range; containing documented evidence of consistent reproduction or the
502 presence of female bears or cubs (mapped at the statewide scale).

503 **Project WILD:** An interdisciplinary conservation and environmental education
504 program emphasizing wildlife. The program is designed for educators of
505 kindergarten through 12th grade students. It capitalizes on the natural interest
506 children and adults have in wildlife by providing hands-on activities that enhance
507 student learning in all subject and skill areas.

508 **Secondary Bear Range:** The portion of occupied range in Florida where bears
509 occur outside primary bear range; bears can be found consistently in secondary
510 range but sightings of females or cubs are infrequent/inconsistent (mapped at the
511 statewide scale).

512 **Social Carrying Capacity:** The upper limit of a population of wildlife based upon
513 human society's tolerance and acceptance of conflicts with wildlife.

514 **Subpopulation:** A grouping of wild black bears living in a specific area, often
515 named for the large block of public land in which they live. For example, the Eglin
516 subpopulation is named after Eglin Air Force Base, which comprises the main area
517 on which most bears in the West Panhandle BMU reside. There are seven black
518 bear subpopulations in Florida: Eglin, Apalachicola, Osceola, Ocala/St. Johns,
519 Chassahowitzka, Glades/Highlands, and Big Cypress.

520 **Successional Sere:** Plant succession is the characteristic sequence of
521 developmental stages in the composition of plant communities following a natural
522 or human disturbance. A sere is one of those developmental stages.

523 **Suitable Habitat:** Habitat capable and large enough to support bears that is
524 outside of towns or dense developments. Habitat patches surrounded by
525 development that are so small as to preclude management would not be considered
526 suitable habitat.

- 527 **Sustainable:** A statewide bear population that is healthy and able to persist over
528 the long-term without the need for frequent intensive management actions.
- 529 **Traversable:** Lands with characteristics that allow movement of bears through
530 them, but do not, in and of themselves, provide adequate habitat to sustain bears.
- 531 **Umbrella Species:** A species of animal that uses large natural areas of habitat
532 containing many different kinds of plant and animal species. Thus, if habitat for
533 the umbrella species is protected, habitat for the other species is protected as well.
- 534 **Viable:** Refers to either a population or subpopulation that contains an adequate
535 number of individuals appropriately distributed to ensure a high probability of long-
536 term survival, in spite of natural fluctuations in numbers, without significant
537 human intervention.

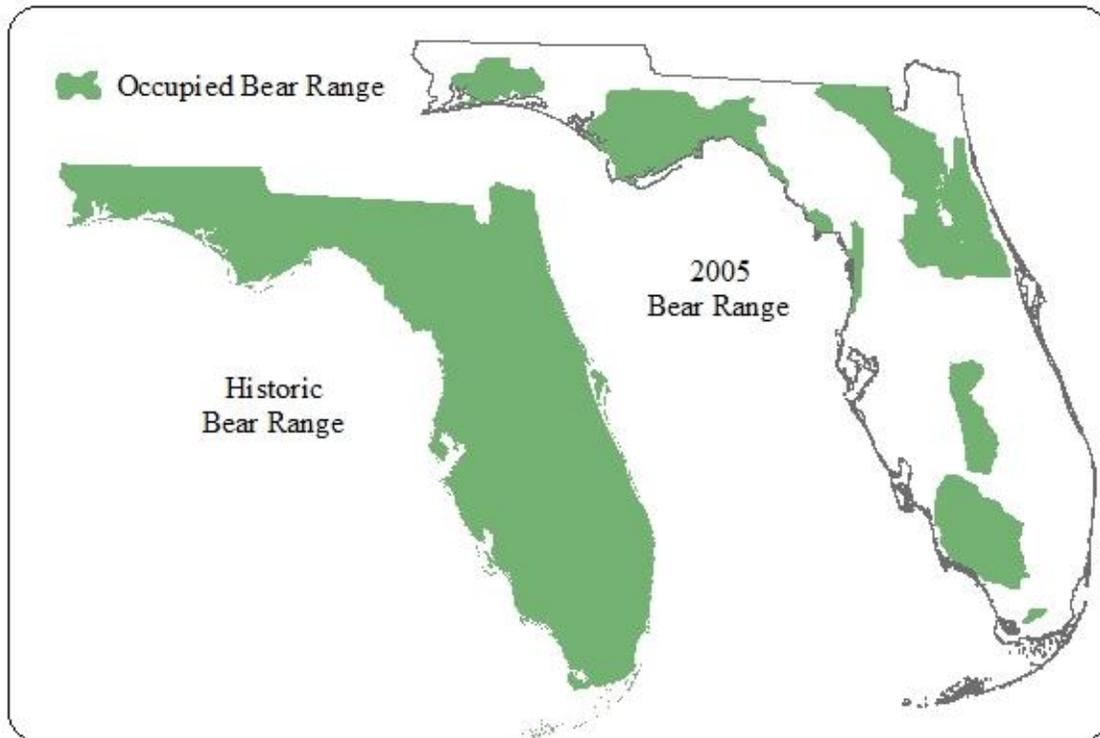
538 CHAPTER 1: INTRODUCTION

539 The Florida black bear (*Ursus americanus floridanus*) is a unique subspecies of
540 the American black bear (*Ursus americanus*) that historically ranged throughout
541 Florida and the southern portions of adjoining states (Hall 1981, pg 451). Today,
542 black bears occupy only a portion of their historic range in Florida (Figure 1). The
543 State listed the black bear as Threatened in 1974.

544 Past and present human activity has impacted the Florida black bear
545 **population**³ and the habitats upon which it depends. Black bear management has
546 become increasingly complex with contentious issues surrounding human-bear
547 interactions such as garbage and other human food attractants, feeding, and
548 hunting. Human-bear encounters will likely continue to increase in number and
549 intensity as both Florida's human and bear populations grow and expand.
550 Therefore, managing bears requires understanding the interaction of biological and
551 social components. A plan is needed to systematically address those concerns so
552 that Florida's citizens can live with and enjoy a healthy, sustainable bear
553 population.

554 The large spatial requirements of bears, fragmented nature of the bear
555 population, and increasing human development that leads to conflicts will play
556 significant roles in the future of bears in Florida. In order to maintain a
557 sustainable population of bears throughout Florida, we must provide adequate
558 habitats, promote **viable subpopulations**, provide connections among
559 subpopulations, manage human impacts, and influence human behavior. If a
560 subpopulation drops below a certain level, it becomes increasingly susceptible to
561 negative effects like inbreeding and environmental variability. Low bear
562 subpopulations also reduce opportunities for people to enjoy observing them or their
563 sign (i.e., tracks, scat). Therefore, staying above a certain lower population level is
564 important from a biological, as well as a social perspective. There are also negative
565 impacts if a population rises above a certain level. Increased negative human-

³ Bolded terms are defined in the glossary.



566

567 **Figure 1. Historic (pre-1800) and 2005 occupied bear range in Florida**
568 **(from Simek et al. 2005).**

569

570 bear interactions can result in a lower social acceptance of bears. This level of
571 tolerance, or **social carrying capacity**, refers to the maximum number of bears
572 that people will tolerate in an area (see Chapter 7: Social Impacts). In addition,
573 there is also a **biological carrying capacity** (see Chapter 7: Social Impacts),
574 which is the maximum number of bears that an area can support without
575 experiencing detrimental effects. High density deer populations can over-browse
576 their habitat; however, habitat quality is not strongly influenced by high bear
577 numbers. Rather, high bear densities can reduce litter size and cub survival and
578 displace bears into neighborhoods, increasing the likelihood of human-bear conflicts.

579 The exact point at which black bear populations reach biological and social
580 carrying capacity can vary by time and location depending on habitat availability
581 and quality, as well as public understanding and perception of bears. This level of
582 tolerance can be different for each year, region, and constituency. The impacts of

583 bears (both positive and negative) on humans and the benefits derived by people
584 from bears results in the human tolerance of bears. Negative human-bear
585 interactions still occur where bear populations are at low density; therefore,
586 biological carrying capacity for bear populations may exceed the social carrying
587 capacity. It is important to consider both the biological and social carrying capacity
588 of an area when managing bears.

589 Determining social carrying capacity will involve economic, political, social, and
590 biological input. Homeowners experiencing property damage from bears, for
591 example, may conclude that bears have exceeded their social carrying capacity and
592 therefore desire fewer bears. However, for the visitor traveling to Chassahowitzka
593 **Wildlife Management Area (WMA)** hoping to see a bear, the current population
594 level may be too low to provide sufficient viewing opportunities.

595 Management responsibility for Florida black bears falls largely on the Florida
596 Fish and Wildlife Conservation Commission (FWC), but numerous agencies,
597 organizations and individuals share responsibility for various aspects, such as
598 habitat protection and management, resolution of human-bear conflicts, and
599 education and outreach. While FWC may have much of the responsibility, many
600 activities in this plan cannot be successfully accomplished without strong input and
601 participation from partners.

602 Developing an integrated and comprehensive management plan requires broad
603 thinking from several disciplines within the wildlife management field, and it must
604 include input from members of the affected public (stakeholders). Significant
605 stakeholder engagement and interaction has occurred and will continue to occur
606 throughout these efforts. FWC recognized that diverse stakeholder involvement
607 from the outset of the management planning process would provide balance and
608 needed guidance. Given past stakeholder involvement in agency planning efforts,
609 FWC agreed it was appropriate first to produce an internal draft while concurrently
610 engaging with stakeholder groups referred to as the **Technical Assistance Group**
611 **(TAG)**. With completion of this draft plan, a comprehensive process for review and

612 comment was implemented with the public (see Preface: Creation of the Bear
613 Management Plan).

614 This plan follows a format similar to other FWC management plans, including
615 text on life history, population status and trends, and ecology; assessment of
616 threats; conservation goals and objectives with recommended actions; an
617 implementation strategy, and anticipated impacts. While this bear management
618 plan is new, it builds on work others have done over the past few decades and
619 considerable pre-work and scoping had been done through earlier FWC bear
620 program efforts (GFC 1993, Eason 2003). The final, fully vetted Florida Black Bear
621 Management Plan will serve as the blueprint for statewide black bear management.
622 This plan provides a framework for local stakeholders to provide FWC with their
623 input on managing bear populations, habitat, and human-bear interactions on a
624 regional level.

625 **CHAPTER 2: BIOLOGICAL AND MANAGEMENT BACKGROUND**626 **Description**

627 Merriam (1896) first
628 described what he called the
629 Everglades bear as a separate
630 species, and suggested that its
631 long skull and highly arched
632 nasal bones distinguished it from
633 other bears. Subsequent analysis
634 by Hall and Kelson (1959) and
635 Harlow (1961, 1962) identified
636 the Florida black bear (*U. a.*
637 *floridanus*) as one of 16
638 recognized subspecies of the
639 American black bear and as one



Credit: FWC

Figure 2. The relative importance of vision, hearing and smell to bears is implied by the animal's relatively small eyes, large ears and very long snout.

640 of three subspecies in the southeastern United States (Hall 1981). Although black
641 bears are classified as **Carnivores** taxonomically because of their teeth and other
642 skeletal characteristics, they are omnivorous in their diet, behavior, and ecological
643 role.

644 Black bears are large-bodied mammals with short tails, prominent canine teeth,
645 and feet with short, curved, non-retractable claws on each of the five digits (Figure
646 2). Black bears walk with the entire sole of their feet touching the ground. Bears
647 use a pacing stride, where both legs on the same side move together so that the hind
648 foot is placed in or slightly in front of the track of the forefoot; the smaller (inner)
649 toe occasionally does not register in the track. Eyes are small, and ears are round
650 and erect. Pelage color is consistently black in Florida, but summer molting of
651 guard hair may cause them to look brown. The muzzle is usually tan but may be
652 darker; 25 to 33 percent of individuals in Florida possess a white chest blaze (FWC,
653 unpublished data, 2004).

654 Adult (\geq three years old) male bears in Florida typically weigh 250 to 350 lbs
655 (average = 270) and adult females weigh 130 to 180 lbs (average = 166) although
656 with Florida's long growing season and availability of calorie-rich human foods,
657 bears can become larger. The largest bears on record in Florida are a 624 lb. male
658 killed on a county road in Collier County and a 383 lb. female killed on a roadway in
659 Liberty County.

660 **Reproduction**

661 Female bears in Florida become sexually mature at three to four years of age
662 (Garrison 2004). Breeding occurs from mid-June to mid-August (Garrison 2004,
663 Land et al. 1994) and coital stimulation is required in order to induce ovulation
664 (Pelton 1982). Black bears experience delayed implantation, where fertilized eggs
665 temporarily cease development after a few divisions, float free in the uterus and do
666 not implant until late November or December (Pelton 1982). This adaptation allows
667 bears to synchronize reproduction with annual food cycles. Lowered nutritional
668 levels caused by poor acorn or berry production can result in delayed first breeding,
669 decreased litter sizes, and increased incidence of barren females (Pelton 1982).
670 Reproductive females enter winter dens in mid- to late December and emerge in
671 early to mid-April after a mean denning period of 100 to 113 days (Garrison 2004,
672 Dobey et al. 2005). Actual gestation is 60 days, and cubs are born in late January to
673 mid-February. Most studies in Florida (Dobey et al. 2005, Garrison 2004, Land et
674 al. 1994) have documented an average litter size of approximately two cubs,
675 although Garrison et al. (2007) documented greater productivity in Ocala National
676 Forest (NF) in older females and females with previous litters. At birth, cubs weigh
677 approximately 12 ounces and are partially furred but blind and toothless. Neonatal
678 growth is rapid and cubs weigh six to eight pounds by the time they leave the den at
679 about ten weeks of age. Cubs stay with their mother and may den with her the
680 following year. Family dissolution usually occurs between May to July when cubs
681 are 15 to 17 months old. Females generally form a home range overlapping their
682 natal range (Moyer et al. 2006) while young males disperse to new areas.

683 Subpopulation Density and Abundance

684 Bears are solitary, reclusive and live at relatively low densities over large
685 landscapes – characteristics that make a direct count of bears infeasible. However,
686 mark-recapture techniques to estimate subpopulation abundance do not require
687 direct counts, and are reliable and scientifically sound (Williams et al. 2002). Simek
688 et al. (2005) used these techniques to estimate the densities of six bear sub-
689 populations in Florida (Eglin, Apalachicola, Osceola, Ocala, St. Johns and Big
690 Cypress). Based on genetic analyses (Dixon et al. 2007), this plan combined the
691 Ocala and St. Johns subpopulations into one subpopulation (Ocala/St. Johns). The
692 density estimate from each subpopulation was then extrapolated across the primary
693 ranges of that subpopulation to estimate bear abundance in the primary range.
694 Subpopulation abundance estimates ranged from 82 bears in Eglin to 1,025 bears in
695 Ocala/St. Johns (Simek et. al. 2005; Table 1). The estimate of bear abundance in
696 the five subpopulations, with 95% statistical confidence, was 2,628 bears (± 118).
697 Chassahowitzka and Glades/Highlands subpopulations may be too low to estimate
698 based on mark-recapture models, but long-term research suggests that the
699 Chassahowitzka subpopulation has about 20 bears (Orlando 2003, Brown 2004) and
700 that the Glades/Highlands subpopulation contains approximately 175 bears (J. Cox,
701 University of Kentucky, 2009, personal communication). Adding these
702 approximations to the Simek et al. (2005) estimates provided a statewide estimate
703 of 2,705 to 2,941 bears in 2002. This estimate was for bears in primary range only;
704 it does not include bears in secondary range. Bears consistently occupy secondary
705 range, but at a lower and more variable density than primary range, which makes
706 estimating their abundance difficult. Population estimates of Florida black bears
707 outside the state are 50 to 100 for Alabama (Hristienko et al. 2010) and 700 to 800
708 for southern Georgia (Greg Nelms, Georgia Department of Natural Resources, 2009,
709 personal communication).

710 **Table 1. Estimates of density and abundance for five Florida**
 711 **black bear subpopulations in primary range in 2002 extrapolated**
 712 **from bear density estimates (from Simek et al. 2005).**

Subpopulation	Density (acres/bear)	Abundance Estimate (Mean)	Abundance Estimate (Range)
Apalachicola	4,140	568	443–693
Big Cypress	1,884	697	513–882
Eglin	5,985	82	63–100
Ocala/St. Johns	1,029/3,699	1,025	825–1,225
Osceola	1,767	256	201–312

713
 714 **Habitat Use and Home Range**

715 Black bears are adaptable and inhabit a variety of forested habitats. Habitat
 716 selection by bears is a function of nutritional needs and spatially fluctuating food
 717 sources. The Florida black bear thrives in habitats that provide an annual supply
 718 of seasonally available foods, secluded areas for denning, and some degree of
 719 protection from humans. Harlow (1961) described optimal bear habitat in Florida
 720 as “a mixture of flatwoods, swamps, scrub oak ridges, bayheads and hammock
 721 habitats, thoroughly interspersed.”

722 Self-sustaining and secure subpopulations of bears in Florida are typically
 723 found within large contiguous forested tracts that contain understories of **mast** or
 724 berry-producing shrubs or trees. Large parcels of public land with habitats as
 725 diverse as the seasonally inundated pine flatwoods, tropical hammocks and
 726 hardwood swamps of the Big Cypress National Preserve (Maehr et al. 2001) and the
 727 xeric sand pine-scrub oak community growing on relic sea dunes in Ocala **NF**
 728 (McCown et al. 2009) support large and healthy subpopulations of bears. Smaller
 729 subpopulations are associated with less expansive habitats that tend to be highly
 730 fragmented and tightly bound by urban areas and highways (Larkin et al. 2004).

731 Variation in home range size and shape is influenced by the timing and location
 732 of nutritional resources, subpopulation density, reproductive status, as well as
 733 human influences such as habitat fragmentation. Female black bears select a home
 734 range based on availability of resources with smaller home ranges found in more

735 optimal habitat. Male black bears establish a home range in relation to the
736 presence of females (Sandell 1989) and their home ranges are usually three to eight
737 times larger than those of females (Pelton 1982). Florida black bears exhibit a wide
738 variety of home range sizes based on the diversity of habitats and habitat quality
739 found in their location (Table 2).

740 Female bears with cubs have smaller summer home ranges than females
741 without cubs but much larger fall home ranges than females without cubs (Moyer et
742 al. 2007). The larger fall home range is a response to the nutritional needs of
743 rapidly growing cubs. Genetically related females establish annual and seasonal
744 home ranges closer to each other than do unrelated females, and females with
745 overlapping home range cores are more closely related than females without
746 overlapping home range cores (Moyer et al. 2006).

747 Bears in natural habitats are generally most active at dawn and dusk but
748 occasionally make extensive movements during daylight hours, especially during
749 fall when bears consume large quantities of food. Black bears daily caloric intake
750 can increase from an average of 5,000/day to 20,000/day in fall (Jonkel and Cowan
751 1971). Bears that live close to urban and suburban areas tend to be more active at
752 night. Dispersing males and bears seeking food may travel extensively. A two-
753 year-old male bear was documented moving a minimum of 87 miles from the
754 vicinity of Naples to Lake Placid, Florida (Maehr et al. 1988). Maehr et al. (1988)
755 and Moyer et al. (2007) noted enlarged home ranges and more extensive movements
756 by females during a year in which severe drought significantly limited the
757 availability of food.

758 **Food Habits**

759 Although members of the Order Carnivora, black bears evolved as **omnivores**
760 at latitudes and under climate regimes that caused dramatic fluctuations in the
761 seasonal availability of food. As a result, even bears in Florida exhibit an annual
762 cycle of feasting and fasting. In fall, bears wander widely and forage extensively in
763 order to accumulate enough energy in the form of fat to survive the winter. Adult

764 **Table 2. Annual home ranges of female Florida black bears within**
 765 **the range of the subspecies.**

Location	Annual Home Range (acres)
Mobile, AL ^a	2,989
Ocala NF, FL ^b	5,062
Wekiva River Basin, FL ^c	6,178
Chassahowitzka NWR, FL ^{d, e}	6,178
Osceola NF, FL ^f	7,488
Okefenokee NWR, GA ^g	13,811
Big Cypress National Preserve, FL ^h	14,106
Eglin Air Force Base, FL ⁱ	21,619

766
 767
 768
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 770
 771
 772

a. Edwards 2002
 b. McCown et al. 2004
 c. Roof and Wooding 1996
 d. NWR = National Wildlife Refuge
 e. Orlando 2003
 f. Scheick 1999
 g. Dobey et al. 2005
 h. Land et al. 1994
 i. Stratman 1998

773 bears may increase their body weight by 25 to 40 percent in fall (Jonkel and Cowan
 774 1971). In winter, the consumption of food by bears is greatly reduced and
 775 reproductive females may spend many weeks in the natal den with little or no
 776 additional nutrition.

777 Bears are opportunistic foragers, taking advantage of seasonally
 778 abundant/available fruits, nuts (especially acorns), insects, and increasingly,
 779 anthropogenic (produced by humans) foods such as garbage and pet, bird and
 780 livestock feed. Because of natural fluctuations in **phenology**, a food item that is
 781 very abundant one year may not be available at all the following year. Given the
 782 nonspecific food habits of the Florida black bear and the diversity of habitats in the
 783 state, the list of food items consumed is lengthy (Maehr and DeFazio 1985).
 784 However, approximately 80 percent of the natural bear foods in Florida are plant
 785 material (Maehr and DeFazio 1985). Although 66 different plant species have been
 786 identified in bear diets, the fruits and fiber of saw palmetto are important
 787 throughout Florida and throughout the year (Maehr et al. 2001). Insects make up
 788 around 15 percent of Florida black bear diets, usually in the form of colonial insects

789 (e.g., ants, termites) and beetles (Maehr and Brady 1984). The remaining five
790 percent of a typical bear diet in Florida is animal matter, which includes medium-
791 sized mammals like raccoons, opossums, and armadillos as well as small livestock
792 and white-tailed deer. Deer in Florida black bear diets ranges between zero and
793 three percent (Land et al. 1994, Maehr and Brady 1982, Maehr and Brady 1984,
794 Maehr and DeFazio 1985, Roof 1997, Dobey et al. 2005). While black bears will
795 prey on deer fawns, most studies have shown bears are opportunistic rather
796 than active predators and that animal matter in their diet typically comes from
797 scavenging dead animals (Pelton 1982).

798 **Mortality**

799 Aside from other bears, adult Florida black bears have few natural predators.
800 Adult males opportunistically kill cubs and occasionally kill and eat denning adult
801 females and their young (Garrison et al. 2007). Most mortality occurs from birth to
802 age one year and can exceed 60 percent (Garrison et al. 2007). Annual female
803 survivorship typically exceeds 90 percent while that of males is 15 to 20 percent
804 lower (Hostetler et al. 2009, Wooding and Hardisky 1992). Males experience lower
805 survival rates because they have larger home ranges and are more mobile which
806 exposes them to greater risks especially to collisions with vehicles (McCown et al.
807 2009). The oldest wild bear documented in Florida was a 24-year-old female from
808 the Apalachicola subpopulation.

809 Known mortality of adult bears is caused largely by humans (i.e., vehicle
810 collisions, illegal kill, euthanasia). In highly fragmented habitat, bears have more
811 frequent interactions with humans and human-related sources of mortality can be
812 significant. Bears living near towns bordering Ocala NF experienced anthropogenic
813 mortality of adult females at a level that would be unsustainable if the
814 subpopulation was isolated (McCown et al. 2004). A similar rate would be
815 catastrophic to the smaller, isolated subpopulations like Chassahowitzka or Eglin.
816 Vehicle collisions are the leading known cause of death for bears in Florida
817 (McCown et al. 2001). From 2000 to 2010, FWC documented an average of 136

818 bears hit and killed by vehicles each year. In 2002, vehicle collisions resulted in an
819 annual mortality rate of 4.8 percent on the overall statewide bear population.
820 Although vehicle collisions are a significant source of mortality, subpopulations
821 above 200 individuals with the reproductive characteristics common to most
822 subpopulations of Florida black bears (e.g., females reproduce at three years old and
823 produce two cubs every two years) can sustain a maximum annual mortality of up
824 to 23 percent (Bunnell and Tait 1980) without experiencing a decline. Many bears
825 survive collisions with vehicles but sustain significant injuries. Out of 92 juvenile
826 and adult bears captured in Ocala NF, twelve (13%) had one or more healed
827 skeletal injuries and/or primarily limb fractures that were likely a result of
828 vehicular collision (McCown et al. 2001).

829 Illegal killing (i.e., poaching) of bears is a regular, though relatively low,
830 mortality factor. Bears are illegally killed because of conflicts with livestock or
831 other property damage and for sale of bear parts on the black market. However, the
832 number of documented bears killed illegally in Florida each year is fairly low. From
833 1990 to 2010, FWC documented 147 illegally killed bears. Most studies involving
834 radio-collared bears in Florida (Wooding and Hardisky 1992, Land et al. 1994,
835 McCown et al. 2004) have reported the incidence of illegally killed bears to be
836 relatively low within large contiguous land parcels and substantially higher within
837 the fragmented habitats bordering urban and suburban areas.

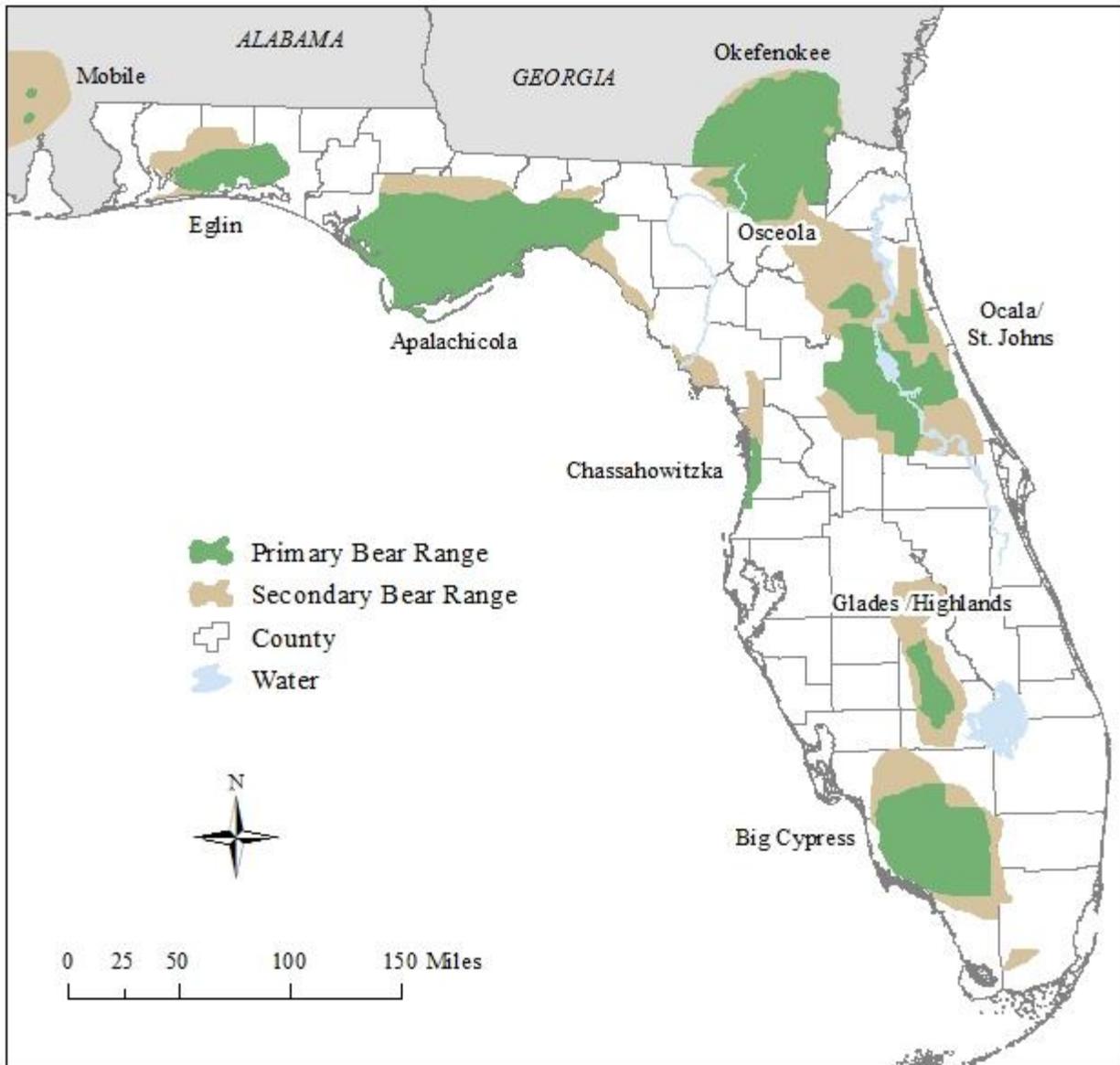
838 FWC attempts to capture and euthanize any bears that could be a threat to
839 public safety. Between 2007 and 2011, FWC euthanized an average of 15 bears per
840 year due to the bear's conflict behavior. Of the bears euthanized during that time
841 period, 68% were associated with seeking out unsecured garbage or other human-
842 provided food sources. Bears that are euthanized have typically lost all their
843 instinctive fear of people and in some cases approached people for food.

844 Serious diseases are uncommon in black bears. There are no reports of rabid
845 black bears in Florida and few from elsewhere. Demodetic mange resulting in
846 generalized hair loss to adult females is relatively common (78%; McCown et al.
847 2001) in one locale on the western border of Ocala NF. Few cases have been

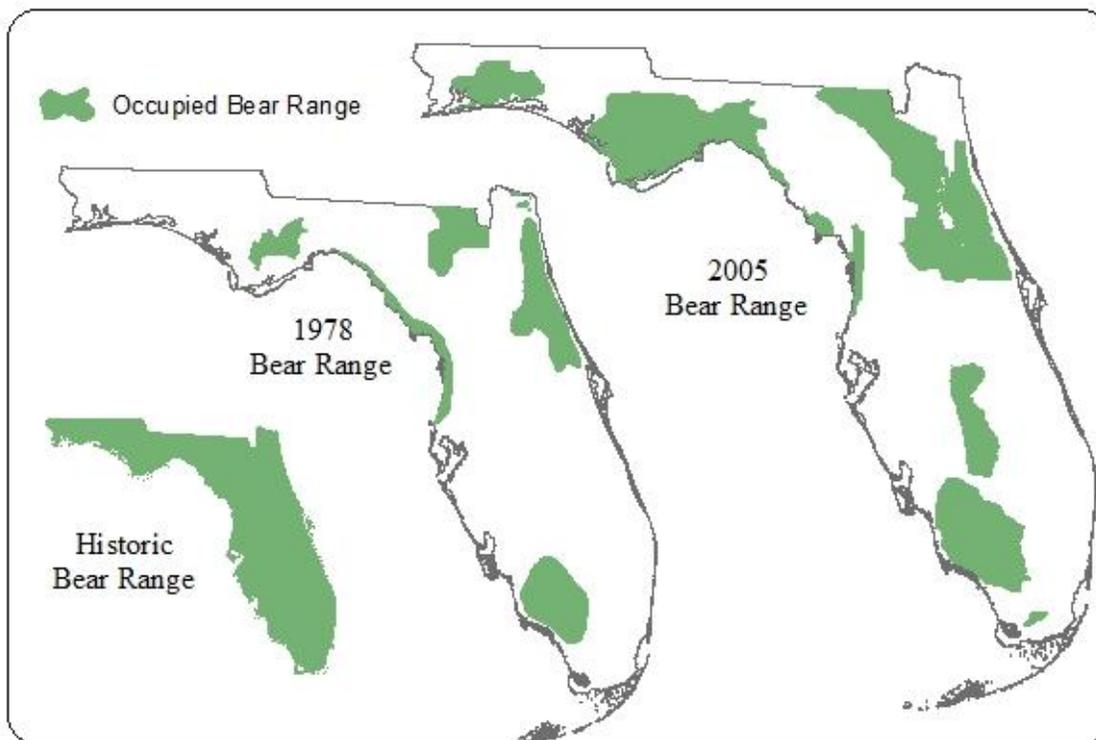
848 observed in any other subpopulation in Florida although one case has been reported
849 from outside of Florida (Foster et al. 1998). Demodetic mange is transmitted from
850 sow to cub but males recover by their second year (Cunningham et al. 2007).
851 Twenty-five other species of parasites have been reported from Florida black bears
852 including 17 nematodes, two trematodes, one protozoan, and five arthropods;
853 however mortality caused by parasites has not been documented (Forrester 1992).

854 **Distribution**

855 Historically, black bears ranged throughout the southeastern United States
856 with the Florida subspecies inhabiting all of Florida (except the lower Keys) and
857 southern portions of Georgia and Alabama (Hall 1981). However, the distribution of
858 the subspecies has been significantly reduced and fragmented to one subpopulation
859 each in Alabama (near Mobile) and Georgia (in and around the Okefenokee
860 **National Wildlife Refuge [NWR]**), and in Florida to seven subpopulations (Eglin,
861 Apalachicola, Osceola, Ocala/St. Johns, Chassahowitzka, Glades/Highlands and Big
862 Cypress; Figure 3). **Occupied range** occurs in 48 of the 67 Florida counties
863 (Appendix I, Table 15) and covers approximately 17,500 square miles (10,000
864 square miles of primary range and 7,500 square miles of secondary range). Bears
865 currently occupy 31 percent of their historic range in Florida, an expansion from the
866 17 percent occupied almost 20 years ago (GFC 1993). Early range maps were based
867 on the subjective opinion of experienced biologists. Bear ranges were difficult to
868 estimate with accuracy, as evidenced by the production of three differing bear range
869 maps within a four year period (GFC 1975, GFC 1977, Brady and McDaniel 1978).
870 Modern genetic analyses indicate that some individual bears must have persisted in
871 the Eglin and Glades/Highlands subpopulations in the late 1970's (Dixon et al.
872 2007), although perhaps there were so few that their range could not be mapped at
873 that time. Despite the challenges in mapping historical bear distribution, all
874 accounts support bears have been expanding their range since the mid-20th century
875 (Frye et al. 1950, GFC 1975, GFC 1977, Brady and McDaniel 1978, Maehr and
876 Brady 1985; Figure 4).



877 **Figure 3. The range of the Florida black bear subspecies. Primary**
 878 **range is a contiguous area that has documented evidence of female**
 879 **bears and reproduction; whereas secondary range includes areas where**
 880 **bears consistently occur but has infrequent evidence of females or**
 881 **reproduction (Florida range map produced by FWC [Simek et al 2005];**
 882 **Alabama and Georgia range maps by Clark et al. 2006).**
 883



884
885 **Figure 4. Changes in black bear distribution in Florida from before**
886 **1800, 1978 (Brady and Maehr 1985), and 2005 (Simek et al. 2005).**
887

888 Genetic Profile

889 Bears are particularly vulnerable to habitat loss and fragmentation because of
890 their low numbers, low densities, large home ranges, low productivity, poor
891 colonization abilities, and increased interactions with humans brought about by
892 habitat alterations. Habitat fragmentation and degradation in Florida reduced
893 what was once a single large population of bears that roamed virtually the entire
894 state into several smaller, largely isolated subpopulations. Habitat fragmentation
895 can lead to isolation of subpopulations and reduction of subpopulation size which
896 may cause a decrease in genetic variation (Frankham 1996). Loss of genetic
897 variation may reduce the ability of individuals to adapt to changes in the
898 environment, cause inbreeding depression (Ebert et al. 2002), and increase the
899 probability of extinction (Westemeier et al. 1998). Small, isolated subpopulations
900 are at a higher risk of extinction than large, genetically-connected subpopulations

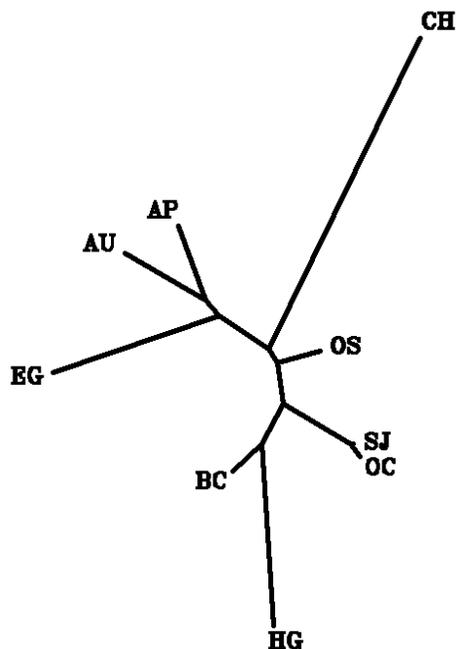
901 (Frankham et al. 2002). The impacts of inbreeding caused by small subpopulation
902 size have been documented in black bears in Alabama, including kinked tail
903 vertebrae, lack of external tails, cryptorchidism (lack of external scrotum or testes or
904 1 descended testicle), and a prolapsed rectum (Kasbohm and Bentzien 1998).
905 Florida panthers (*Puma concolor coryi*) suffered similar defects prior to the release
906 of eight Texas puma (*Puma concolor*) females into the Florida panther population.
907 The symptoms of panther inbreeding included such congenital abnormalities as
908 lethal heart defects, cryptorchidism, sperm malformation and lack of sperm
909 motility. Subsequent to the genetic rescue efforts for the Florida panther,
910 congenital abnormalities have decreased significantly (Mansfield and Land 2002; D.
911 Onorato, FWC, personal communication, 2010).

912 An analysis of the genetic structure of Florida's black bears indicated that many
913 of the state's bear subpopulations have been isolated from one another long and
914 completely enough that genetic differentiation between them is measurable (Dixon
915 et al. 2007). This plan combined the former Ocala and St. Johns subpopulations
916 because the genetic analysis found the subpopulations to be genetically
917 indistinguishable. Although the analysis treated Aucilla as a separate
918 subpopulation, it is considered a part of the Apalachicola subpopulation in this
919 document because the ranges are contiguous.

920 Genetic differentiation was most evident in the Chassahowitzka,
921 Glades/Highlands, and Eglin subpopulations (Figure 5). Because the degree of
922 genetic differentiation exceeded that which would be explained by distance alone, it
923 was thought that isolation was caused by people (i.e., major highways block
924 movements). Additionally, the genetic variation within the Chassahowitzka and
925 Glades/Highlands subpopulations are among the lowest reported for any bear
926 population (Dixon et al. 2007). These two smaller subpopulations were apparently
927 so small that they were not mapped in 1978 (Brady and McDaniel 1978).

928

929 **Figure 5. An unrooted**
930 **phylogenetic tree depicting the**
931 **genetic relationships among**
932 **Florida black bear populations**
933 **(from Dixon et al. 2007). Branch**
934 **lengths correspond to genetic**
935 **distance. Subpopulations are**
936 **Eglin (EG), Apalachicola (AP),**
937 **Aucilla (AU), Osceola (OS), Ocala**
938 **(OC), St. Johns (SJ),**
939 **Chassahowitzka (CH),**
940 **Highlands/Glades (HG), and Big**
941 **Cypress (BC).**



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Ecological Significance of Bears

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Black bears are recognized as an **umbrella species**, a species whose habitat requirements encompass those of many other species. Given the large area requirements of bears and the diversity of habitats they use, many species are protected under the umbrella of bear conservation. The black bear has been an instrumental species in conserving natural habitats; the presence of bears is occasionally cited as justification for land protection efforts in Florida. Although land management activities specifically targeted to benefit bears are uncommon, such efforts would benefit many other species. Additionally, because bears are seed dispersers, they may have a significant impact on plant distribution, particularly for large-seeded species such as saw palmetto (Maehr 1984, Auger et al. 2002).

957

Land Use and Bear Populations

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At the time of the first European contact in what is now Florida, it was estimated there could have been over 11,000 bears sharing their space with 350,000 native inhabitants (GFC 1993, Milanich 1995). With such low numbers, it is unlikely that humans had significant direct impacts on bears. Native Americans cleared forests for villages and agriculture and set fires to improve hunting and

963 increase security from hostile tribes (Milanich 1995). The cumulative effect of fires
964 such as those set by Native Americans over many millennia, as well as those caused
965 by lightning, created conditions that encouraged the growth of longleaf pine-
966 wiregrass communities over other forest types (Meyers 1985, Cowell 1998).
967 Reported bear densities in longleaf pine-wiregrass habitat, such as in Apalachicola
968 NF, (Simek et al. 2005) are much lower than most other forest communities in
969 Florida. Although Native Americans modified their habitat and used bears for a
970 variety of reasons, large-scale impacts to natural communities by humans did not
971 begin until European settlement of Florida.

972 With the arrival of the Europeans, extensive clearing of Florida's forests began
973 in earnest and bear numbers likely declined. Most early settlers depended on
974 agriculture for their livelihood and cleared vast areas of forest for farming and
975 cattle production through the use of fire – a practice that reduced understory
976 vegetation and negatively impacted bears. Additionally, bears were killed
977 indiscriminately by residents for meat and fur, to protect livestock, and as vermin.

978 By the 18th century, enough commercial ports had been developed to permit the
979 economic exploitation of the state's longleaf and slash pine forests by the turpentine
980 and timber industries. Construction of railroads in the 19th century increased the
981 efficiency and reach of those industries. Because the lower surfaces of trees
982 producing turpentine were coated in this highly flammable substance, they were
983 extremely vulnerable to wildfire. To prevent fires, turpentine workers reduced
984 understory vegetation manually and with controlled fires. Most commonly, after
985 several years, turpentine production began to lag and the forest was cut for timber
986 with a “cut out and get out” philosophy. Few attempts were made to replant forests
987 and the debris created during logging operations provided fuel for devastating
988 wildfires (Kendrick and Walsh 2007). Within wooded habitats, the open range laws
989 in Florida meant cattle grazed extensively on forest understory and setting fires
990 was a common practice by cattlemen to improve forage. Additionally, more than
991 62,000, mostly subsistence farms (only 10% had tractors), were operating by the
992 early 20th century (US Census Bureau 2009). An estimate of bear numbers by the

993 first Commissioner of the short-lived Department of Game and Fish suggested the
994 state's bear population may have declined to approximately 3,000 by 1915 (Jones
995 1915).

996 The impacts on the composition and structure of Florida's landscape from the
997 practices associated with farming, ranching, and the naval stores industries were
998 significant. Pyne (1982, p. 144) estimated that 105 percent of Florida was burned in
999 one year (some areas burned more than once) by the combination of those land uses.
1000 Furthermore, by the early 20th century, "several hundred" mills processed
1001 turpentine from what must have been many thousands of turpentine camps and
1002 turpentine production in Florida eventually accounted for approximately 27 percent
1003 of the US total (Kendrick and Walsh 2007). Additionally, by 1940, approximately
1004 24 percent of Florida's landmass was being farmed (US Census Bureau 2009). The
1005 result of these land-use practices was to promote an open landscape with a sparse
1006 understory that likely supported few bears and is plainly evident in the aerial
1007 photographs of Florida taken from 1935 to 1950 (SUS 2005). In 1950, Frye et al.
1008 (1950) considered bears to be "...still fairly well distributed throughout
1009 Florida....but nowhere numerous" and "...badly depleted."

1010 The end of the naval stores industry in the 1940s and the passage of Florida's
1011 first mandatory statewide fence law in 1950 brought an end to frequent fires and
1012 open-pasture grazing. Those land-use changes had a noticeable effect on forest
1013 stand composition in the state. Additionally, rapid growth of the human population
1014 in Florida and the conversion of natural landscapes to roads and towns created fire
1015 breaks that reduced the frequency and extent of most fires. Analysis of the
1016 differences between present day and pre-settlement forests has revealed that
1017 present day forests have lower fire frequencies and a denser understory with
1018 greater shrub cover (Myers and Ewel 1990). Forests with this type of structure
1019 provide good habitat for bears.

1020 The bear population was generally estimated at 500 to 1,000 in the 1960s and
1021 1970s (Harlow 1962, Pelton and Nichols 1972, McDaniel 1974, Brady and Maehr
1022 1985) with an estimate as low as 300 bears in 1974 (GFC 1974; Table 3). However

1023 **Table 3. History of published reports on Florida black bear numbers**
 1024 **from 1700 to 2002. Note: Different methods with varying degrees of**
 1025 **confidence were used to estimate populations over time; therefore a**
 1026 **comparison of estimates among years may not be appropriate.**

Year	Estimate	Source	Methods
1700	11,500	GFC 1993	Assumed density of bears statewide is equal to density found in a study area in Ocala National Forest
1914	3,051	Jones 1915	Surveyed state personnel on how many bears they thought might be in each county
1940	300	GFC 1940	Unknown
1950	500	Frye et al. 1950	Unknown
1961	530–860	Harlow 1961	Based on calculations using estimates of both legal and illegal kills
1962	800–1,000	Harlow 1962	Based on calculations using estimates of both legal and illegal kills
1969	1,000	USDOJ 1969	Unknown
1971	500–600	GFC 1971	Unknown
1972	500	Pelton and Nichols 1972	Surveyed state game and fish personnel in the southeastern U.S.
1974	300	McDaniels 1974	Unknown
1977	500	East 1977	Unknown
1993	1,000–1,500	GFC 1993	Based on bear densities and habitat acreages calculated from several previously completed studies
1998	1,280	Bentzien 1998	Based on using bear densities and habitat acreages calculated from several previously completed studies
2002*	2,569–2,687	Simek et al. 2005	Estimated using mark-recapture models based on DNA collected from 2001 to 2003; densities from study areas were assumed to represent the density of bears within primary bear ranges in those areas

1027 *2002 is the only population estimate with statistical confidence intervals.
 1028

1029

1030 the regrowth of forests, the exclusion of fire, and increased protection began to
1031 benefit bears. The extensive development that occurred in Florida during the latter
1032 half of the 20th century meant less available habitat and severe fragmentation of
1033 what remained. However, with reduced fire frequency, habitat conditions improved
1034 overall for bears in the remaining range. Bears were reported to occupy 50 of 67
1035 Florida counties in fragmented, insular, and or resident subpopulations by 1984
1036 (Brady and Maehr 1985). GFC staff used previously documented densities and
1037 approximations of occupied range to estimate the statewide black bear population
1038 as 1,000 to 1,500 bears in the 1990s (GFC 1993, Bentzen 1998; Table 3).

1039 The Florida Department of Transportation partnered with FWC to examine the
1040 effects of roads on bear populations across the state between 2001 and 2003. As
1041 part of this study, FWC mapped primary and secondary bear range in Florida
1042 (Figure 3). Primary range represents areas occupied by a relatively high density of
1043 resident bears and where breeding activity was documented. Secondary range
1044 represents areas where resident bears consistently occur, but at lower densities,
1045 with inconsistent evidence of breeding, and typically more fragmented habitat.

1046 FWC set up study areas within the primary ranges of five of the seven bear
1047 subpopulations and estimated there were 2,569 to 2,687 bears (Simek et al. 2005,
1048 Appendix II). Because the estimate was only for bears in the primary ranges of five
1049 of seven subpopulations, this number was conservative and likely low. The
1050 remaining Florida subpopulations include bears in and around Chassahowitzka
1051 WMA and in Glades and Highlands counties. The Chassahowitzka subpopulation
1052 was estimated to be around 20 bears based on research conducted in Citrus and
1053 Hernando counties (Brown 2004, FWC, unpublished data, 2010). The
1054 Glades/Highlands subpopulation was estimated to be 175 bears based on data from
1055 an ongoing bear research project in this area (John Cox, University of Kentucky,
1056 personnel communication, 2010). A more formal population estimate will be
1057 produced from the Glades/Highlands study in 2013. With the addition of the
1058

1059 Chassahowitzka and Glades/Highlands subpopulation estimates, the most current
1060 estimate available of the statewide bear population in Florida is 2,705 to 2,941
1061 bears (Simek et al. 2005).

1062 Ideally, population estimates for long-lived species would be updated each
1063 generation. The Florida black bear has an average generation length of eight years
1064 (FWC, unpublished data, 2010), thus the 2002 population estimate is appropriate to
1065 use in this plan as a benchmark to measure population change over time. There are
1066 many indications that the number of Florida black bears and their range has
1067 continued to increase since the 2002 population estimate. FWC estimates at least
1068 two subpopulations are showing positive growth rates. Hostetler et al. (2009)
1069 estimated annual population growth of up to 10% in the Ocala/St. Johns
1070 subpopulation. However, the growth rate was partially offset by higher mortality
1071 along the perimeter than in the central portions of the Ocala/St. Johns
1072 subpopulation range. Dobey et al. (2005) estimated the Osceola subpopulation
1073 could have been growing up to 18% per year between 1995 and 1999. However, that
1074 growth was somewhat dampened because bears from Osceola NF were regularly
1075 traveling into neighboring Okefenokee NWR in Georgia. FWC also collects data
1076 annually on bear population trends in the form of bear-related calls from the public,
1077 bear captures, and vehicle-killed bears. Those data indicate the number of bears
1078 and their range is increasing in most areas. FWC has no data to indicate the
1079 statewide Florida black bear population is declining.

1080 **Status, Management, and Hunting**

1081 Regulations and the legal status of bears have changed many times over the
1082 past several decades (Table 4). Until the mid-1930s, bears were not assigned any
1083 official status and were unprotected throughout Florida (GFC 1935). The Florida
1084 Game and Fresh Water Fish Commission (GFC) classified bears as a fur-bearing
1085 animal and initiated the first regulated harvest season in 1936. GFC changed the
1086 bear to a game animal in 1950, which afforded new legal protections. After
1087 population assessments indicated further decline in bear numbers, the bear hunting

1088 **Table 4. Chronological history of events regarding Florida black bear**
 1089 **management.**

Year	Event
1913	Florida creates a short-lived Department of Game & Fish (DGF).
1915	DGF estimated bear's have a "value" of \$25 each; DGF is abolished (Jones 1915).
1915–1925	Local laws were enacted for protection of game and freshwater fish.
1925	Law passed creating Department of Game and Fresh Water Fish; leaving in effect 130 local laws which conflicted with general law.
1927	Law from 1925 rewritten to change Department into a Commission of Game and Fresh Water Fish (GFC); all local laws are repealed.
1931	Chapter 15721 of the Commission of GFC Laws – Local Law of Volusia County makes it unlawful to kill or take bears.
1936	The bear is defined as a “fur-bearing animal” permissible for harvest between December 1 st – March 1 st with no bag limit.
1945	Apalachicola WMA opens 2 consecutive 3-day bear hunts held Nov. 18–23; only one bear killed.
1947–1948	Apalachicola WMA bear hunt extended to 6 3-day hunts with 3 bears taken during 1947 and none in 1948. One and 2 bears, respectively, are taken on the Ocala WMA.
1948	Wildlife Code of the State of Florida for GFC redefined bears as “Unprotected Fur-bearing Animals” (open season November 20 th – February 15 th of succeeding year).
1950	GFC defines bears as “Protected Fur-bearing Animals” in NFs, WMAs and Eglin Field Military Reservation and “Unprotected Fur-bearing Animals” elsewhere. In 1950, the bear is designated as a game animal with no bag limit and harvest dates coinciding with deer season statewide. Special GFC managed hunts continue on Ocala WMA (1 bear bag limit) and Apalachicola and Osceola WMAs (2 bear bag limit)
1951	Definitions changed in Wildlife Code of the State of Florida for GFC; bears defined as a Game Animal.
1958–1961	Bear hunting was closed on Eglin WMA in 1958, Big Cypress WMA in 1960, and Ocala NF in 1961
1969	Special managed bear hunts on Tomoka WMA began during 1969–1970 hunting season
1971–1972	GFC closes hunting season statewide except in Baker Co. and Columbia Co. and during GFC managed hunts on Apalachicola NF, Osceola NF (or by special permit; Rule 16E-10.08 allowed Commission Director to issue special permits to run or chase bears during closed seasons); Tomoka WMA hunt discontinued in 1972
1974	GFC created definition and list of Threatened Species under Chapter 16E-3 of the Florida Wildlife Code and includes bears as a Threatened Species

Year	Event
1977	FAC Rule 16E-10.01, general methods of taking game changed to include the prohibited taking of bear cubs and female bears with cubs
1978	Threatened designation removed from bears in Baker and Columbia counties and Apalachicola NF.
1979	Listed Species Rules 39-27.01 to 39-27.05 established, including general prohibitions on harming or killing a listed species (GFC 1979).
1990	USFWS petitioned to list the Florida black bear as Threatened under the Endangered Species Act (Bentzien 1990)
1991	USFWS determined threatened status is “warranted but precluded by other higher priority listing actions” (Bentzien 1991).
1993	GFC recommended closing bear hunting statewide; creates management strategy for bears (GFC 1993); 1993–1994 season on Osceola NF closed.
1994	GFC closed remaining bear hunting seasons statewide
1995	GFC (1995) published habitat management guidelines for Apalachicola
1997	Conserve Wildlife Tag featuring a bear was created by GFC and the Wildlife Foundation of Florida; portion of funds go to bear conservation.
1998	Florida Constitution Revision 5 passed to combine staff from the Marine Fisheries Commission, elements of the Divisions of Marine Resources and Law Enforcement of the Florida Department of Environmental Protection and GFC to become the Florida Fish and Wildlife Conservation Commission (FWC); USFWS finds “listing of the Florida black bear is not warranted at this time” (Bentzien 1998). Conservation organizations sue USFWS; Bentzien (1998) estimates 1,280 bears in Florida.
2001	Maehr et al. (2001) published <i>Black Bear Habitat Management Guidelines for Florida</i>
2002	FWC passed wildlife feeding restriction (F.A.C. 68A-4.001(3)) that makes it illegal to intentionally or unintentionally feed bears where they can cause a public nuisance.
2003	FWC published <i>Conservation Strategy for the Black Bear in Florida</i> (Eason 2003)
2004	Court ordered USFWS to re-examine the inadequacy of 1998 regulatory mechanisms. Service determined “existing regulatory mechanisms are not inadequate so as to warrant listing the Florida black bear under the Endangered Species Act” (Kasbohm 2004).
2005	FWC released report assessing the impacts of roads on bears, including population estimates for bears in six subpopulations (Simek et. al. 2005).
2007	FWC creates Bear Action Team to draft statewide bear management plan with assistance of a team representing stakeholder groups
2010	Draft 5.1 of bear management plan opens for public review and comment; Florida’s Endangered and Threatened Species rule FAC 68A-27 approved; Draft 5.1 revised to comply with FAC 68A-27

Year	Event
2011–2012	Biological status review indicates the bear does not meet any criteria for high risk of extinction; Commission agrees with staff recommendation to remove bears from State Threatened Species list in June 2011; Draft 6.1 of bear management plan and rule open for public review and comment Nov. 10, 2011 to Jan. 10, 2012; Draft plan presented to Commission Feb. 9, 2012; Plan revised and Draft 7.0 was opened for public comment April 13 to June 1, 2012; Plan revised and Draft 7.1 was posted on the FWC website June 11, 2012; Plan returned to Commission for final review June 27, 2012.

1090
1091 season was closed statewide in 1971, with the exception of Osceola NF, Baker and
1092 Columbia counties, Apalachicola NF, and for an additional year, the Tomoka WMA
1093 (GFC 1993). GFC listed the black bear as threatened in 1974 (GFC 1974).
1094 Although bears were listed as threatened statewide, bear hunting seasons remained
1095 open in some areas. Because bear subpopulations in Baker and Columbia counties
1096 and Apalachicola NF were considered stable, the threatened designation was
1097 removed from these areas in 1978, the same year that rules were revised to prevent
1098 a threatened species from being hunted (GFC 1978, GFC 1992, p. 1).

1099 Between 1981 and 1994, GFC made several changes to bear hunting regulations
1100 in order to minimize the number of females and young in the harvest: seasons were
1101 shifted later in the year, the number days in the season were reduced, and the
1102 minimum size for harvest was increased to 200 lbs (GFC 1993). Regulation change
1103 showed success in two of the three hunted areas; the percentage of females in the
1104 harvest dropped from 49% to 24% in Apalachicola WMA, and 46% to 15% in Osceola
1105 WMA (Appendix III, Table 16). An average of 46 bears (32 males and 14 females)
1106 was taken in portions of northern Florida each year between 1981 and 1994
1107 (Appendix III). GFC closed the remaining bear hunting seasons in 1994 because: 1)
1108 harvesting a species classified as State Threatened was confusing to the public, 2)
1109 regulation changes reduced harvest of females, resulting in a lack of data needed to
1110 use the preferred method to monitor bear populations during that time period
1111 (Fraser et al. 1982, Fraser 1984), and 3) GFC wanted to maintain bears at

1112 maximum biological carrying capacity so they would be “resilient against
1113 decimating factors” (GFC 1993, p. 14).

1114 The U.S. Fish and Wildlife Service (USFWS) was petitioned to list the Florida
1115 black bear under the Endangered Species Act in 1990 (Kasbohm 2004; Table 4).
1116 Factors considered for listing the species were: habitat destruction, road mortality,
1117 hunting, and poaching. USFWS reviewed all available scientific information on the
1118 Florida black bear and considered the threats were moderate to low magnitude for
1119 the species statewide. USFWS concluded that Federal listing was warranted but
1120 precluded by higher priority species (Kasbohm 2004). USFWS determined the
1121 Florida black bear did not merit Federal listing as a threatened or endangered
1122 species in 1998 (Kasbohm 2004). The decision not to list the Florida black bear was
1123 challenged in court in 1999, and the USFWS was ordered to clarify and further
1124 determine whether the “inadequacy of existing regulatory mechanisms” warranted
1125 listing. USFWS concluded existing regulatory mechanisms were adequate and that
1126 “the positive changes in the bear’s situation from 1992 to 1998 supported a ‘not
1127 warranted’ finding,” and that “the overall effects of habitat loss and isolation,
1128 roadkill, and hunting would not likely result in the bear becoming endangered in
1129 the foreseeable future” and therefore did not warrant listing the Florida black bear
1130 under the Endangered Species Act in 2004 (Kasbohm 2004).

1131 FWC passed Florida’s Endangered and Threatened Species rule (68A-27,
1132 Florida Administrative Code [F.A.C]) to conserve and manage rare species in
1133 Florida in September 2010. The new rule required that biological status reviews
1134 (BSRs) be completed on all the State’s species that were classified as Threatened or
1135 Species of Special Concern. The BSR assessed the Florida black bear population
1136 based on available data on abundance, trends, extent of range, and the results of
1137 quantitative analyses and indicated that the bear did not meet any of the listing
1138 criteria for threatened species status (Appendix II). The initial BSR findings were
1139 reviewed by five independent scientists who have experience in black bear research
1140 or management. While peer reviewers had differing opinions on the details
1141 included in the preliminary BSR, all agreed that the bear did not meet any of

1142 Florida's new listing criteria (Appendix II). The final report of the BSR was
1143 presented to the Commission for their consideration in June 2011. The Commission
1144 approved staff's recommendation to delist the black bear in June 2011; however the
1145 bear would remain a threatened species until a management plan is approved.

1146 Management actions and a changing landscape have allowed bear
1147 subpopulations to rebound in many parts of the state. Florida's bear population has
1148 tracked bear population trends in the rest of the southeastern United States (Maehr
1149 et al. 2001). In the mid-1900s, bear numbers were at their lowest points, and
1150 management was focused on recovering declining populations. As bear populations
1151 began to rebound, states struggled with the transition to manage increasing bear
1152 populations, which were often coupled with growing human populations. Currently,
1153 32 of the 41 states with resident black bear populations have a regulated hunting
1154 season (Appendix IV, Table 17). Despite its common use as a management tool,
1155 bear hunting remains a complex issue in Florida requiring extensive stakeholder
1156 engagement. Because the purpose of this plan is to establish the conservation
1157 measures necessary to ensure that the bear does not meet the threatened criteria in
1158 the future, addressing the prospects of bear hunting is outside the plan's scope. Any
1159 further consideration of bear hunting after the approval of this plan would require
1160 additional direction from the Commission. If directed by the Commission to
1161 consider hunting, FWC staff would explore options and develop proposals in an open
1162 and transparent process for further consideration.

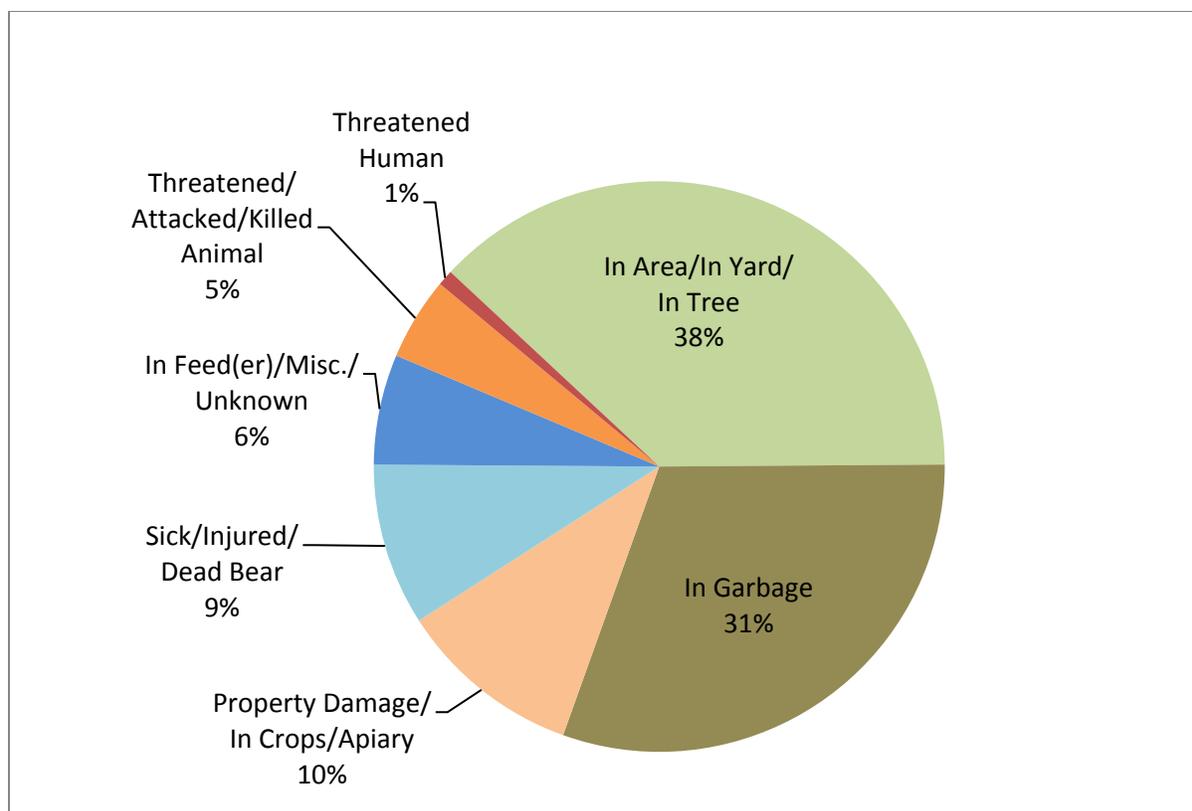
1163 Current management efforts in Florida include continued habitat conservation,
1164 documentation of population parameters, reduction of vehicle-bear collisions,
1165 development of educational programs, response to human-bear conflicts, and
1166 coordination among stakeholders. Presently, management efforts are aimed at
1167 collaborating with all levels of government to develop solutions to human-bear
1168 conflicts. A primary focus is to reduce the level of negative human-bear encounters
1169 associated with garbage in residential and commercial areas. The need for public
1170 outreach and education regarding coexistence with black bears has become an
1171 increasingly important management issue.

1172 **CHAPTER 3: THREAT ASSESSMENT**

1173 Black bears in Florida face an array of threats that vary in their significance
1174 and intensity. Prior to the 1950s and wide-spread development, the greatest threat
1175 to bears was persecution and unregulated hunting, resulting in significant
1176 population decline and a restriction of bear range to a few, scattered and isolated
1177 areas. As development in Florida increased, habitat loss became a growing concern.
1178 Bear hunting became regulated in the early 20th century and more detailed
1179 conservation efforts were initiated in the 1970's, including increased protections,
1180 more restrictive hunting regulations, and habitat protection (Table 4). Today, the
1181 greatest threat to the long term survival of Florida black bears is habitat loss and
1182 fragmentation, exacerbated by incompatible habitat management in areas where
1183 subpopulations are very small. Negative interactions with people and human-
1184 caused mortality are also important concerns for bear management.

1185 Habitat loss and fragmentation have greatly impacted bears in Florida.
1186 Although bear numbers and range have rebounded, bears do not currently occupy
1187 all available habitat. Male bears travel widely, often through low quality habitat,
1188 however expansion of occupied range is driven by female movements. The loss of
1189 habitat and disconnections between large habitat patches caused by development
1190 and roads make occupying the high quality but unoccupied bear habitat, such as the
1191 Big Bend region, more difficult for bears. Increasing human development, including
1192 highways, reduces the ability of bears to travel between, or even find, isolated
1193 habitats.

1194 Human population growth and expanding bear populations have led to
1195 increasing contact between people and bears. Many of these interactions are
1196 positive or neutral in outcome (e.g., sightings that lead to excitement or presence
1197 that leads to no response), but some lead to conflicts. FWC classifies the types of
1198 calls it receives from the public about bear interactions into categories based on the
1199 caller's description (Figure 6). A substantial proportion of the calls refer to bears in
1200 the area, a yard, or up a tree (38%), which can typically be resolved when callers



1201

1202 **Figure 6. Types of human-bear conflicts, as described by callers,**
 1203 **received by FWC from 1990 to 2010 in Florida (n = 25,249).**

1204

1205 follow the technical advice provided by FWC. Human-bear interactions have
 1206 increased considerably in recent years and negative encounters will continue to be a
 1207 challenging management issue and potential threat to bears and people (Figure 7).
 1208 Interactions with humans can lead to the death of the bear either through illegal
 1209 killing, vehicle collisions or euthanasia. Additionally, increasing frequency of
 1210 conflicts with bears can lead to the devaluation of bears as negative experiences
 1211 overshadow the respect and wonder most people initially have for bears. If current
 1212 trends in human-bear interactions continue, these issues may become the foremost
 1213 management challenge for bears in Florida.

1214 Currently, direct mortality caused by humans is a chronic threat to bears but
 1215 does not appear to have much of a dampening effect on bear population growth (see
 1216 Chapter 2: Mortality). While recent levels of documented illegal kill and

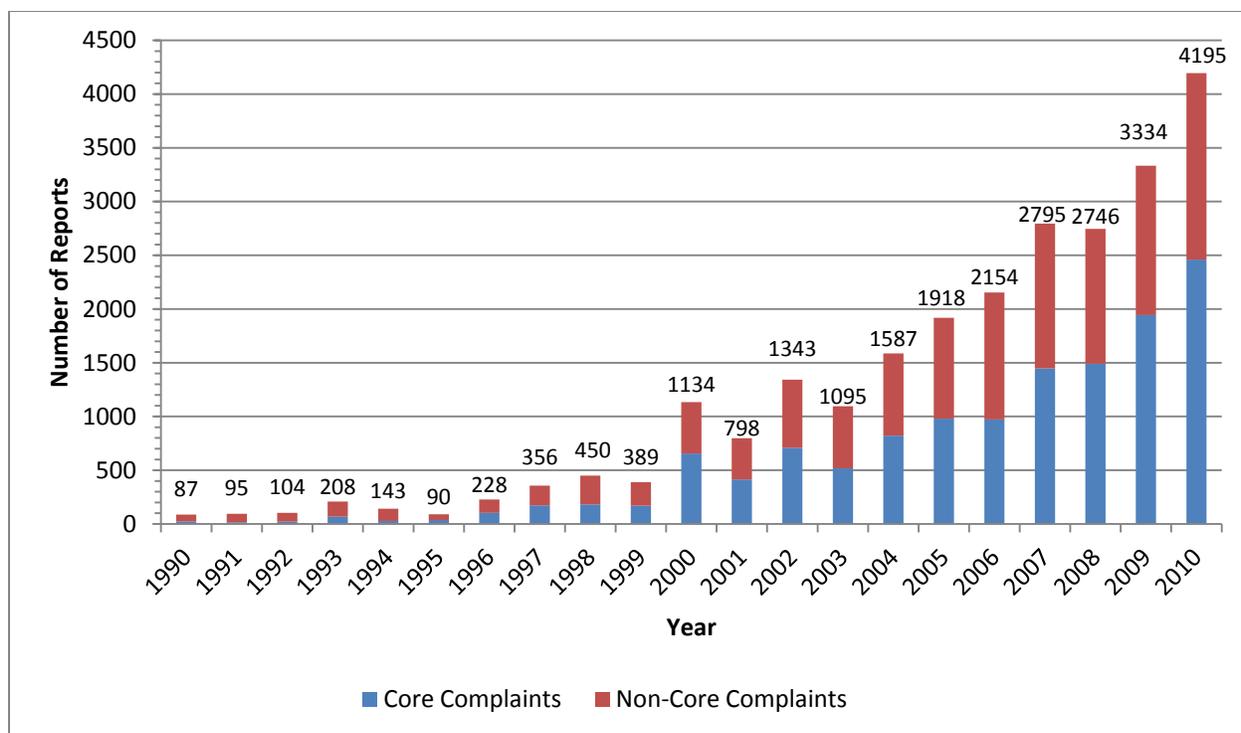
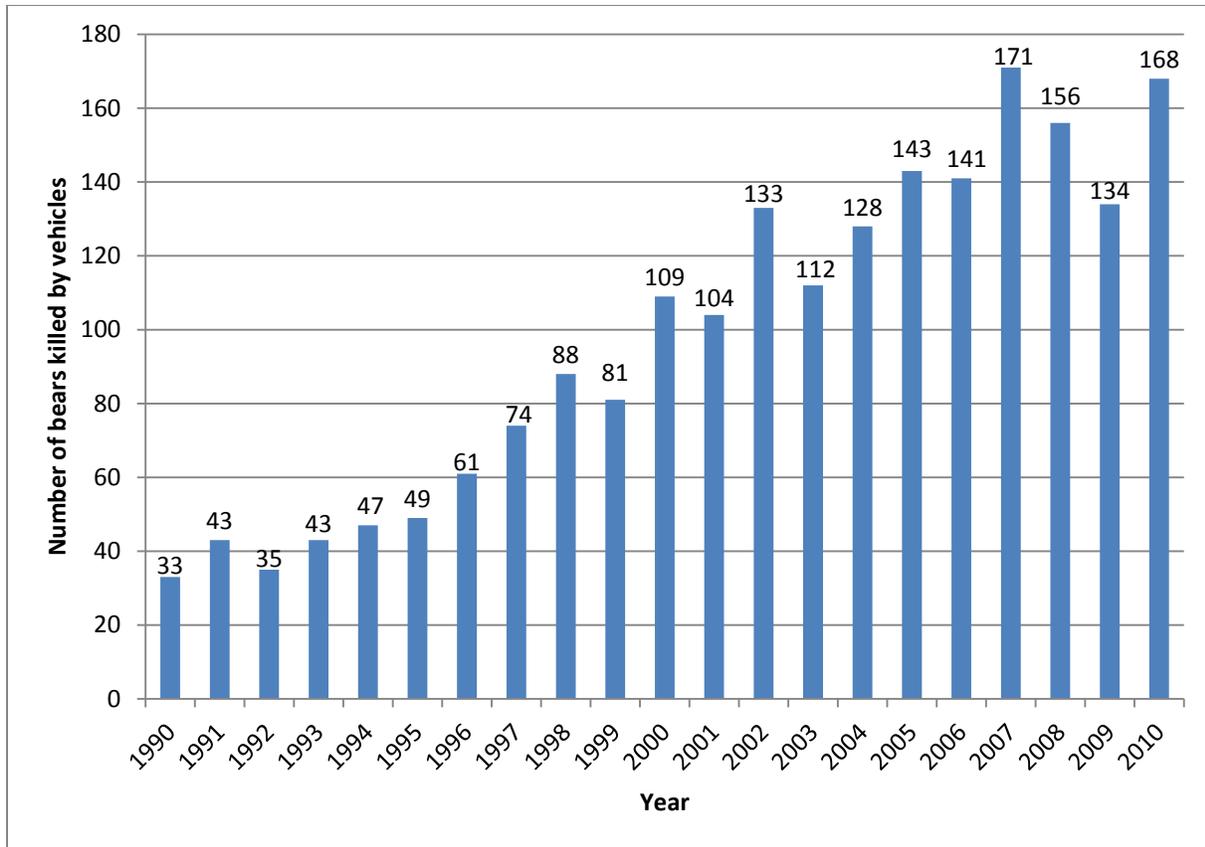


Figure 7. Number of reports relating to bears received by the Florida Fish and Wildlife Conservation Commission from 1990 to 2010 (n = 25,249; one report may include several telephone calls).

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1222 euthanasia are low, collisions with vehicles accounted for approximately 81 percent
1223 (2,057 of 2,544) of known bear mortalities from 1990 to 2010 (Figure 8). Although
1224 the incidence of vehicle-killed bears has increased significantly through time, the
1225 impacts to subpopulations are relatively low. In 2002, 126 bears were killed on the
1226 state’s roadways. Based on bear population estimates for 2002, that level of vehicle-
1227 related mortality was equivalent to an annual mortality rate of approximately 4.8
1228 percent for the statewide population, and varied from less than one percent in the
1229 Osceola subpopulation to ten percent for bears in Chassahowitzka (Brown 2004,
1230 Simek et al. 2005). Vehicle-collisions were particularly concentrated in the
1231 Ocala/St. Johns subpopulation, where approximately 44 percent (1,111 of 2,544) of
1232 the vehicle-killed bears in the state from 1990 to 2010 occurred (FWC, unpublished
1233 data, 2010). Despite this concentration, Ocala/St. Johns vehicle-related mortality
1234 equaled eight percent of overall annual mortality (Simek et al. 2005). While the



1235
1236 **Figure 8. Number of bears killed by vehicles, or euthanized due to**
1237 **vehicle injuries, documented each year from 1990 to 2010 in Florida (n =**
1238 **2,057).**
1239

1240 2002 vehicle-related mortality rate in all subpopulations was below the maximum
1241 23 percent total mortality level that most Florida black bear subpopulations can
1242 sustain without experiencing a decline (Bunnell and Tait 1980), continued increases
1243 of vehicle-related mortality can pose a major threat to fragmented and isolated
1244 subpopulations. While part of the trends in vehicle-caused mortality is attributable
1245 to increases in the volume of road traffic (Figure 9), it also is influenced by
1246 increasing trends in bear population numbers (Table 4).

1247 Habitat degradation through incompatible land management has the potential
1248 to threaten bears in Florida. Bears are adaptive generalists and therefore well
1249 suited to use a variety of habitats, even those in change. However, large wildfires
1250 may temporarily remove forest cover and food sources bears need to survive.

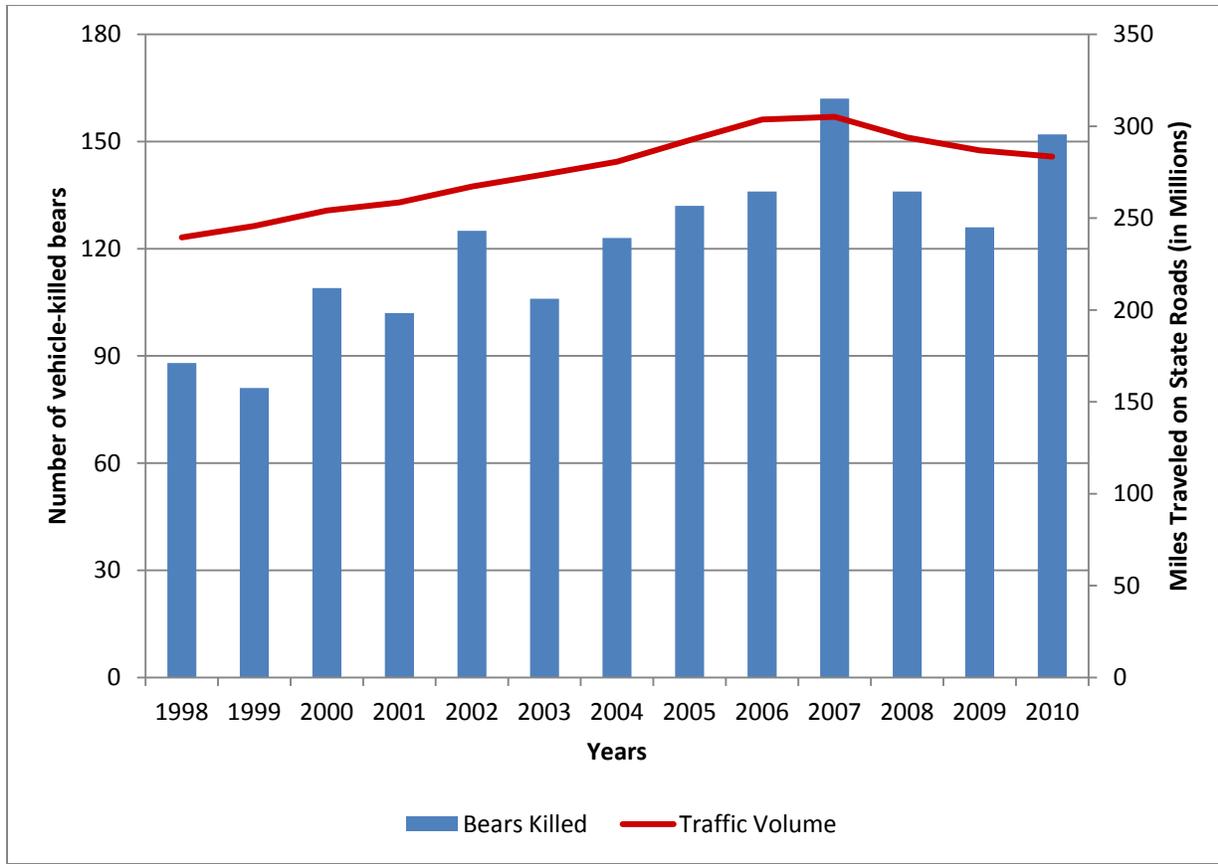


Figure 9. Number of bears killed by vehicles, or euthanized due to vehicle injuries compared to vehicle traffic on state roads (FDOT 2010) from 1998 to 2010 in Florida.

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1257 Additionally, prescribed fire at frequent intervals or performed during winter
1258 seasons may decrease food production and cover for bears at the local level (Maehr
1259 et al. 2001). These impacts must be weighed against the greater threat related to
1260 the loss of functional fire-maintained ecosystems upon which numerous other
1261 species depend. Palmetto berry harvest for commercial purposes has the potential
1262 to remove important food sources for bears (Maehr et al. 2001), particularly in poor
1263 mast years. In isolation, these issues do not pose grave threats to the statewide
1264 bear population. However, these threats can lower the biological carrying capacity
1265 for bears in an area and when occurring in conjunction with each other or with
1266 other threats, they could have interactive negative effects for individual bear
1267 subpopulations.

1268 **CHAPTER 4: CONSERVATION FOCUS AREAS**1269 **Conservation Goal**

1270 The goal of a plan is the overarching aim and is intended to be general in nature
1271 without providing specific details or timeframes. The goal of this management plan
1272 is to:

1273 *Maintain sustainable black bear populations in suitable habitats*
1274 *throughout Florida for the benefit of the species and people.*

1275 A **sustainable** statewide bear population is healthy and able to persist over the
1276 long-term without the need for frequent intensive management actions. An
1277 important element to ensure genetic health over the long-term is to have
1278 interconnections among several subpopulations that would allow them to function
1279 as one large statewide population. Subpopulations should be distributed
1280 appropriately across the state in **suitable habitats**. Suitable habitats are areas
1281 large enough to support bears and are outside of towns and other densely developed
1282 areas.

1283 FWC wants to keep bears in the areas where they now exist and work toward
1284 creating more functional landscape connections among them. It is important to
1285 note that the goal identifies management for the good of both the species and
1286 people. Therefore, FWC wants to strike the appropriate balance between what the
1287 species needs to exist in a viable state and what people need and gain from bears.

1288 **Objectives, Strategies, Actions, Research, Monitoring, and Resources**

1289 The objectives, strategies, actions, research, monitoring and resources
1290 subsections represent a consensus of FWC staff that developed this plan, with
1291 stakeholder input from TAG. There are four major objectives in this management
1292 plan: Population Conservation, Habitat Conservation, Human-Bear Conflict
1293 Management, and Education and Outreach. Each objective addresses a specific
1294 conservation focus area and is intended to be specific and measurable. The ten-year
1295 timeframe used in the objectives begins when the Commission approves this plan.

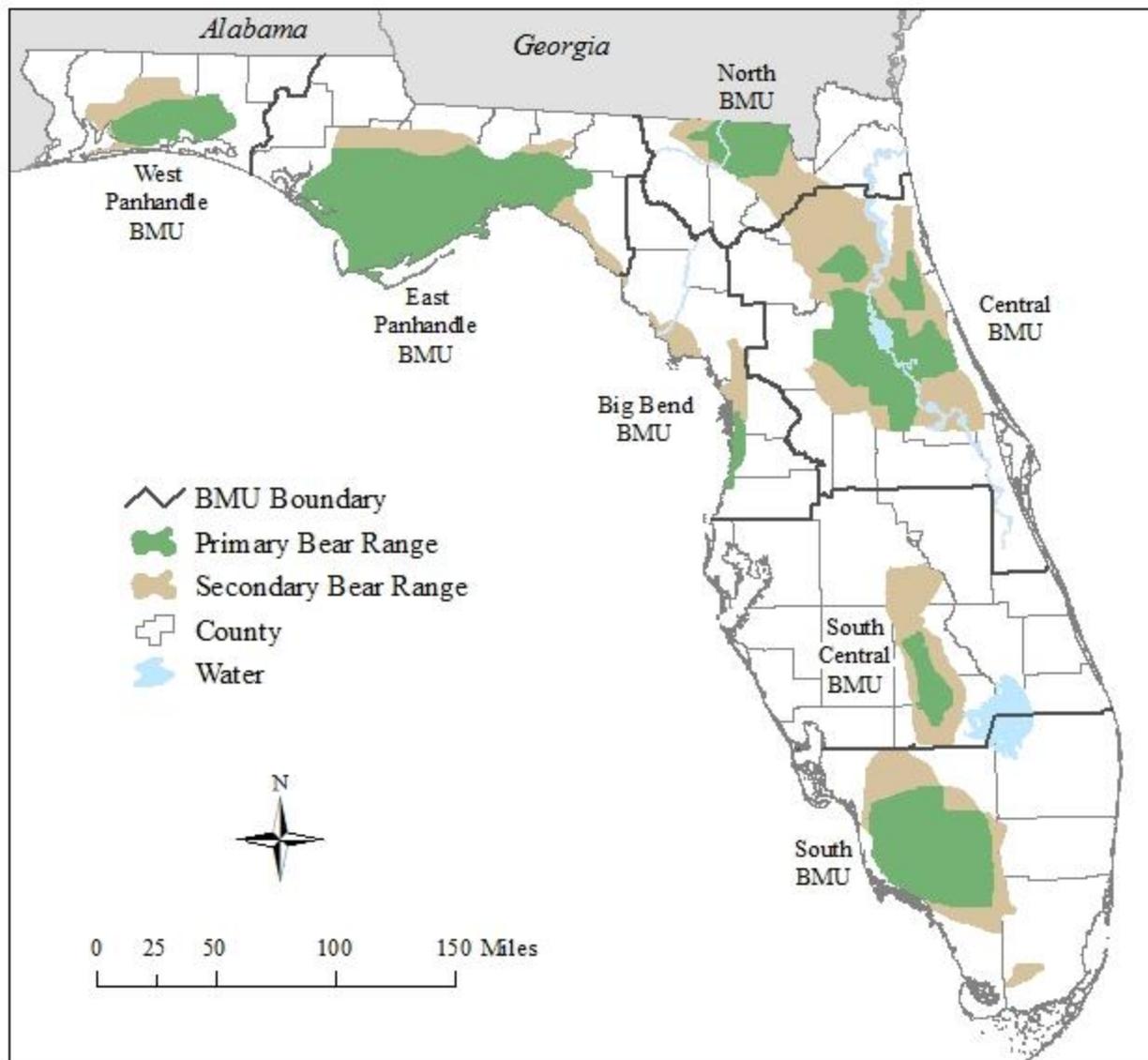
1296 Strategies are the broad categories under which similar actions are grouped. Some
1297 objectives only have one strategy, while others have several. Actions are discrete
1298 and measurable, describing specific activities that will be taken to meet the
1299 objectives of the management plan. Research and Monitoring identifies actions that
1300 will fill information gaps or maintain information important for making
1301 management decisions.

1302 FWC staff reviewed the actions within this plan and estimated which could be
1303 done with existing resources and which would need other resources. Other
1304 resources could come in the form of redirecting existing resources within FWC, or
1305 new resources that are not currently in place. While many staff and funds from
1306 across FWC participate at some level in bear management, there currently are not
1307 enough resources dedicated to bears to fully implement all of the actions in this
1308 management plan. Some of the actions identified in this plan have been occurring
1309 for many years; however, they could be enhanced with other resources.

1310 **Bear Management Units**

1311 Objectives of the Florida Black Bear Management Plan are designed to be
1312 statewide in nature; however, FWC recognizes the need to have actions that
1313 effectively address threats that can differ dramatically from one part of the state to
1314 another. In order to have a statewide plan that is flexible enough to accommodate
1315 for those differences, the state was divided into geographic areas known as **Bear**
1316 **Management Units (BMUs; Figure 10)** which are centered on bear
1317 subpopulations. The statewide plan offers a framework under which the BMUs will
1318 manage bears. Those BMUs will allow FWC to manage bears based on the specific
1319 characteristics of both the bear and human populations that are unique to different
1320 areas of the state. Three of the four objectives have sub-elements that break down
1321 the measurable objectives by BMU.

1322 As the plan progresses, currently separated subpopulations from two BMU's
1323 may begin to interact and function as one large subpopulation. In that event, FWC
1324 would likely still manage the BMU's separately because the bear subpopulation is



1325 **Figure 10. Bear Management Units and occupied bear range in Florida.**
 1326

1327 only one of several elements that vary between the BMUs. The North and Central
 1328 BMUs, for example, have an active connection where the two subpopulations are
 1329 clearly interacting with one another. However, the amount and distribution of
 1330 human development in the North BMU is dramatically different than in the Central
 1331 BMU. Human development and other differences between these two BMU's lend
 1332 themselves to different management approaches.

1333 FWC created profiles for each of the seven proposed BMUs. The profiles
1334 depict the current subpopulation estimates, population and habitat information,
1335 bear-related reports and core complaints, vehicle-related mortality, and a summary
1336 of the threats to bears in each BMU. The profiles identify potential bear habitat
1337 and the amount of that habitat within conservation lands. Potential bear habitats
1338 are areas with characteristics that make them more likely to have bears living
1339 there. As the name implies, however, potential bear habitat is not necessarily
1340 occupied by bears. The four characteristics of potential bear habitat are: 1) land
1341 cover type, 2) habitat size, 3) distance from high quality habitats, and 4)
1342 connectivity and size of large habitats across the landscape (Hoctor 2006, Endries et
1343 al. 2009; see detailed description in Appendix V). Conservation lands were
1344 identified by Florida Natural Areas Inventory as lands managed for wildlife in
1345 public ownership or private ownership in easements or similar agreements in 2009.
1346 BMU profiles can be found at the end of Chapter 4.

1347

1348 **Objective 1: Population Conservation**

1349 **Maintain a sustainable statewide population of Florida black bears by:**

- 1350 • **Maintaining a stable or increasing statewide population of Florida**
- 1351 **black bears;**
- 1352 • **Maintaining subpopulations that are estimated to be above 200**
- 1353 **individuals at or above their current levels (Table 5)**
- 1354 • **Maintaining at least one subpopulation at or above 1,000 individuals;**
- 1355 • **Increasing subpopulations that are estimated to be below 200**
- 1356 **individuals; and**
- 1357 • **Increasing genetic exchange among subpopulations.**

1358 FWC will manage for a statewide population of Florida black bears that is not at
1359 risk of extinction over the long term. Florida's Endangered and Threatened Species
1360 rule (68A-27, F.A.C.) provides a detailed set of criteria by which species are
1361 evaluated to assess if they are at a high risk of extinction and subsequently need to
1362 be designated as State Threatened or a Species of Special Concern (see Appendix
1363 II). Of the five criteria, the Florida black bear is closest to meeting two factors
1364 relating to population size and trend (Criterion C; Appendix II). While the objective
1365 is to maintain or increase the statewide bear population, the larger subpopulations
1366 may need to be managed near the levels indicated in Table 5 as there is a finite
1367 amount of suitable habitat. In suitable habitat areas, bear subpopulations will
1368 likely be managed to reach their biological carrying capacity. In human-dominated
1369 areas, however, bears may be managed below biological carrying capacity to reduce
1370 human-bear conflicts, which may be closer to social carrying capacity (see Chapter
1371 7: Social Impacts).

1372 Cox et al. (1994) and Dixon et al. (2007) determined that each subpopulation
1373 should have at least 200 mature individuals to maintain genetic health and chances
1374 for survival over the long term. Therefore, for those subpopulations currently
1375 estimated to be below 200 individuals FWC will seek to increase bear numbers in
1376 that BMU to at least 200 mature individuals among which gene flow is possible.
1377 For those subpopulations that are currently above 200, FWC will manage at or

1378 **Table 5. Abundance estimates and minimum population objectives**
 1379 **for each Bear Management Unit (BMU).**

Bear Management Unit (BMU)	Subpopulation Name	Abundance Estimate		Minimum BMU Objective ^c
		Range ^a	Mean ^b	
West Panhandle	Eglin	63–100	82	200
East Panhandle	Apalachicola	443–693	568	570
Big Bend	Chassahowitzka	12–28	20	200
North	Osceola	201–312	256	260
Central	Ocala/St. Johns	825–1,225	1,025	1,030
South Central	Glades/Highlands	150–200	175	200
South	Big Cypress	513–882	697	700
Statewide		2,207–3,440	2,823	3,160

1380 ^{a.} All subpopulations in BMUs were estimated in primary bear range by Simek et al. (2005), with
 1381 the exception of subpopulations in Big Bend and South Central BMUs. The Big Bend BMU
 1382 used two annual estimates as the population estimate range for the Chassahowitzka
 1383 subpopulation in Hernando and Citrus counties (Brown 2004). The South Central BMU
 1384 estimate for the Glades/Highlands subpopulation was based on field data from an ongoing bear
 1385 research project in this area (Wade Ulrey, University of Kentucky, personnel communication,
 1386 2010).

1387 ^{b.} Mean estimates, calculated based on Simek et al. (2005), were not available for subpopulations
 1388 in the Big Bend or South Central BMUs, so the average of low and high estimates were used.

1389 ^{c.} Minimum subpopulation levels are set at 200 or the subpopulation estimate mean (rounded to
 1390 nearest 10), whichever is larger.

1391
 1392 above the current mean subpopulation estimates (Table 5). The once-statewide
 1393 bear population has been fragmented long enough that each subpopulation is
 1394 genetically identifiable and has lowered genetic diversity (Dixon et al. 2007).
 1395 Genetic health and persistence of subpopulations are increased when individual
 1396 bears can move from one subpopulation to another. FWC is not seeking to preserve
 1397 the genetic differences among subpopulations; rather, the objective is to achieve
 1398 increased genetic diversity among all subpopulations by increasing interchange
 1399 between subpopulations so that they can function effectively as a single statewide
 1400 population (i.e., **metapopulation**). Recent genetic analysis identified bears from

1401 the Ocala/St. Johns subpopulation within the Chassahowitzka subpopulation (FWC,
1402 unpublished data, 2010). It is unclear whether the Ocala/St. Johns bears moved
1403 into Chassahowitzka on their own or were released during FWC conflict
1404 management actions. While this example could be seen as a hopeful sign that
1405 dispersing bears in some areas might be able to increase genetic diversity naturally,
1406 a substantial increase in diversity may require management actions in some areas.
1407 Encroaching development and related human infrastructure likely will continue to
1408 impact bears in Florida for the foreseeable future. Vehicle collisions with bears has
1409 become more of a concern with the expanding bear population and increased traffic
1410 volumes. Between 2005 and 2010, 152 bears on average were killed annually by
1411 vehicles statewide, ranging from 141 in 2006 to 170 in 2007. Maintaining a
1412 statewide bear mortality database provides critical data to make informed decisions
1413 regarding issues such as development, road design and human-bear encounters. In
1414 response to increasing vehicle-related mortality, FWC will continue to cooperate
1415 with the Florida Department of Transportation (DOT) to provide solutions towards
1416 stabilizing or reducing vehicle-related wildlife deaths and increasing human safety.
1417 Wildlife crossing structures have proven very effective in reducing wildlife-vehicle
1418 collisions. McCollister and van Manen (2009) found underpasses reduced vehicle-
1419 related wildlife mortalities by 58% along a recently upgraded section of US
1420 Highway 64 in North Carolina. When 2-lane State Road 84 (i.e., Alligator Alley)
1421 was converted to 4-lane Interstate 75 in South Florida, 24 underpasses and
1422 associated fencing were installed to reduce wildlife-vehicle collisions. While the
1423 underpasses were designed primarily with Florida panthers in mind, many other
1424 species, including black bears, have been using those structures to safely cross the
1425 interstate (Foster and Humphrey 1995). Florida's first wildlife underpass
1426 specifically for bear crossings was built in 1994 on State Road 46 and is reducing
1427 vehicle-related mortalities in this area. FWC and DOT have had good success in
1428 reducing vehicle collisions when fencing is used to help guide animals to cross under
1429 bridges and underpasses, as has been seen in many other areas (Forman et al.
1430 2003). FWC will continue to provide minimum standards for road projects,

1431 evaluate development projects on bear habitat, and develop effective alternative
1432 methods to reduce bear presence in areas prone to bear-vehicle strikes.

1433 If larger bear subpopulations continue to grow at their current rates, at some
1434 point they may exceed what suitable habitat can support. There are several options
1435 to stabilize subpopulations. Strategies may include translocation to areas below the
1436 minimum population objective, reduction of understory vegetation to reduce habitat
1437 quality for bears or regulated hunting. Recent translocation projects have
1438 established new subpopulations in low density areas by capturing females with cubs
1439 before they emerge from their dens (Eastridge and Clark 2001, Clark et al. 2002,
1440 Benson and Chamberlain 2007). Another potential source for females could be to
1441 use other opportunities when FWC catches females without documented human-
1442 bear conflict behavior. A female bear captured inadvertently, for example, while
1443 attempting to capture another bear involved in a conflict could be translocated to an
1444 area with low bear densities. While not as successful as moving a female with
1445 dependent cubs, some of those females could become established in new areas.
1446 Additionally, orphaned cubs that have been rehabilitated for release can be released
1447 in areas with potential bear habitat but have a low density of resident bears (Stiver
1448 et al 1997). Releasing rehabilitated cubs into areas with low resident bear
1449 populations reduces the risk of mortality caused by other adult black bears
1450 (Beecham 2006).

1451 **Research and Monitoring for Population Conservation**

1452 Survival and reproduction should be tracked periodically to assess whether
1453 subpopulations are sustainable. Management measures should be implemented to
1454 ensure the bear subpopulation levels are maintained or increased where desired
1455 (Table 6). If the BMU subpopulation is significantly below the minimum population
1456 objective (i.e., objective is outside the estimate's 95% confidence interval) actions
1457 such as habitat improvement should be considered to increase the subpopulation.
1458 Subpopulations should be monitored periodically to assess whether interchange
1459 (i.e., natural dispersal or resulting from management actions) has improved genetic

1460 diversity where needed. Such research will be more important for the smaller
1461 subpopulations. Occupied range should be updated periodically and can include
1462 both FWC-generated data as well as public input.

1463

1464

1465
1466

Table 6. Strategies and actions involving the Population Conservation Objective, with estimates of resources available to implement the action, and associated timeframes for implementation.

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Strategy 1.1: Collect data to monitor bear subpopulations.												
1.1.1	Estimate population trend and update occupied range in each subpopulation every 10 years.	Other	→	→	→	→	→	→	→	→	→	→
1.1.2	Establish bear demographic parameters such as survival, fecundity and population growth for each subpopulation.	Other	→	→	→	→	→	→	→	→	→	→
1.1.3	Develop partnerships within each BMU to assist with monitoring distribution and abundance.	Existing	→	→	→							
1.1.4	Maintain statewide database for bear vehicle collisions and other sources of mortality.	Existing	→	→	→	→	→	→	→	→	→	→
1.1.5	Assess the current and anticipated future impacts of development, roads, and habitat conditions upon bear subpopulations.	Other			→	→	→					
1.1.6	Update population viability analyses for all subpopulations using data from Actions 1.1.1 and 1.1.2.	Other							→	→	→	→

Action	Description of Action	Resources	Year										
		Can be done with Existing resources OR requires Other resources	20	21	22	23	24	25	26	27	28	29	30
1.1.7	Establish a minimum criterion for genetic diversity within individual subpopulations.	Existing											
1.1.8	Estimate degree of connectivity among all subpopulations statewide every 10 years.	Other											
Strategy 1.2: Manage bear subpopulations to maintain their numbers at or above current levels.													
1.2.1	Determine the most significant needs of the bear subpopulations estimated to have less than 200 bears.	Other											
1.2.2	Augment bear numbers in subpopulations within BMUs that have less than 200 bears using bears from high-density subpopulations as donors.	Other											
1.2.3	Use habitat modification to increase bear numbers in selected subpopulations.	Other											
1.2.4	Reduce illegal killing of bears through education, incentives, increased enforcement, or additional regulations.	Existing											
1.2.5	Explore options to slow population growth in larger subpopulations, including the use of hunting and habitat modification.	Existing											

1467 **Objective 2: Habitat Conservation**

1468 **Maintain habitat of sufficient quality, quantity, and connectivity to**
1469 **support the statewide population of Florida black bears in the**
1470 **Population Conservation Objective by:**

- 1471 • **Maintaining habitat capable of sustaining a stable or increasing**
1472 **statewide population of Florida black bears;**
- 1473 • **Maintaining habitat in at least one subpopulation capable of**
1474 **sustaining 1,000 or more individuals;**
- 1475 • **Ensuring sufficient habitat to support subpopulations above 200**
1476 **bears at current levels**
- 1477 • **Ensuring sufficient habitat to support at least 200 bears in**
1478 **subpopulations currently below 200 bears; and**
- 1479 • **Improving habitat connectivity to promote genetic exchange among**
1480 **subpopulations.**

1481 The Habitat Conservation Objective was designed to provide the habitat needed
1482 to support the Population Conservation Objective. Conservation actions are not
1483 likely to return black bears to their full historic range, but it is possible to improve
1484 the current situation. Ideally, each bear subpopulation in Florida would be large
1485 enough to be independently **viable** and interconnected by a network of habitat that
1486 would allow dispersal events often enough to maintain genetic health, thus
1487 operating similar to a metapopulation. Habitat management can affect population
1488 abundance by increasing habitat quality and occupied range or decreasing the
1489 opportunities for dispersal to other subpopulations. Habitat fragmentation in some
1490 areas will challenge conservation efforts to move beyond managing habitat only
1491 within occupied bear range to areas with the potential to link bear subpopulations.

1492 Bear habitat usually is described as large, publicly owned forestlands because
1493 most subpopulations are centered on public lands, but it is important to
1494 acknowledge that bears occupy habitat regardless of ownership. Bear habitat can
1495 be defined in a number of ways. Occupied range is defined as the areas where bears

1496 consistently occur, so by definition it is capable of sustaining bears at some scale
1497 even if the land-use types are not normally considered bear habitat. For example,
1498 bears regularly occur in residential neighborhoods in several towns near Wekiwa
1499 Springs State Park because scattered woodlots and human-provided foods offer
1500 adequate food, water, and shelter that define an area as **habitat**. Such “urban
1501 bears” cause many of the human-bear conflicts. FWC can identify areas beyond
1502 whether they are simply occupied by bears, but rather, whether the area they
1503 occupy is suitable. FWC intends to manage bears at their biological carrying
1504 capacity in suitable habitat, whereas management efforts in human-dominated
1505 areas will be influenced more by social carrying capacity that may keep bear
1506 subpopulations below their biological carrying capacity (see Chapter 7: Social
1507 Impacts).

1508 There are many private and commercial land uses that can provide suitable
1509 bear habitat, including forestry and agriculture. Managed lands can increase the
1510 amount of habitat diversity that is preferred by bears. Timber harvests can benefit
1511 bears by offering a diverse suite of food and cover associated with multiple stages of
1512 forest growth (Clark et al. 1994, Jones and Pelton 2003). Row crops such as corn
1513 and wheat are common foods in bear diets in the southeastern US (Maddrey 1995,
1514 Maehr et al. 2001, Benson and Chamberlain 2006). Large cow-calf operations that
1515 have a mix of pasture and woodlands provide important bear habitat in south
1516 central Florida (Wade Ulrey, University of Kentucky, unpublished data, 2010).
1517 Suitable habitat can include private or commercial lands with uses compatible with
1518 wildlife, private lands under some type of conservation easement, government-
1519 owned land managed for wildlife, or even undeveloped and unmanaged lands that
1520 become bear habitat by default. Bear conservation efforts likely will rely on
1521 suitable habitat in all ownership types, including land management regimes that
1522 provide suitable bear habitat but are not enrolled in official agreement or easement
1523 programs. At this time, however, we do not have an adequate measure of those
1524 lands. However, we can measure **potential bear habitat** and conserved lands
1525 (i.e., government-owned land managed for wildlife and private lands under a

1526 conservation easement) as maintained by the Florida Natural Areas Inventory
1527 (FNAI; Table 7).

1528 To identify BMUs with higher priority needs for bear habitat, Table 7 compares
1529 the area needed to sustain the minimum population objective with the estimated
1530 density of the bear subpopulation in current occupied range (Simek et al. 2005), the
1531 amount of potential bear habitat, and the amount of that habitat that exists on
1532 conserved lands (FNAI 2009). Potential bear habitat meets or exceeds the amount
1533 of habitat needed to support the minimum bear population objective in each BMU
1534 (Table 7). While the Central and South Central BMU's conserved lands exceed the
1535 total acreage necessary to support the minimum population objective, those areas
1536 may still need habitat connections to ensure long term persistence of bears in the
1537 BMU. Additionally, some areas (e.g. Big Bend BMU) have sufficient potential bear
1538 habitat on conservation lands but most of it is unoccupied by bears.

1539 Defining a BMU-specific habitat objective is complicated because it relies on
1540 estimates of occupied range and density as correlates of what bears are actually
1541 doing. Occupied range can only be measured across the state imprecisely and at a
1542 large scale, therefore the current occupied range (Figure 1) is an over-estimate
1543 because it includes towns and other land-use types that, at a small scale, are not
1544 actually occupied by bears. For this reason, occupied bear range should be
1545 considered a general, large-scale representation of the extent of occurrence of the
1546 species in Florida. The only available estimates of bear densities were calculated
1547 from high quality, protected habitat within primary bear range. However, accurate
1548 density estimates for secondary range are not possible given the fragmented nature
1549 and variability of both habitat and bear densities in this range type.

1550 The Habitat Conservation Objective of this plan seeks to conserve suitable bear
1551 habitat (i.e., areas both capable of maintaining bears and desirable from a
1552 management perspective) and promote connectivity between subpopulations.
1553 Helping bears re-colonize unoccupied habitat will support both the Population and
1554 Habitat Conservation Objectives. Whether an area is occupied by bears is often

1555 **Table 7. Area needed to the meet the minimum population objective, potential bear habitat,**
 1556 **potential bear habitat predicted to remain in the year 2020, and potential bear habitat in**
 1557 **Conservation Lands for each Bear Management Unit in Florida.**

Bear Management Unit	Area to support minimum population objective ^a (acres)	Area of Potential Bear Habitat ^b (acres)	Area of Potential Bear Habitat predicted to remain in the year 2020 ^c (acres)	Area of Potential Bear Habitat in Conservation Lands ^d (acres)
West Panhandle	1,198,461	1,887,021	1,832,956	723,051
East Panhandle	2,359,856	4,279,835	4,241,027	1,229,916
Big Bend	549,809	1,625,766	1,589,627	478,042
North	457,145	1,741,602	1,689,505	411,541
Central	1,062,553	3,531,133	3,376,929	1,310,191
South Central	580,698	2,478,299	2,412,166	883,270
South	1,322,014	1,606,476	1,563,962	1,173,756
TOTAL	7,530,537	17,150,132	16,706,172	6,209,766

1558
 1559 a. Minimum Population Objectives are listed in Table 5.
 1560 b. Potential bear habitat are areas with characteristics that make them more likely to have bears living there. As the name implies,
 1561 however, potential bear habitat is not necessarily occupied by bears. The four characteristics of potential bear habitat are: 1) land cover
 1562 type, 2) habitat size, 3) distance from high quality habitats, and 4) connectivity and size of large habitats across the landscape (see
 1563 Appendix V).
 1564 c. The area of Potential Bear Habitat was reduced in areas where it was predicted to be converted to development in the year 2020
 1565 identified in Zwick and Carr (2006).
 1566 d. Conservation Lands include publicly-owned conservation lands as well as easements and other less-than-fee private properties in
 1567 conservation identified by Florida Natural Areas Inventory as managed areas in 2009.
 1568

1569 a product of distance from currently occupied habitat and management more than
1570 ownership. Maintaining and linking bear subpopulations will require quality
1571 habitat of sufficient quantity and in the right areas. To successfully accomplish the
1572 Habitat Conservation Objectives, occupied bear habitat cannot be restricted to
1573 public lands; bears must be able to live on and traverse private lands. Potential
1574 bear habitat exists in large quantities on private lands, therefore FWC must work
1575 with private landowners to assist and encourage them to continue the management
1576 practices that are benefiting bears. FWC can provide landowners with habitat
1577 management information for creating favorable or unfavorable bear habitat,
1578 depending on the landowner's interests. In areas prone to human-bear conflicts
1579 where habitat structure and spatial positioning are exacerbating the problem, for
1580 example, habitat management techniques should be employed to minimize negative
1581 impacts. Techniques such as frequently clearing or burning a perimeter area
1582 surrounding the developed area could be employed. FWC can identify ways to make
1583 the presence of bears a benefit rather than a liability for landowners. Landowner
1584 incentive programs that can be used to establish or manage quality bear habitat,
1585 from short term cost-share agreements to perpetual conservation easements, can be
1586 conveyed through FWC's **Landowner Assistance Program (LAP)**; see Private
1587 Landowners in Education and Outreach Objective).

1588 FWC and its partners must continue to proactively engage private landowners
1589 and encourage land-use practices compatible with suitable bear habitat. Interested
1590 landowners may benefit by participation in programs that retain their desired use
1591 of the property while restricting or mitigating future development potential. FWC
1592 and its partners should use and expand on programs that assist private landowners
1593 in continuing to use their lands in ways that result in suitable bear habitat, with an
1594 eye for bringing multiple landowners together around a common purpose of habitat
1595 connectivity. Vital to the success of this objective is cooperation from private
1596 landowners, especially regarding the use of conservation agreements, easements,
1597 conservation and mitigation banks, less-than-fee simple, and fee simple acquisition.
1598 Areas under public management or conservation easements can be mapped, but it is

1599 equally important to identify how much additional privately-owned lands are
1600 currently managed under suitable habitat conditions within each BMU.

1601 Habitat that provides important resources for bears regardless of ownership
1602 needs to be mapped in each BMU. Similarly, important corridors with suitable
1603 habitat must be identified and efforts made to work with landowners for mutually
1604 beneficial land management practices. Existing bear habitat and compatible land
1605 management regimes need to be evaluated and ranked for their quality and
1606 suitability for bears. A monitoring protocol for habitat quality should be established
1607 to assist interested landowners.

1608 The bear is often identified as an umbrella species for many conservation efforts
1609 because a diverse array of wildlife and plant species benefit when protected habitat
1610 is expansive enough to allow bears to persist in an area. Maintaining a diversity of
1611 habitat types over extensive acreage is important because it provides black bears
1612 with the nutritional requirements over all seasons. An important element in this
1613 regard is identification of a regional conservation vision (Keddy 2009) and
1614 coordination with other large-scale conservation efforts. For example, habitats
1615 needed for bears overlap heavily with those needed for gopher tortoise conservation
1616 and lands identified as part of Florida's Ecological Network (see Chapter 6:
1617 Coordination with Other Efforts). This overlap of priority landscapes should lead to
1618 improved conservation and leveraging of resources. Consideration should be given
1619 to areas that presently have suitable bear habitat as well as areas that can be
1620 restored. Many areas have been conserved to increase and enhance black bear
1621 habitat. Corkscrew Regional Ecosystem Watershed located in Collier and Lee
1622 counties, for example, was acquired with the purpose of protecting habitat for
1623 wildlife, particularly bears. Areas identified through efforts by The Nature
1624 Conservancy such as Yellow River Ravines and Gulf Coast Plain Ecosystem
1625 Partnership have been marked as areas important for bears. The 600-acre Searcy
1626 Estate purchase in Apalachicola NF identified the black bear as an important
1627 species. Public lands purchased primarily for conserving black bears should be
1628 reviewed and monitored to make certain the management regimes are compatible

1629 with the needs of bears and the many other species associated with their habitat.
1630 Such a review and monitoring systems will need to be established.

1631 **Habitat Connectivity**

1632 **Landscape connectivity** is an important component of habitat conservation
1633 in bear management because bear movements are so extensive that their habitats
1634 must be evaluated and managed at the landscape scale. Noss and Cooperrider
1635 (1994) discuss connectivity as they relate to movements within home ranges (p.
1636 153), dispersal, including estimates of dimensions (p. 154), and in response to
1637 climate change (p. 156). Landscape connectivity related to bears in Florida is
1638 explained in great depth in Maehr et al. (2001, p. 29–35).

1639 Landscape connectivity that allows movement among bear subpopulations is
1640 crucial for genetic integrity and population viability. It is important to maintain
1641 existing connections, augment near connections, and establish connectivity among
1642 isolated habitats. The intended outcome is an interconnected network of bear
1643 subpopulations that form a functional metapopulation. While the range of the
1644 Florida black bear is fragmented into subpopulations that look similar to
1645 metapopulations (Maehr et al 2001, p. 40), poor connectivity among subpopulations
1646 may prevent them from truly functioning as such (Clark et al. 2006). Hoctor (2003)
1647 and Larkin et al. (2004) ran several “least cost pathway” simulations to model
1648 landscape connectivity between each subpopulation. Those simulations revealed
1649 obstacles to bear movements between distant subpopulations that help focus
1650 conservation planning. Managing lands between subpopulations to encourage
1651 natural interchange will result in a more functional statewide population (Maehr et
1652 al. 2001, p. 42).

1653 FWC’s objective is to maintain existing connections [e.g., Okefenokee NWR to
1654 Osceola NF], solidify and strengthen near connections (e.g., Ocala NF to Osceola
1655 NF), and work toward creating more distant connections (e.g., Chassahowitzka
1656 WMA to Lower Suwannee NWR). Creating these connections will be challenging,
1657 especially for the more distant ones, but as an umbrella species, efforts to improve

1658 connectivity for bears also should improve landscape connectivity for many other
1659 species.

1660 As human development continues to impact natural systems, landscape
1661 connectivity among bear populations will be important to retain genetic integrity
1662 and population viability. Landscape connections should allow for several biological
1663 processes (Clevenger and Wierzchowski 2006) including the necessities (e.g., food,
1664 mates) and movements within and among subpopulations (i.e., dispersal and
1665 genetic interchange). Factors that impact whether a connection is functional
1666 include habitat quality and distance between habitat patches. Roads are
1667 impediments to connectivity for bears at local and landscape levels; wildlife
1668 structures can decrease those barrier effects (Clevenger and Wierzchowski 2006).
1669 Development directly reduces habitat and, depending on its shape, can impede bear
1670 movements. Habitat types that are avoided by bears also affect their movements.
1671 Maehr et al. (2001) provides an excellent summary of landscape ecology in relation
1672 to bear management.

1673 Connectivity as a concept is “entirely scale and target dependent” (Crooks and
1674 Sanjayan 2006, p. 3), ranging from small scale “patch connectivity” to large scale
1675 “landscape connectivity” (Tischendorf and Fahrig 2001). Local movements to obtain
1676 food and other necessities occur daily and seasonally; moderate movements in
1677 response to dispersal events or natural disasters might occur every few years; and
1678 longer movements allowing genetic interchange between distant subpopulations
1679 might only occur occasionally, perhaps once each generation (Harris and Scheck
1680 1991). Harrison (1992) suggested one home range as the minimum width of
1681 landscape connections so the area would contain enough suitable habitat for the
1682 animal to occupy it rather than just pass through it. If this approach were applied
1683 in Florida, the minimum corridor width would equal 4.37 miles, representing the
1684 diameter of the average annual adult female Florida black bear’s home range (FWC,
1685 unpublished data, 2010). Developments often have “green spaces” that are
1686 considered corridors for wildlife. Although the term corridor has been used for all

1687 scales of connectivity, in this context the phrase equates to patch connectivity.
1688 Short, local connections between habitat patches require cover that is **traversable**
1689 by bears, but not necessarily habitat suitable for occupancy. If they are functional,
1690 those corridors are important for local bear movements that occur within a
1691 subpopulation.

1692 This plan seeks to maintain or improve the patch connectivity within
1693 subpopulations and improve the landscape connections among subpopulations.
1694 High landscape connectivity allows larger, stable subpopulations to sustain smaller
1695 subpopulations (e.g., Ocala NF connection with Wekiva River Basin). Currently,
1696 the most important landscape connections to improve for bears are for the
1697 Chassahowitzka, Glades/Highlands, and Eglin subpopulations because they are
1698 small and isolated. These landscape-sized connections are often envisioned as
1699 complete swaths of habitat, but other ways to increase long-distance movements of
1700 bears include habitat mosaics, improving the permeability of surrounding property,
1701 and to create islands of habitat that allow bears to move from one patch to another
1702 like stepping stones (Crooks and Sanjayan 2006, p. 12, Noss and Daly 2006). While
1703 the dispersal ability of male bears is high, females seldom disperse far from their
1704 natal areas; therefore, bears are slow to colonize empty habitats (Costello et al.
1705 2008). While long-distance movements have been documented in black bears
1706 (Maehr et al. 1988, Stratman et al. 2001), conservation efforts should not rely upon
1707 these rare examples for connectivity or range expansion.

1708 **Habitat Management**

1709 The use of fire by land managers to promote restoration and maintenance of fire
1710 climax communities provides well-established benefits. The frequent application of
1711 fire creates a plant community structure and **successional sere** that is beneficial
1712 to an array of wildlife. However, bears and many other species benefit from habitat
1713 patches with prolonged fire intervals. Several studies have indicated the
1714 importance of saw palmetto and oak mast for food (Maehr and Brady 1982, Land et
1715 al. 1994, Roof 1997, Stratman and Pelton 2007) and the use of dense understory

1716 including palmetto as concealing cover for natal dens (Garrison et al. 2007).
1717 However, fire can be fatal to oaks (Garren 1943) and reduce fruiting of palmettos
1718 when burned more frequently than every five years (Hilmon 1968, Carrington and
1719 Mullahey 2006). Consequently, bears in Florida use areas that have at least five
1720 years between burns more frequently than they do areas with shorter burn cycles
1721 (Stratman and Pelton 2007). Land management compatible with bear needs would
1722 include a diverse mosaic of forest communities where some forest compartments are
1723 burned less frequently than every five years. Conversely, the frequent application
1724 of fire could help reduce the abundance of bears in areas where that is a
1725 management objective.

1726 Long-term conservation of the Florida black bear will be dependent upon
1727 prudent management of large contiguous woodlands which are unlikely to be under
1728 a single ownership. With some consideration for bear habitat needs, landscape
1729 level, multi-species management regimes can be compatible with quality bear
1730 habitat. Present efforts to enhance red-cockaded woodpecker populations, for
1731 example, involve controlled burns and longleaf pine restoration; however, frequent,
1732 large-scale winter burning may reduce the diversity and abundance of foods
1733 available to bears and kill cubs in dens. A coordinated management effort will
1734 provide much needed habitat for bears, scrub-jays, snakes and other wildlife species
1735 that will require alternate habitats while burns are underway. Therefore,
1736 coordinating land-management activities that span the landscape, address the
1737 seasonal conditions, and the varying requirements of individual species is
1738 important for establishing successful habitat conservation efforts for bears and
1739 other wildlife species.

1740 Management goals and desired conditions for other wildlife species, particularly
1741 listed species, may not always result in prime bear habitat. However, many species
1742 with seemingly divergent needs can be accommodated if a variety of land
1743 management regimes are used to provide diverse forest communities at the
1744 landscape level.

1745 Research and Monitoring for Habitat Conservation

1746 Information is needed on how habitat quality, quantity, and connectivity can be
1747 measured at appropriate scales and managed to affect bear numbers in specific
1748 areas (Table 8). Research may be needed to provide land managers with habitat
1749 management practices to increase or decrease bear numbers where needed or to
1750 determine why specific areas of seemingly high quality bear habitat are not
1751 occupied. Potential quantitative and qualitative impacts of management actions
1752 (e.g., herbicides, prescribed fire, timber harvest, palmetto berry harvest) should be
1753 identified, and results offered to private landowners interested in preferred land
1754 management practices for bears.

1755 A system will need to be implemented to map suitable bear habitats, including
1756 privately owned lands that are not in agreement or easement programs but still
1757 provide for bear habitat. Conversely, conservation planning can be better focused if
1758 areas that no longer provide suitable habitat because they are isolated by large-
1759 scale human development are removed from further consideration. Development of
1760 methodologies that can assess the cumulative impacts of habitat declines will be
1761 necessary.

1762 Research should also categorize habitat characteristics that promote landscape
1763 permeability so the most important landscape connections can be identified. Where
1764 high quality, suitable bear habitat is far from occupied bear range, research may be
1765 needed to determine the feasibility and acceptance of restocking bears. Similar
1766 budget and stakeholder work would be needed to augment bears in areas where
1767 their density is very low. For conservation lands where bears are a target species,
1768 results of management actions should be monitored to ensure they benefit bears.

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Table 8. Strategies and actions involving the Habitat Conservation Objective, with estimates of resources available to implement the action, and associated timeframes for implementation.

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<p>Strategy 2.1: Determine clear criteria for categorizing habitat quality and then assess the current quality, at an appropriate scale, of occupied and unoccupied but potentially suitable bear habitat in each BMU.</p>												
2.1.1	Develop criteria to evaluate and categorize the quality of bear habitat by a combination of existing habitat models at statewide and BMU levels.	Existing	→									
2.1.2	Designate suitable bear habitat by habitat type, ownership, and land management regime within each BMU.	Existing		→							→	
2.1.3	Develop fine scale bear habitat quality measures in each BMU.	Other		→								
2.1.4	Determine the amount and distribution of suitable bear habitat within each BMU needed to meet minimum population objectives.	Existing		→								

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Strategy 2.2: Conserve or increase good quality bear habitat to meet objectives within each BMU.												
2.2.1	Work with the FWC Landowner Assistance Program to identify opportunities for landowners to help increase habitat quality to increase bear numbers and connectivity.	Other										
2.2.2	Collaborate with public and private partners to use habitat incentive programs, less-than-fee-simple conservation easements, and fee-simple acquisitions to enhance conservation of large, high-priority tracts of good quality bear habitat within each BMU.	Other										
2.2.3	Work with FWC Landowner Assistance Program biologists to develop habitat management techniques and best management practices specific to bears and voluntary, incentive-based programs to assist willing landowners in restoring or managing bear habitat to enhance long-term conservation of quality bear habitat on their lands.	Existing										

Action	Description of Action	Resources	Year																	
		Can be done with Existing resources OR requires Other resources	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030								
2.2.4	Promote use of the comprehensive conservation planning tools incorporated in the Florida Wildlife Conservation Guide to more effectively address potential impacts of development, including transportation corridors, land-use conversion, and land-management projects on bear habitat.	Existing																		
2.2.5	Rank mitigation banks by bear habitat quality to offer interested landowners options for mitigating bear habitat loss.	Other																		
Strategy 2.3: Manage bear habitat on public and private lands.																				
2.3.1	Identify practices to minimize potential negative impacts on habitat quality for bears, in quantitative and qualitative terms, from management actions (e.g., herbicides, prescribed fire, timber harvest, palmetto berry harvest).	Existing																		
2.3.2	Work with partners to develop protocols for monitoring habitat quality for bears at fine scales within each BMU.	Existing																		

Action	Description of Action	Resources	Year											
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
2.3.3	Develop a system to identify and review all public lands that have been purchased primarily to conserve bears and promote application of best management practices in bear habitat.	Existing		→									→	
2.3.4	Engage the Black Bear Assistance Groups in each BMU to assist private landowners and other organizations who are seeking assistance with comparison and selection of landowner incentive programs or other programs for enhanced conservation of high quality bear habitat on their lands.	Other	→											
<p>Strategy 2.4: Promote connectivity within and among Florida black bear subpopulations by maintaining, improving, and/or creating landscape connectivity.</p>														
2.4.1	Determine landscape connectivity characteristics (e.g., habitat type, length, width) that facilitate movement of individual bears within and among subpopulations.	Other				→								

Action	Description of Action	Resources	Year										
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
2.4.2	Identify and prioritize existing landscape connections used by bears to move within and among subpopulations; determine ownership and land management approaches for individual parcels of land that make up each connection; work with private landowners to promote land management practices that offer suitable bear habitat.	Other		→								→	
2.4.3	Evaluate landscape connections to identify full or partial barriers (e.g., roads, lack of corridors) to bear movement and determine where additional infrastructure (e.g., fencing, clear road shoulders) is needed to overcome those barriers.	Other											→
2.4.4	Evaluate the compatibility of long-term highway use and traffic projections with landscape connectivity.	Other		→									

Action	Description of Action	Resources	Year											
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
2.4.5	Coordinate with and provide minimum standards for projects to Florida departments of Environmental Protection and Transportation, Division of Community Planning, and other relevant agencies to ensure that bear habitats and landscape connections are known and considered in state and regional conservation planning.	Existing												

1772
1773

1774 **Objective 3: Human-Bear Conflict Management**

- 1775 **Reduce human-bear conflicts as measured by bear-related calls to FWC**
1776 **at or below average 2008 to 2010 levels (1,949 annual core complaints)**
1777 **and near or below the corresponding levels for each BMU (Table 9) by:**
- 1778 • **Coordinating with local government officials in bear range to**
1779 **implement methods for reducing conflicts;**
 - 1780 • **Revising FWC bear policies to create a comprehensive approach to**
1781 **human-bear conflict management;**
 - 1782 • **Creating protocols to capture institutional knowledge, standardize**
1783 **response, and improve effectiveness in conflict management; and**
 - 1784 • **Create partnerships that will help FWC resolve human-bear**
1785 **conflicts.**

1786 The intent of this objective is to achieve the delicate balance between the needs
1787 of bears and the needs of people. FWC will work with communities to promote local
1788 actions that result in meaningful solutions. Many techniques that facilitate the
1789 peaceful coexistence of humans and bears exist and promotion of these methods can
1790 help avoid or reduce human-bear conflicts.

1791 There is an overlap between the Conflict Management and Education and
1792 Outreach Objectives, because both center on human-bear interactions. The main
1793 difference is the Education and Outreach Objective approaches conflicts through
1794 education and responsible human behavior to avoid human-bear conflicts while the
1795 Conflict Management Objective focuses more on direct actions responding to bear
1796 behavior and human-bear conflicts. FWC acknowledges several actions within each
1797 objective contain aspects that will help achieve the other objective.

1798 FWC staff decided a reasonable approach to measure success in conflict
1799 management would be to examine bear-related calls to FWC. **Core complaints**, a
1800 subset of calls, were used instead of all calls because some calls are informative
1801 (e.g., sick/injured bear), some are complaints, and some can be either depending on

1802 **Table 9. Number of core complaints for each Bear Management Unit,**
 1803 **2008-2010.**

Bear Management Unit	Subpopulation Name	Number of Core Complaints			
		Year			Mean
		2008	2009	2010	
West Panhandle	Eglin	286	543	597	475
East Panhandle	Apalachicola	223	383	511	372
Big Bend	Chassahowitzka	14	18	12	15
North	Osceola	7	12	6	8
Central	Ocala/St. Johns	925	879	1239	1014
South Central	Glades/Highlands	3	15	13	10
South	Big Cypress	32	81	47	53
Statewide		1,490	1,931	2,425	1,949

1804
 1805 the caller (e.g., a bear in the area; Figure 6). Core complaints included the following
 1806 call types: In Building, In Crops, In Feed, In Feeder, In Garbage, Property Damage,
 1807 Apiary, Threatened/Attacked/Killed Animal, and Threatened Human. Core
 1808 complaint levels closely follow the same annual trends as overall levels (Figure 7).
 1809 Current levels of core complaints strain both FWC's resources as well as community
 1810 tolerance, and increases in complaints may lead to decreased ability to respond by
 1811 FWC and a devaluation of bears by citizens, which would negatively impact bear
 1812 conservation efforts.

1813 The number of bear-related reports to FWC has been increasing over the past
1814 20 years (Figure 7). Statewide, core complaints have increased 106% from 2006 to
1815 2010 (Figure 7). If this level of conflict continues in high complaint areas, there is
1816 concern it could create broad public antagonism towards bears, increase fear of
1817 bears, and promote a perception of bears as vermin. Education, waste
1818 management, technical assistance, trapping, relocation, and euthanasia will all
1819 have to be used to help mitigate complaints.

1820 Increasing human-bear conflicts are a concern in Florida as both human and
1821 bear populations increase, occupied bear range expands, and human development
1822 continues to reduce and encroach upon bear habitat. “Urban bears” are becoming
1823 more prevalent in many areas of Florida as the edge of occupied bear range moves
1824 from rural areas into suburban or even urban locations. Managing black bears in
1825 residential areas is especially complex; bears in close proximity to humans create a
1826 range of issues from perceived threats (e.g., seeing a bear on the edge of the forest)
1827 to relatively serious issues (e.g., a bear in a city center disrupting traffic).
1828 Capturing and relocating bears usually is not effective because there are few remote
1829 places in Florida where relocated bears will not come into contact with humans. It
1830 has become increasingly important to provide government officials and other
1831 decision makers with practical and effective management approaches to reduce
1832 human-bear conflicts.

1833 Eliminating food sources that attract bears is the first and most important
1834 action to resolve problems. When bears forage on garbage, pet food, and other
1835 attractants, they learn to ignore the close proximity of humans (i.e., become
1836 **habituated**) and to seek human-sources of food (i.e., **food conditioned**); such
1837 bears may become a threat to human safety. The current FWC Nuisance Black
1838 Bear Policy relies heavily on complainant’s personal responsibility for eliminating
1839 attractants and thereby reducing or eliminating bear problems.

1840 The public needs to have reasonable access to a wide variety of tools to secure
1841 their garbage and other attractants. Currently, FWC offers several options to

1842 secure attractants; however, commercially manufactured bear-resistant residential
1843 trashcans have not been widely available to Floridians. There are only two counties
1844 (Franklin and Wakulla) that offer over 100 bear-resistant trashcans to their
1845 residents. In 2010, those two counties were among 10 Florida counties responsible
1846 for 88% of all core complaints FWC received statewide (each county received over 80
1847 core complaints; Appendix I). FWC will continue to assist citizens and local
1848 governments in identifying waste management companies that can provide bear-
1849 resistant dumpsters and residential trashcans and encourage local governments to
1850 acquire those services for their residents.

1851 Many problems are resolved by individual citizens taking personal
1852 responsibility and securing their attractants; however, relying solely on voluntary
1853 actions has not been sufficient because it requires continued vigilance and nearly
1854 100% compliance across entire neighborhoods to succeed in preventing bears from
1855 lingering in neighborhoods. FWC has been working with municipalities and
1856 developers to address this issue by incorporating language that would require
1857 people to secure garbage and other attractants in their charters, homeowner
1858 association covenants, and development orders (Appendix VI). Ultimately, FWC
1859 will need to work with local governments and law enforcement agencies to draft
1860 ordinances and statutes in areas with chronic human-bear conflicts.

1861 Residents and visitors are also encouraged to try and scare bears out of their
1862 neighborhoods. FWC advises people to get in a secure location (e.g., on porch, in
1863 car), make sure the bear has a clear escape route, and then scare the bear away by
1864 yelling, honking horns, banging pots and pans, and threatening in other ways that
1865 do not involve physical contact with the bear. People can also scare bears remotely
1866 by using motion sensitive alarms and water sprinklers. Bears that approach those
1867 devices are scared away by loud noises, lights or a spray of water. Many bears can
1868 be scared away using methods FWC advocates for use by the public. Unfortunately,
1869 large dominant males and bears that have become dependent on human food can
1870 be more difficult to scare away. Enhanced methods for scaring bears that can

1871 include the use of slingshots, paintball guns, pyrotechnics, and non-lethal shotgun
1872 rounds are currently reserved for FWC staff and partnering law enforcement,
1873 military, and natural resource agencies who go through a training course and apply
1874 for a permit from FWC.

1875 Management actions will be required to reduce human-bear conflicts,
1876 particularly in and around urban settings. Bears frequenting urban areas are more
1877 likely to become habituated and pose more of a public safety risk due to the volume
1878 of encounters with humans compared to bears in rural areas. A multi-tiered
1879 response to human-bear conflicts could be employed, with the level of response
1880 partially dependent upon where conflicts would be most likely to occur. While
1881 residents living in rural areas within primary bear range will need the knowledge
1882 and willingness to take the necessary steps to coexist with bears, a lower
1883 expectation might be appropriate for urban residents.

1884 Depredation of livestock has become an increasing concern, with documented
1885 bear attacks on animals such as hogs, goats and chickens. The plan calls for an
1886 evaluation of the potential use of black bear depredation permits to address bears
1887 that repeatedly kill livestock. This permit could also be evaluated for use in other
1888 human-bear conflict situations including other types of property damage or human
1889 safety issues. While used by other states and on other species, a depredation permit
1890 system for bears would have to be fully reviewed and structured to prevent misuse
1891 and undue harm to the local subpopulation. FWC would continue to emphasize
1892 preventive measures and personal responsibility for securing attractants and likely
1893 issue permits only after all other viable deterrent methods had been exhausted.

1894 FWC field response to human-bear conflicts (i.e., site visits with residents,
1895 trapping efforts, and retrieving vehicle-killed bears) is currently conducted by either
1896 FWC biologists or private contractors with FWC's Bear Response Program (BRP).
1897 Human-bear conflict response is only one of the many job duties of FWC biologists.
1898 As the need for bear response continues to increase, FWC has relied heavily on the
1899 BRP to prevent bear responsibilities from overly interfering with other FWC staff

1900 duties and keeping response times appropriate. Quick response to human-bear
1901 conflicts is considered an important element for successful coexistence with bears by
1902 many stakeholders in Florida (McDonald 1998). The plan proposes to continue to
1903 adapt and transition field response responsibilities from general FWC staff to Bear
1904 Management Program personnel and contractors. FWC could expand the duties of
1905 BRP to allow contractors to handle more of the workload in the field, potentially
1906 decreasing response time and increasing the efficiency of complaint resolution. An
1907 additional option is to increase Bear Management Program staffing to a level where
1908 they could take on the role of coordinating human-bear conflict response and other
1909 bear management duties (see Chapter 6: Resources for Implementation). As this
1910 transition continues, it will be important to revise the current FWC Nuisance Black
1911 Bear Policy to provide a more comprehensive set of guidelines that will increase the
1912 effectiveness and standardization of FWC's response to human-bear conflicts. FWC
1913 personnel charged with implementing bear policies currently attend a bear
1914 workshop training to encourage information exchange and ensure more uniform
1915 understanding and execution. Revised policies should provide guidance to staff on
1916 standard responses to typical situations while leaving some level of flexibility with
1917 field staff. Further knowledge and experience can be gained by coordinating and
1918 sharing information among other local, state, and federal agencies experiencing
1919 similar human-bear conflicts.

1920 **Research and Monitoring for Human-Bear Conflicts**

1921 Research is needed to address the Conflict Management Objective and includes
1922 improving techniques to alter bear and human behaviors and monitoring
1923 characteristics affecting human-bear conflicts (Table 10). FWC needs to examine
1924 the effectiveness of specific hazing or aversive conditioning techniques. Outreach
1925 efforts, ordinances, and policies should be reviewed to determine which approach or
1926 combination of approaches results in the most citizen participation in reducing
1927 attractants. Monitoring local abundance of natural foods would help managers
1928 understand and anticipate fluctuations in the numbers and intensity of human-bear

1929 conflicts and tailor agency responses accordingly. Determining which natural foods
1930 and food availability cycles (i.e., bumper crop and mast failure) most affect human-
1931 bear conflicts and how best to monitor the abundance of these foods will be
1932 important. Research is also needed to determine the most effective habitat
1933 management techniques to reduce or exclude bears from areas where the severity
1934 and frequency of human-bear conflicts exceed Conflict Management Objectives.

1935

1936

1937

Table 10. Strategies and actions involving the Conflict Management Objective, with estimates of resources available to implement the action, and associated timeframes for implementation.

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Strategy 3.1: Mitigate human-bear conflicts.												
3.1.1	Work with local governments to pass ordinances that reduce human-bear conflicts, habituation and food conditioning of bears to humans.	Existing	→	→	→	→	→	→	→	→	→	→
3.1.2	Review the prohibition on feeding bears rule (F.A.C. 68A-4001[3]) to determine if changes could make the rule more effective.	Existing	→									
3.1.3	Coordinate with local, state, and federal agencies experiencing similar human-bear conflicts to exchange knowledge and resources.	Existing	→	→	→	→	→	→	→	→	→	→
3.1.4	Explore the capabilities of the Bear Response Program to handle more responsibilities, increase efficiency, and reduce FWC staff time.	Other			→	→	→	→	→	→	→	→
3.1.5	Continue use of euthanasia in human-bear conflict situations according to FWC policy.	Existing	→	→	→	→	→	→	→	→	→	→

Action	Description of Action	Resources	Year																		
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020									
3.1.6	Assess the effectiveness of different methods for securing attractants and deterring bears and promote the most effective techniques.	Other																			
3.1.7	Encourage businesses experiencing human-bear conflicts to secure their waste and other attractants.	Existing																			
3.1.8	Develop and implement land-management techniques to deter bear presence in areas prone to human-bear conflicts.	Other																			
3.1.9	Identify areas of high human-bear conflict, rank areas in order of conflict levels, and use ranked areas to help guide management actions.	Existing																			
3.1.10	Evaluate and recommend effective, safe and humane bear hazing techniques that can be used by the public to reduce the likelihood of bears becoming acclimated to people and causing a conflict or safety threat.	Other																			

Action	Description of Action	Resources	Year																		
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020									
3.1.11	Provide training, materials, and a permit system to partner agency staff, the Bear Response Program contractors, and FWC staff to better understand bear behavior, and to use hazing or other methods to discourage bears from interacting with people.	Existing																			
3.1.12	Develop bear-response zones in areas heavily populated by people where levels of human-bear conflicts are high and bear habitat availability is low. Implement a multi-tiered response to handling human-bear conflicts dependent on the location of the complaint.	Existing																			
3.1.13	Explore options regarding use of depredation permits to address human-bear conflicts.	Existing																			
3.1.14	Continue to seek grants and partner with not-for-profit organizations, local governments, and waste service providers to increase availability of bear resistant cans and technical assistance.	Existing																			
3.1.15	Update FWC Nuisance Bear Policy and guidance documents to create a comprehensive approach to managing human-bear conflicts.	Existing																			

Action	Description of Action	Resources	Year										
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
3.1.16	Revise the Bear Incident Response Plan to include descriptions of bear behaviors and the estimated risk levels to human safety that may be associated with each behavior.	Existing	→										
3.1.17	Develop practical solutions for public recreation areas in primary bear range that are experiencing human-bear conflicts.	Existing	→	→	→	→	→	→	→	→	→	→	→
3.1.18	Work with Black Bear Assistance Groups in each BMU to solicit local stakeholder input and cooperation in reducing human-bear conflicts.	Other	→	→	→	→	→	→	→	→	→	→	→

1938

1939 **Objective 4: Education and Outreach**

1940 **Increase public understanding of bears, support for bear conservation,**
1941 **and a willingness to coexist with bears by:**

- 1942 • **Engaging, educating and informing residents, visitors and**
1943 **businesses through ongoing education, information and outreach**
1944 **programs;**
- 1945 • **Maintaining existing, and developing new partnerships with federal,**
1946 **state, county and local governments, non-governmental**
1947 **organizations and other stakeholders to meet the objectives of this**
1948 **plan;**
- 1949 • **Assisting communities in areas of high bear activity to become Bear**
1950 **Smart Communities; and**
- 1951 • **Achieving compliance from at least 75% of the people who receive**
1952 **FWC advice on human-bear conflict resolution.**

1953
1954 It is vital that the people of the state of Florida, including residents, visitors,
1955 stakeholders and governmental entities, understand, support, and, where
1956 applicable, integrate components of this plan into their daily lives, programs and
1957 management practices. The Education and Outreach Objective develops and
1958 delivers the tools and messages necessary to accomplish this challenging task. The
1959 objective integrates the communication components necessary to support bear
1960 conservation measures addressed in the Population Conservation and Habitat
1961 Conservation Objectives, and conflict resolution in the Conflict Management
1962 Objective. Achieving all of those objectives requires a strong, unified, and effective
1963 education and outreach effort. Success on the Education and Outreach Objective
1964 will be measured in part by monitoring the amount of people who follow FWC's
1965 advice on human-bear conflict resolution. FWC receives thousands of bear-related
1966 calls each year (Figure 7). The Bear Management Program surveys a sample of
1967 callers to find out how FWC's advice is received and the results of that advice.
1968 Currently, more than 75% of callers surveyed follow FWC advice, and of those

1969 callers, 70% report that their bear conflicts were resolved (FWC, unpublished data,
1970 2011). Therefore, FWC will strive to maintain or increase the current level of
1971 compliance among callers to FWC.

1972 **Support for Black Bear Population and Habitat Conservation**

1973 Over the last decade, there has been an increase in public awareness that
1974 black bears exist in Florida, from 67% in 1993 (Duda and Young 1993) to 93% in
1975 2008 (Miller et al. 2008). While those surveys differed in methods and
1976 demographics, it is practical to assume that there has been a notable increase in
1977 awareness of bears in Florida. Strong, effective education programs foster support
1978 for black bear conservation. FWC has found that Floridians in general value black
1979 bears and want to conserve them (McDonald 1998, Miller et al. 2008; Table 11).
1980 Maintaining this broad-based support of conservation will be crucial to any bear
1981 population or habitat management efforts to be successful.

1982 Fortunately, most Floridians agree wildlife education is important (91%) and
1983 find learning about wildlife enjoyable (89%; Miller et al. 2008). FWC will build on
1984 those values by continuing to design outreach efforts that address the differing
1985 beliefs and needs of rural, suburban and urban communities regarding bears and
1986 bear conservation. While there is clearly support in Florida for bear conservation
1987 (McDonald 1998, Miller et al. 2008), it cannot be assumed that target audiences will
1988 always understand, value, or instantly accept FWC's message or advice.
1989 Education and outreach must be continuous, sustained and systemic to achieve
1990 desired outcomes.

1991 Proposed projects in this plan target many age levels, backgrounds and
1992 outcomes. Research indicates that children who participate in conservation
1993 education programs before the age of 12 are more likely to become environmentally
1994 responsible adults (Kellert and Westervelt 1983, Jaus 1984, Iozzi 1989). It is
1995 important that education and outreach efforts include youth as well as the current
1996 adult population.

1997

1998 **Table 11. Percentage of Floridians who had some level of agreement**
 1999 **(Agree or Strongly Agree) with selected statements regarding Florida**
 2000 **black bears (from Miller et al. 2008).**

Agree	Selected Statement
93%	Florida black bears should be protected so future generations will see them.
92%	It is important to know black bears exist in Florida, even if I never see one.
86%	Black bears are an important part of our ecosystem.
84%	I think seeing a black bear increases my appreciation of nature.
84%	Black bears are part of our heritage in Florida.
74%	I enjoy seeing black bears in Florida.
64%	People should learn to live with black bears near their homes.

2001
2002

2003 Decades of research have clearly shown that in order to promote ecological
 2004 literacy and conservation-oriented behavior, educational programs should focus on
 2005 five major outcomes: awareness, knowledge, attitudes, problem solving and decision
 2006 making skills, and opportunities for individual and group action (UNESCO 1997,
 2007 NAAEE 1998). In addition, short-term awareness level messages do not always
 2008 result in long-term sustained changes in environmental behavior. While awareness
 2009 level messages can promote simple changes in behavior, significant lifestyle
 2010 changes only occur when individuals are exposed to programs specifically designed
 2011 to result in additional outcomes such as knowledge and attitudes (NEETF 2001).
 2012 This plan attempts to address all five outcomes.

2013 Education and outreach efforts designed to promote a basic understanding of
 2014 the biology and ecological role of bears as well as appropriate actions are powerful
 2015 tools for bear conservation. These actions are based on receptive, willing learners
 2016 and voluntary participation. However, support for bear conservation is a
 2017 combination of sound management, education, and at times, regulation with
 2018 enforcement that gives the greatest chance of success (Peine 2001). If the plan is to
 2019 be effective, all available management tools must be used.

2020 Human-Bear Conflict

2021 Managing black bears becomes increasingly challenging as both human and
2022 bear populations increase, and human development expands and encroaches on
2023 bear habitat. Bears and humans share much of the same space in Florida and the
2024 two must be able to live with minimal conflict. Unfortunately, resolving conflicts is
2025 much more complicated than simply managing the bears and their habitat.

2026 Managing human impact involves understanding target audiences, fostering
2027 positive attitudes, and building knowledge and skills that ideally result in practices
2028 that will minimize conflict.

2029 It is vital that people understand how their behavior can significantly influence
2030 bear behavior, and what can be done to minimize conflict. One objective of outreach
2031 and education outlined in this plan is to reduce the negative interactions between
2032 humans and bears. In order to be successful, the actions associated with this
2033 objective prescribe continuously and effectively engaging specific stakeholder
2034 groups, particularly those that are affected by black bears.

2035 Education and outreach actions focus on: 1) attaining public support and
2036 acceptance of bear densities and distributions needed to achieve conservation
2037 objectives, 2) minimizing human-bear conflicts, 3) working with citizen groups to
2038 develop locally relevant education and outreach methods, 4) building partnerships,
2039 and 5) educating youth. Assessing these actions is essential to improving and
2040 refining future education and outreach efforts. Where feasible, an assessment tool
2041 will be developed and implemented.

2042 The ultimate goal of FWC's education and outreach efforts is a bear-literate,
2043 supportive citizenry that voluntarily participates in practices that benefit both
2044 people and bears. Different outreach strategies and actions are necessary for
2045 different groups, therefore the education and outreach efforts have been separated
2046 into four major audiences: 1) Communities, 2) Private Landowners, 3)
2047 Governmental, Nongovernmental and Business Organizations, and 4) FWC Staff.

2048 **Communities**

2049 One of the most effective ways to reduce human-bear conflicts is to engage
2050 citizens in community-wide efforts like the **Bear Smart Community (BSC)**
2051 program. The mission of this program is to influence and guide communities to
2052 accept personal and communal responsibility for reducing human-bear conflicts. A
2053 BSC is a specific and defined geographical area where the residents, local
2054 government, businesses, and schools engage in behaviors that will resolve their
2055 human-bear conflicts.

2056 Becoming a BSC is a rigorous process and takes substantial time and effort.
2057 BSCs include an educational component, provisions for bear-resistant solid waste
2058 handling and containers, appropriate governance (e.g., ordinances, covenants,
2059 bylaws; see sample in Appendix VI), and assessment measures to determine success
2060 (Davis et al. 2002). A detailed explanation of the BSC program, case studies, and
2061 strategies on how to engage communities can be found in Appendix VII.

2062 U.S. Air Force Hurlburt Field in Okaloosa County, FL incorporated many
2063 aspects of a Bear Smart Community, resulting in a dramatic reduction in their
2064 human-bear conflicts. Hurlburt Field replaced all of their trashcans and dumpsters
2065 with bear-resistant models and instructed all base personnel in their proper use.
2066 FWC conducted multiple bear response trainings with military security personnel
2067 to assist them with understanding bear behavior and how to respond appropriately
2068 to human-bear conflicts. Hurlburt Field's Natural Resources personnel had an
2069 active education program where they engaged multiple times a year with everyone
2070 who lived or worked on base about how to live in bear country. Hurlburt Field's
2071 combined efforts resulted in a 70% reduction in human-bear conflicts from 2009 to
2072 2011.

2073 Volunteers who are trained, interested and enthusiastic are an invaluable
2074 resource in education and outreach efforts. Establishing an FWC-supported
2075 volunteer program where trained, local residents act as volunteer liaisons between
2076 FWC and their neighbors could assist in reducing human-bear conflict and the
2077 resulting bear complaints. Volunteer liaisons could provide information to fellow

2078 residents about seasonal increases or decreases in bear activity, make literature
2079 available to new residents regarding preventable bear problems, and be a point of
2080 contact to suggest common strategies for problem resolutions. This community-
2081 based approach can be successful because it promotes ownership, and residents may
2082 be more likely to follow advice from a neighbor than from a government official.

2083 FWC has an effective educational tool to reach elementary school students.
2084 Originally published in 1999, the *Florida Black Bear Curriculum Guide* (Guide) has
2085 recently been updated with 2010 data and two additional lessons that focus on
2086 avoiding human-bear conflicts. In addition, each lesson in the Guide now refers
2087 teachers to specific video segments of the recently produced DVD “Living with
2088 Florida Black Bears.” The updated Guide was tested in the classroom, and is
2089 anticipated to be released for teachers in 2012. FWC will market the updated
2090 Guide to educators and their third to eighth grade students within the areas of high
2091 human-bear interaction. Educators will receive the Guide and supporting materials
2092 including the “Bears and You” activity book and “Living with Florida Black Bears”
2093 DVD. **Project WILD** and other staff will hold workshops for interested teachers so
2094 they can experience implementing the Guide activities before bringing them into
2095 the classroom.

2096 **Private Landowners**

2097 Private landowners are essential to bear conservation by providing habitat for
2098 bears while meeting their own land use objectives. Numerous government and
2099 private conservation programs offer landowners assistance to enhance wildlife
2100 habitat. However, the many programs, different easement types, cost-share plans,
2101 and lengthy decision-making processes may dissuade landowner involvement.
2102 Interested landowners may be unfamiliar with programs and selecting the most
2103 appropriate program for their needs could be overwhelming. Interested stakeholder
2104 groups can partner with FWC’s LAP to provide landowners with a summary of the
2105 different assistance programs offered by State and Federal agencies as well as
2106 private organizations. LAP can help private landowners navigate through the

2107 numerous programs that award preference to parcels if they either have or
2108 potentially could have certain types of wildlife habitat. This process could help
2109 elevate parcels that contain bear habitat above those without bear habitat. This
2110 summary should identify programs that best suit landowners' needs and
2111 qualifications, assist in finalizing conservation agreements, and act as a liaison
2112 between the landowner and LAP.

2113 Habitat management practices for bears are often similar to those practices that
2114 benefit deer, turkey, and other forest species. One difference, however, is bears do
2115 not need large areas of open habitat. Bears require extremely dense habitat at
2116 ground level for dens and diverse types and ages of habitats for foraging. Specific
2117 practices can be recommended to those who want to manage habitat for bears.
2118 Habitat management practices specific to bear denning or foraging habitat can be
2119 added to LAP, and those could then be added to the land-use planning and habitat
2120 management plans created for landowners participating in incentive programs.
2121 FWC will use a **GIS** (Geographic Information Systems) computer model to
2122 numerically rank properties, which includes land cover imagery, current listed
2123 species habitats, wildlife occurrence data, and potential listed species habitat
2124 models. Because bears are an umbrella species, FWC could recommend that lands
2125 supporting bears should receive a higher score and be distinguished from other
2126 species when ranking a property. The U. S. Department of Agriculture's Natural
2127 Resources Conservation Service provides several incentive programs to restore or
2128 improve wildlife habitat, including the Wildlife Habitat Incentives Program
2129 (WHIP), Wetland Reserve Program (WRP), Environmental Quality Incentives
2130 Program (EQIP), Healthy Forests Reserve Program (HFRP), and Conservation
2131 Reserve Program (CRP). The U.S. Department of Agriculture's Farm Service
2132 Agency offers the Debt for Nature Program (DNP), which allows forgiveness of farm
2133 debt in exchange for putting lands into conservation. In addition, U.S. Fish and
2134 Wildlife Service offers the Partners for Fish and Wildlife Program (Partners) and
2135 the Internal Revenue Service offers a Federal Reforestation Tax Credit and
2136 Amortization program. At the state level, the Florida Forest Service offers the

2137 Forest Stewardship Program (FSP), which helps private landowners create a
2138 management plan for their forests by drawing on a team of natural resource
2139 professionals. FWC offers the Landowner Incentive Program (LIP), which
2140 distributes funds to private landowners whose properties have the greatest
2141 potential benefits for rare species. In addition to government programs, some
2142 private conservation organizations work with landowners to develop conservation
2143 easements or other financial or technical assistance to restore or enhance wildlife
2144 habitat on their property. **Carbon banking** could create important economic
2145 opportunities for private landowners as well as opportunities to create and restore
2146 black bear habitat.

2147 Another option for Florida landowners is the property tax break that became
2148 available after January 2010 (HB 7157 2009) for privately-owned conservation
2149 lands. The amendment provides property tax relief to landowners managing for
2150 conservation in certain situations. Landowners with a permanent conservation
2151 easement and meeting other requirements (e.g. not gaining income from
2152 conservation activities) could have reduced, or be exempt from, property taxes.
2153 Also, those landowners choosing to manage for conservation through pre-approved
2154 activities could receive a conservation assessment from their property appraiser,
2155 thus being eligible for a partial tax exemption.

2156 **Governmental, Nongovernmental, and Business Organizations**

2157 While FWC is the State agency constitutionally responsible for managing and
2158 protecting fish and wildlife resources, they must engage both public and private
2159 partners in order to be successful. Local and State government agencies play
2160 pivotal roles in land-use planning, acquisitions and easements, waste management
2161 and conflict resolution. Private businesses need to be part of any discussion of
2162 large-scale conservation efforts, and organizations such as non-profit groups have
2163 the ability to gauge their supporters' opinions on different management options and
2164 elicit their support for action.

2165 It will be important to engage local interest in bear management and solicit
2166 stakeholder input on FWC actions in BMUs. FWC proposes to create a **Black Bear**
2167 **Assistance Group (BBAG)** in each BMU that would be composed of
2168 representatives from local stakeholder groups. Each BBAG will consist of a variety
2169 of stakeholders which could include representatives from local, State, and/or
2170 Federal government agencies, non-governmental organizations, and concerned
2171 citizens. Since the issues within each BMU vary due to differences in bear
2172 abundance, human populations, available habitat and social attitudes, the
2173 composition of each BBAG will likely vary by BMU.

2174 BBAGs would facilitate community input and involvement in bear management
2175 decisions, resulting in more acceptance, compliance, and support of bear
2176 management activities. BBAGs could engage the community in local bear
2177 management and conservation efforts through regularly-scheduled meetings,
2178 coordinating presentations on black bear behavior and conflict avoidance, and
2179 introducing the *Florida Black Bear Curriculum Guide* to local schools. BBAGs
2180 would possess a wealth of local knowledge and, along with other public input, could
2181 assist FWC's efforts to monitor occupied bear range in the state. BBAGs could also
2182 assist FWC in improving and retaining habitat at the local level by promoting
2183 conservation agreements, easements, and other options for interested private
2184 landowners. Through the BBAGs, local communities would provide their input into
2185 FWC's decision-making process regarding land management, education and
2186 outreach, best waste management practices, and human tolerance to bears (i.e.,
2187 social carrying capacity), but the final decisions would rest with FWC.

2188 In areas of growing human and/or bear populations, local and county law
2189 enforcement, parks and environmental staff, and animal control providers are
2190 increasingly involved in human-bear conflicts. In order to respond effectively to
2191 those situations, it is imperative that local government staff are aware of pertinent
2192 FWC regulations, bear management policies, and FWC resources available to them.
2193 To address this need, FWC's Bear Management Program offers Bear Response
2194 Training to local government partners. From 2007 to 2010, FWC held 20 trainings

2195 around the state for 171 individuals from local government agencies. This
2196 successful program will be updated and expanded to create a new resource manual
2197 and training DVD for government agencies, and make these resources available in
2198 an online version for portions of the program.

2199 **FWC Staff**

2200 FWC's Community Relations Office (CRO) is the agency's communications
2201 branch and is instrumental in developing protocols and standards for consistent
2202 messaging, delivering those messages, and providing products and services for the
2203 agency's divisions in support of their programs. In order to ensure quality and
2204 consistency, this plan calls for actions requiring education and outreach products,
2205 including DVD, photographic, and electronic and print literature, to be coordinated
2206 through the CRO. Coordination and collaboration with CRO will be employed
2207 whenever possible to draw on their expertise to enhance outreach efforts.

2208 FWC staff from many different disciplines within the agency is often involved
2209 with bear issues. It is essential that staff responsible for communicating
2210 information about bears or performing bear management duties understand and
2211 speak uniformly about statewide bear management policies, protocols, and
2212 procedures. To facilitate internal communication, information updates and training
2213 will continue to be provided to a wide range of employees including, but not limited
2214 to, customer service personnel, public information coordinators, law enforcement
2215 officers, biologists, managers and others where appropriate.

2216 From 2007 to 2010, the Bear Management Program trained 356 FWC
2217 employees, including law enforcement, biological and public information employees,
2218 through 23 Bear Response Trainings. A modified version of the training is now
2219 offered to all FWC Division of Law Enforcement cadets as part of their regular
2220 courses at the Florida Public Safety Academy. FWC Bear Management and
2221 Research Program biologists developed the *Bear Management Handbook*
2222 (Handbook) to capture the wealth of institutional knowledge and experiences
2223 regarding bear management practices in Florida. The Handbook will help the

2224 agency be more effective and consistent in implementing bear management
2225 activities and messaging by serving as a living reference guide for biologists who
2226 perform bear management activities. The Handbook is designed to be revised as
2227 new ideas and issues arise. Updates to the Handbook are facilitated through
2228 annual workshops that bring together FWC staff directly involved in bear
2229 management across the state. Once the majority of FWC staff involved in bear
2230 management activities have participated in workshops (expected in 2012), the
2231 Handbook will be distributed to the regions for use as a reference manual for new
2232 regional staff.

2233 **Research and Monitoring for Education and Outreach**

2234 It is important to measure people's behavioral changes in response to education
2235 and outreach efforts. FWC will attempt to monitor the effects of their education
2236 and outreach efforts on people's behavior (Table 12). FWC is interested in how both
2237 traditional and more recent approaches to reaching people about bears. For
2238 example, FWC has recently engaged in social media with its own YouTube channel.
2239 FWC's YouTube channel currently features nine bear-related video clips that have
2240 generated over 36,000 views as of December 31, 2011. FWC would like to know
2241 what effect those videos have on people's behavior in bear country.

2242 The Bear Management Program surveys a sample of people who call FWC about
2243 bears to find out how FWC's advice is received and the results of that advice. FWC
2244 will continue surveying callers, and will adapt outreach approaches based on
2245 information gained from the surveys. For example, survey respondents indicated
2246 they were wary of using electric fencing, one of the most effective deterrents for
2247 bears. In response, the Bear Management Program developed a video segment
2248 "How to Use Electric Fencing to Secure Your Outdoor Attractants" in order to walk
2249 people through the process and put them more at ease. The video was posted on
2250 FWC's YouTube website and has received over 10,000 views from October 20, 2010
2251 to December 31, 2011. The survey results can be used to examine whether FWC's
2252 recent efforts have resulted in increased use of electric fencing among the public.

2253 Additional research will focus on identifying specific factors that influence
2254 behavior and public perceptions and attitudes towards bears and bear conservation.
2255 FWC and its partners can tailor programs and messages to address specific
2256 informational gaps and build support for bear conservation and management.
2257 Although it is expected that this will be an ongoing effort, it will focus each year on
2258 specific communities with acute human-bear conflicts. Repeating those surveys
2259 following management actions will allow FWC and its partners to monitor changes
2260 in public awareness of bears and bear issues. The surveys also will help FWC
2261 assess existing programs and focus efforts on areas of greatest need.
2262

2263
2264

Table 12. Strategies and actions involving the Education and Outreach Objective with estimates of resources available to implement the action, and associated timeframes for implementation.

Action	Description of Action	Resources	Year										
		Can be done with Existing resources OR requires Other resources	20	21	22	23	24	25	26	27	28	29	30
Strategy 4.1: Education and Outreach for Citizens													
4.1.1	Attend and/or organize local stakeholder group meetings to assess opportunities for change in local behaviors, policies, rules and ordinances that could support bear management goals.	Existing											
4.1.2	Maintain and regularly update the FWC’s black bear website and social media outlets.	Existing											
4.1.3	Identify key communication message(s) and target audiences. Develop and implement an educational campaign using a variety of electronic and print media outlets to prepare residents and visitors for likely encounters with bears.	Existing											

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.1.4	Continue as an active partner in the Florida Black Bear Festival in Umatilla and the Forgotten Coast Black Bear Festival in Carrabelle, and look for additional opportunities to establish new bear festivals in other locations. Explore methods to evaluate festival impact on education and outreach objectives.	Existing	—————→									
4.1.5	Seek out and participate in existing festivals and other outreach events	Existing	—————→									
4.1.6	Continue to work with FWC Community Relation Office to develop and implement informational news releases as appropriate to promote bear conservation and conflict management activities.	Existing	—————→									
4.1.7	Work with Black Bear Assistance Groups to identify site-specific outreach needs and the most effective methods to address them.	Other	→			→					→	
4.1.8	Implement Bear Smart Communities program in high human-bear conflict areas.	Other			—————→							

Action	Description of Action	Resources	Year									
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4.1.9	Develop and implement community-based Bear Smart education and outreach materials and activities that target residents, landowners and businesses with information and resources that result in an increased use of Bear Smart practices.	Other	—————→									
4.1.10	Create an action checklist for Bear Smart activities that can be used by existing communities to attain Bear Smart status.	Existing	→									
4.1.11	Provide template language for Bear Smart practices that municipalities and residential developers can incorporate into local charters, statutes, or ordinances.	Existing	→									
4.1.12	Create and implement a branded Bear Smart educational campaign to support Bear Smart Communities.	Other	→									
4.1.13	Explore partnership with the University of Florida’s Institute of Food and Agricultural Sciences county extension agents to provide assistance in developing and delivering educational materials and programs.	Existing	→									

Action	Description of Action	Resources	Year												
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021			
4.1.14	Coordinate with FWC’s Wildlife Friendly Designation initiative. Include a requirement to become a Bear Smart Community when developments are located in bear range.	Existing	→												
4.1.15	Expand use of the <i>Florida Black Bear Curriculum Guide</i> and continue to train educators in target areas to incorporate it into their lesson planning.	Existing	→	→	→	→	→	→	→	→	→	→	→	→	→
4.1.16	Work with interested schools in areas of high human-bear conflict to implement a bear education family science night.	Existing	→	→	→	→	→	→	→	→	→	→	→	→	→
4.1.17	Provide bear-oriented materials for students, parents, and teachers to build knowledge, use of Bear Smart practices and increase appreciation for bears.	Existing	→	→	→	→	→	→	→	→	→	→	→	→	→

Action	Description of Action	Resources	Year																	
		Can be done with Existing resources OR requires Other resources	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021								
4.1.18	Coordinate with FWC’s Landowner Assistance Program biologists to educate private landowners about bears, habitat management techniques, voluntary best management practices for bears, incentive programs, easements, and fee simple acquisition to enhance long-term conservation of quality bear habitat on their lands. (see Action 2.2.3)	Existing																		
4.1.19	Advertise the penalties for feeding bears and promote the Wildlife Alert Hotline phone number and reward program.	Other																		
4.1.20	Actively engage with external partners located in areas of high bear activity to identify and resolve issues that prevent implementation of initiatives to reduce human-bear conflict.	Existing																		
4.1.21	Continue existing bear internship program to conduct outreach activities and other bear management projects.	Existing																		

Action	Description of Action	Resources	Year																	
		Can be done with Existing resources OR requires Other resources	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020								
4.1.22	Continue to survey individuals and agencies/organizations who call FWC with human-bear conflict complaints to measure satisfaction with technical advice and assess compliance with FWC’s technical assistance.	Existing	1	1	1	1	1	1	1	1	2	2								
Strategy 4.2: Education and Outreach for Governmental, Nongovernmental, and Business Organizations																				
4.2.1	Work with Black Bear Assistance Groups in each BMU to assist with bear education outreach.	Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.2.2	Develop community bear conservation programs that are supported and funded by local sources.	Other																		
4.2.3	Regularly update state and local elected officials and law enforcement leadership in bear range on bear research, management, and public education efforts in their area.	Existing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.2.4	Develop and distribute an information resource packet to public information sections of appropriate local, state, and federal agencies.	Existing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4.2.5	Develop DVD and online version of Bear Response Training for external agencies.	Other																		

Action	Description of Action	Resources	Year										
		Can be done with Existing resources OR requires Other resources	20	21	22	23	24	25	26	27	28	29	30
Strategy 4.3: Education and Outreach for FWC Staff													
4.3.1	Provide materials, training, and messaging to FWC employees who are involved with bear management to ensure agency policies and protocols are implemented correctly and consistently statewide.	Existing	1	1	1	1	1	1	1	1	1	1	1
4.3.2	Develop DVD and online version of FWC employee bear training.	Other	1	1									
4.3.3	Continue to update existing <i>Bear Management Handbook</i> and provide to employees as reference guide.	Existing	1	1									
4.3.4	Regularly update agency leadership on human-bear conflict mitigation and resolution.	Existing	1	1	1	1	1	1	1	1	1	1	1
4.3.5	Develop opportunities for Bear Response Program contractors to provide outreach in addition to site visits and canvassing.	Other											
Strategy 4.4: Education and Outreach Research and Monitoring													
4.4.1	Create tools to assess the effectiveness of education and outreach actions where appropriate.	Other											

Action	Description of Action	Resources	Year												
		Can be done with Existing resources OR requires Other resources	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031			
4.4.2	Conduct community level surveys in areas targeted for interventions to assess the public’s knowledge, attitudes, and willingness to cooperate in achieving management objectives and implementing conservation plans.	Other													
4.4.3	Conduct focus group sessions within communities to provide a qualitative complement to the survey in Action 4.4.2.	Other													
4.4.4	Measure effect of canvassing events and talks to communities on human-bear conflicts.	Existing													

2265

2266 **Bear Management Unit Profiles**

2267

2268 **West Panhandle Bear Management Unit**2269 *Florida Counties:*

2270 Escambia, Holmes, Okaloosa, Santa Rosa, and Walton (Figure 11)

2271

2272 *Subpopulation Size:*

2273 Bears in the West Panhandle BMU are part of the Eglin subpopulation, named
 2274 after the Eglin Air Force Base that represents the majority of occupied bear range
 2275 in this BMU. The subpopulation estimate is below the minimum subpopulation
 2276 objective, and therefore the management objective is to increase the current bear
 2277 subpopulation. However, Eglin Air Force Base is probably at or near its biological
 2278 carrying capacity, and therefore increases in bear numbers would likely occur in
 2279 suitable habitats in other parts of the BMU.

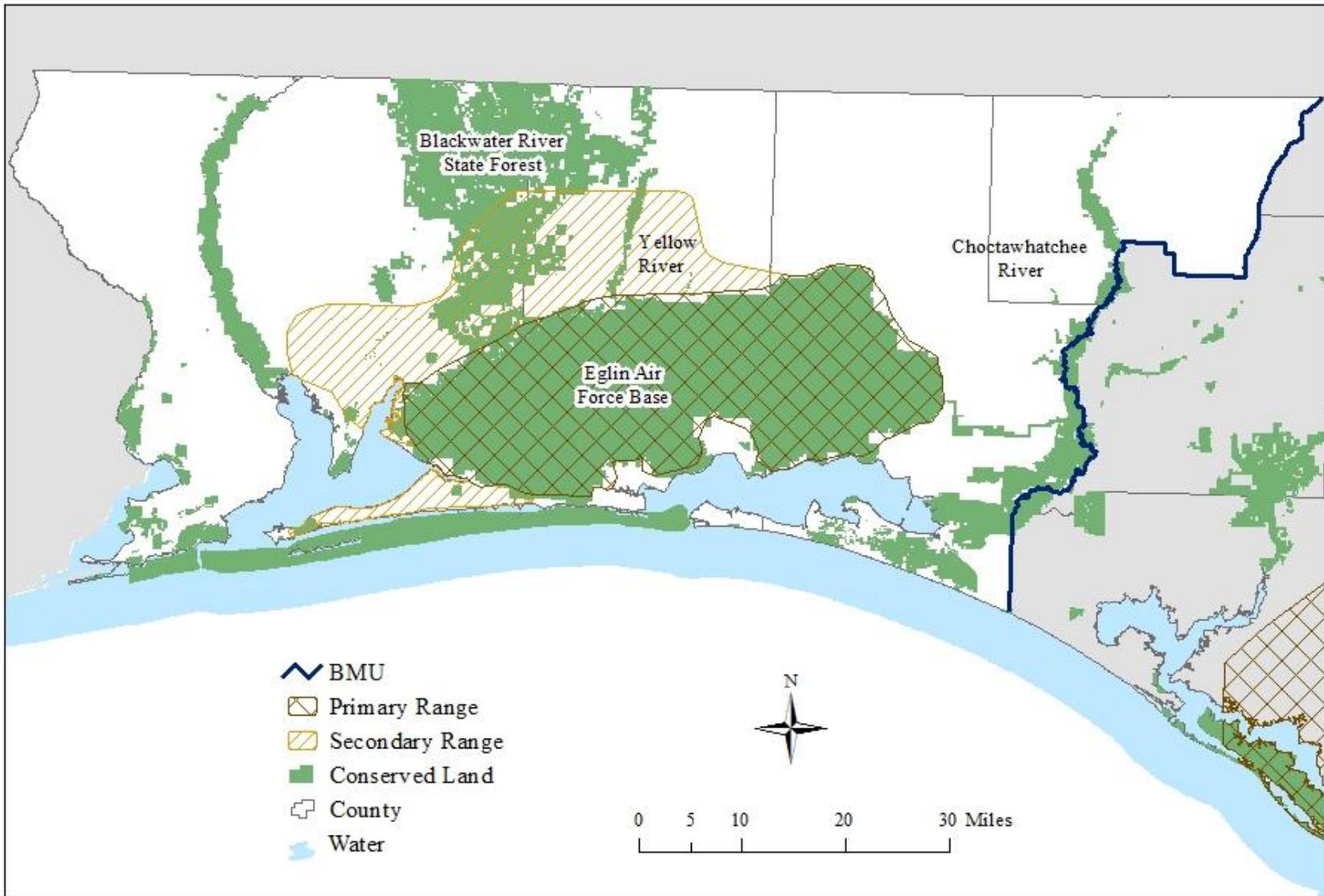
2280

2281	Minimum subpopulation objective	200 bears
2282	Estimated subpopulation in primary range	63–101 bears
2283	Potential bear habitat in Conserved Lands could support	121 bears

2284

2285 *Habitat:*

2286 Currently, potential bear habitat in conserved land is approximately 74 percent of
 2287 that needed to support the minimum subpopulation objective. Habitat conservation
 2288 efforts should seek to expand **occupied range** and create the following critical
 2289 landscape connections: along the Yellow River to Blackwater River State Forest;
 2290 with the Apalachicola population by building on existing conserved habitat toward
 2291 the Choctawhatchee River; and Alabama's Mobile bear population through Cunecuh
 2292 NF (Figure 11). Increasing genetic interchange with the bears in Alabama would
 2293 benefit both of these small subpopulations.



2294

2295 **Figure 11. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the West Panhandle**
2296 **Bear Management Unit.**

2297	Habitat needed for 200 bears	1,198,461 acres
2298	Potential Bear Habitat	1,886,289 acres
2299	Potential Bear Habitat in Conservation Lands	723,051 acres
2300	Total area of the BMU	2,686,286 acres

2301

2302 *Human-Bear Conflicts:*

2303 Residential development expansion in recent years has contributed to a rapid
 2304 increase in bear reports to FWC (Figure 12). The West Panhandle BMU had the
 2305 highest percentage of reports related to bears getting into garbage (44%) of all the
 2306 BMUs (Figure 13). Over 27% of statewide core complaints in 2010 came from this
 2307 BMU (Appendix I, Table 15). FWC will take actions to reduce human-bear conflicts
 2308 in this BMU, however, keeping complaints at the three-year average (2008–2010) of
 2309 475 core bear complaints will be challenging (Figure 12).

2310

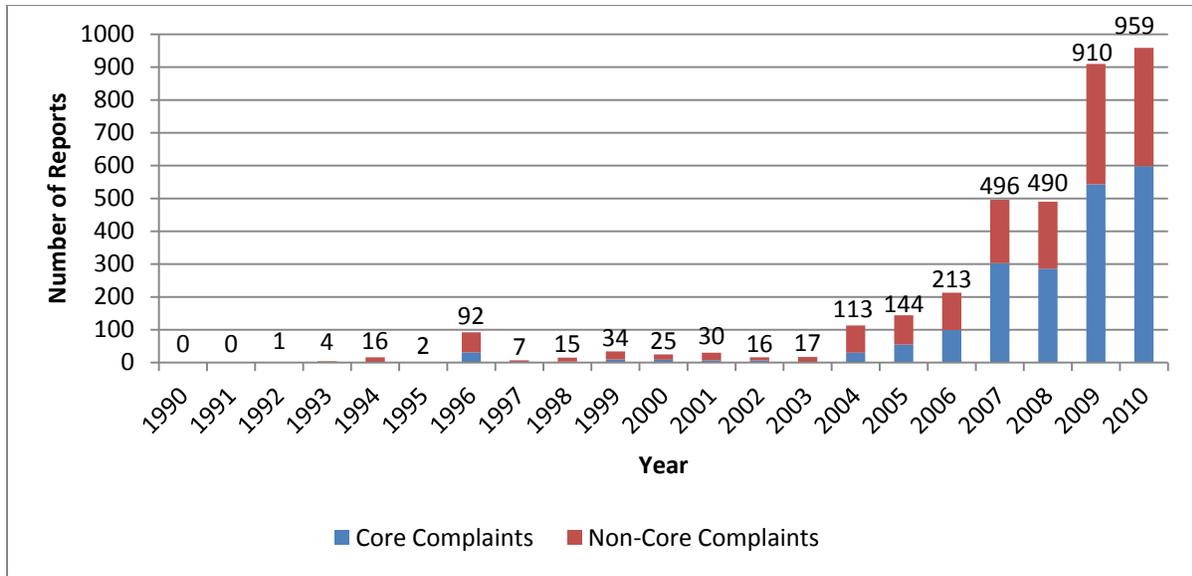
2311 *Threats:*

2312 This area is experiencing rapid human population growth and habitat conversion,
 2313 making this small subpopulation of bears vulnerable to demographic variability and
 2314 genetic isolation. Creating and maintaining habitat connections to encourage
 2315 movements between Eglin Air Force Base and other suitable areas will be very
 2316 important for the long-term survival of this bear subpopulation. Mortality
 2317 associated with vehicles has been increasing in recent years (Figure 14).

2318

2319

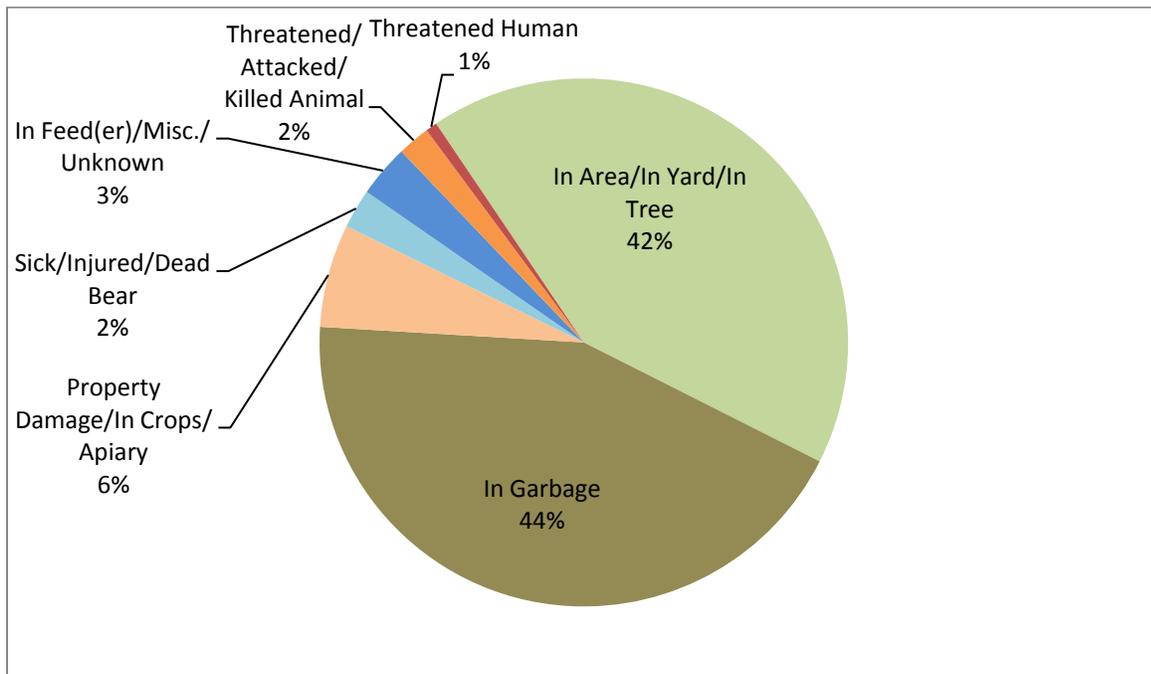
2320



2321

2322 **Figure 12. Bear-related reports received by FWC in the West Panhandle**
 2323 **Bear Management Unit between 1990 and 2010 (n = 3,584).**

2324



2325

2326 **Figure 13. Bear-related report types received by FWC in the West**
 2327 **Panhandle Bear Management Unit between 1990 and 2010 (n = 3,584).**

2328

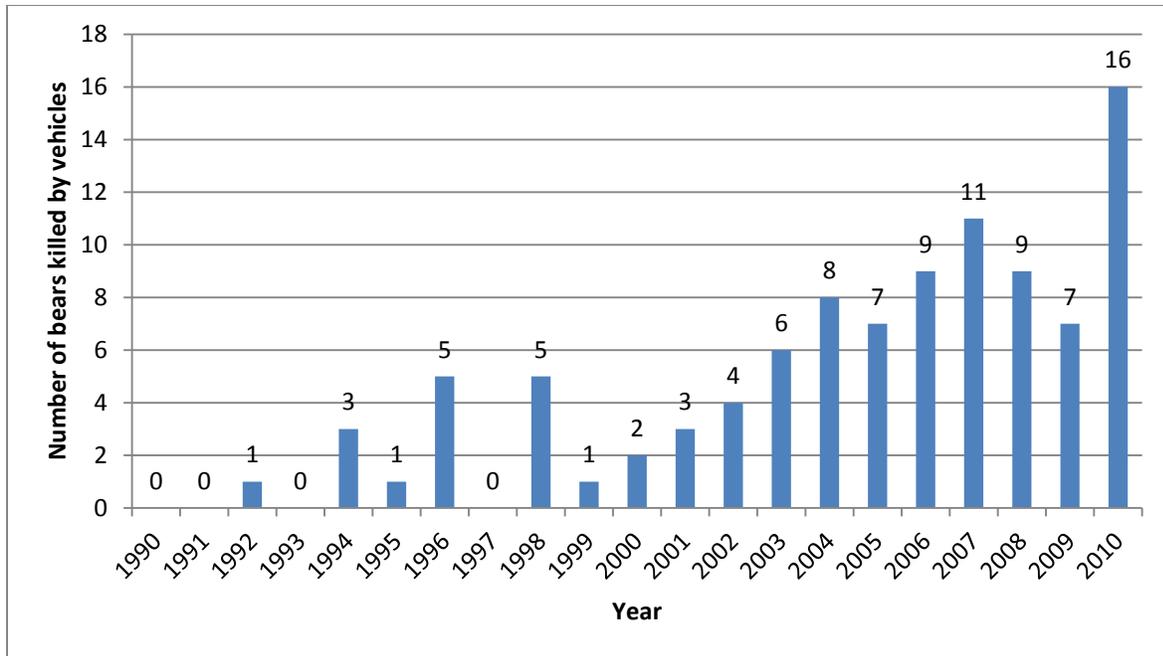


Figure 14. Number of bears killed by vehicles, or euthanized due to vehicle injuries, documented each year in the West Panhandle Bear Management Unit between 1990 and 2010 (n = 98).

2329
 2330
 2331
 2332
 2333
 2334

2335 **East Panhandle Bear Management Unit**2336 *Florida Counties:*

2337 Bay, Calhoun, Franklin, Gadsden, Gulf, Jackson, Jefferson, Leon, Liberty, Madison,
2338 Taylor, Wakulla, and Washington (Figure 15)

2339

2340 *Subpopulation Size:*

2341 Bears in the East Panhandle BMU are part of the Apalachicola subpopulation,
2342 named after the Apalachicola NF which encompasses a large portion of occupied
2343 bear range in this BMU. The current estimate of bears in the East Panhandle BMU
2344 is above the minimum subpopulation objective, and therefore the management
2345 objective is to maintain or increase the current bear subpopulation.

2346

2347	Minimum subpopulation objective	570 bears
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2348	Estimated subpopulation in primary range	411–653 bears
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2349	Potential bear habitat in Conserved Lands could support	297 bears
------	---	-----------

2350

2351 *Habitat:*

2352 Currently, potential bear habitat in conserved lands are insufficient to maintain or
2353 increase the minimum subpopulation objective. Habitat conservation efforts should
2354 seek to create two primary landscape connections: one with the West Panhandle
2355 BMU that incorporates Econfina Creek Water Management Area and
2356 Choctawhatchee River conservation areas, among others; and one with the Big
2357 Bend BMU using coastal conservation lands (Figure 15). Continuing to manage St.
2358 Marks NWR and Aucilla WMA to provide bear habitat would help support bear
2359 numbers for expansion into the Big Bend BMU.

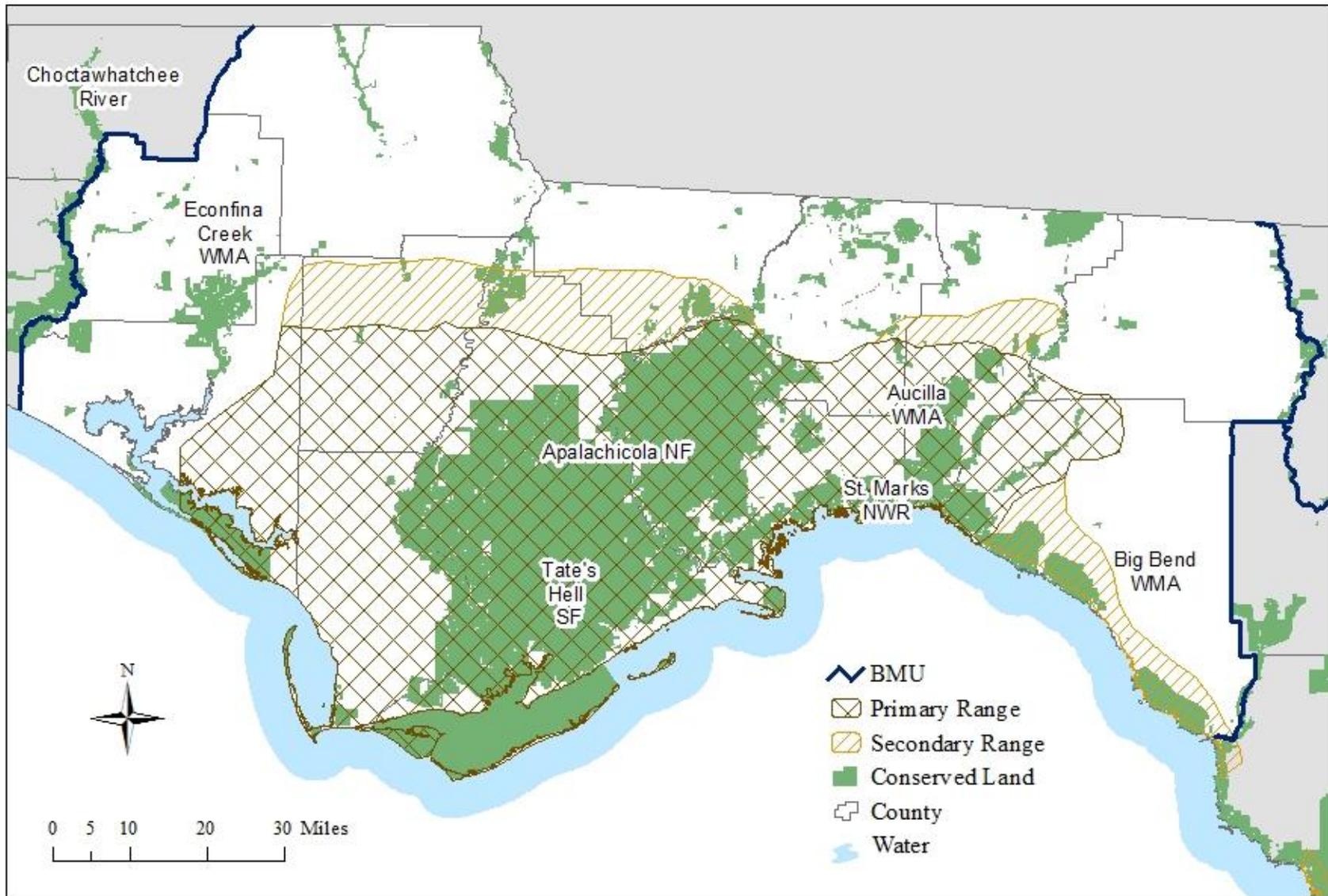
2360

2361	Habitat needed for 570 bears	2,359,856 acres
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2362	Potential Bear Habitat	4,278,290 acres
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2363	Potential Bear Habitat in Conservation Lands	1,229,916 acres
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2364	Total area of BMU	5,830,664 acres
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Figure 15. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the East Panhandle Bear Management Unit.

2368 *Human-Bear Conflicts:*

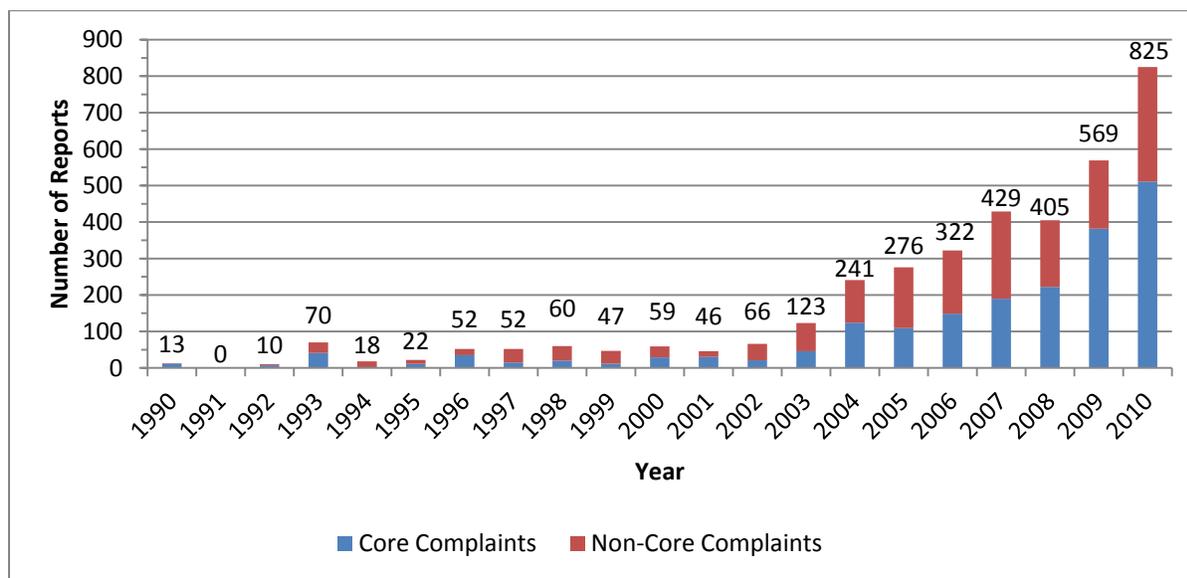
2369
 2370 Human-bear interactions have increased substantially since 2000 and need to be
 2371 reduced (Figure 16). Over 23% of statewide core complaints in 2010 came from this
 2372 BMU (Appendix I, Table 15). The three-year average (2008–2010) of core
 2373 complaints was 372 (Figure 16). The relatively high percentages of reports of bears
 2374 in garbage (34%) and property damage, in crops, or in apiary (11%) received from
 2375 this BMU are indicative of a bear population that has regular access to human-
 2376 provided foods (Figure 17).

2377

2378 *Threats:*

2379 Increasing human-bear conflicts and habitat fragmentation that can sever
 2380 connections with other BMUs are threats in the East Panhandle BMU. Vehicle-
 2381 related deaths continue to rise in this BMU (Figure 18).

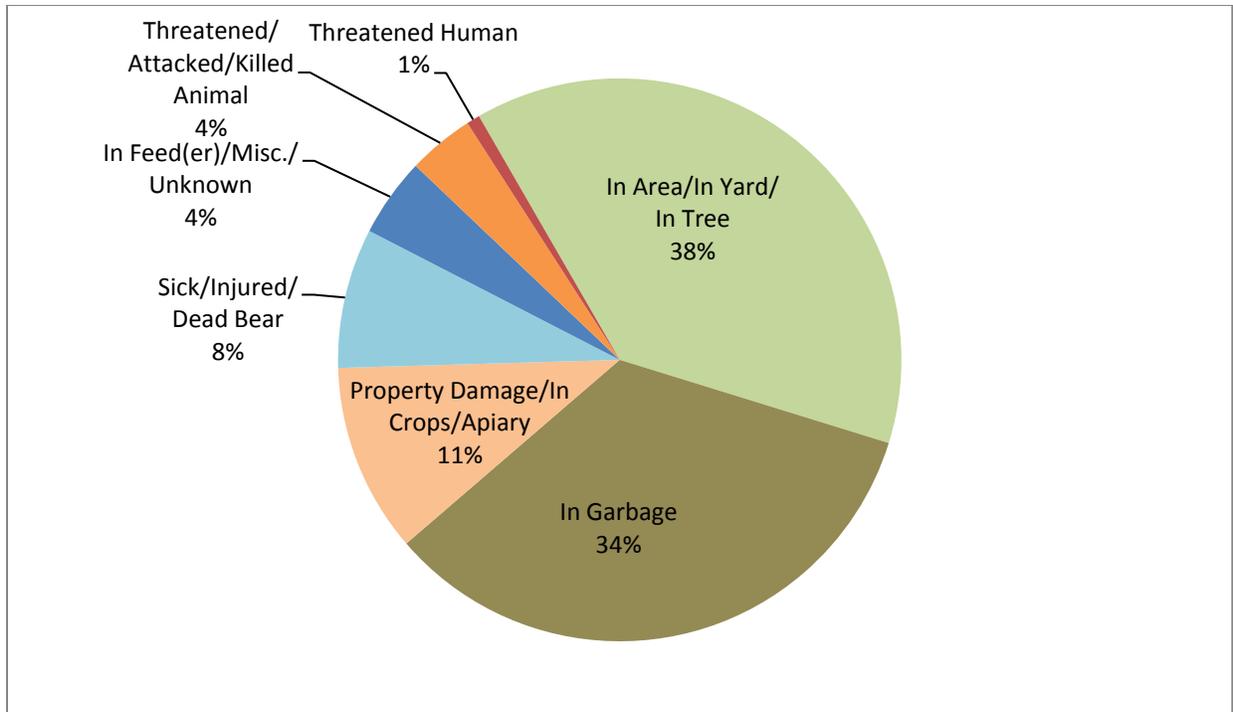
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2383
 2384

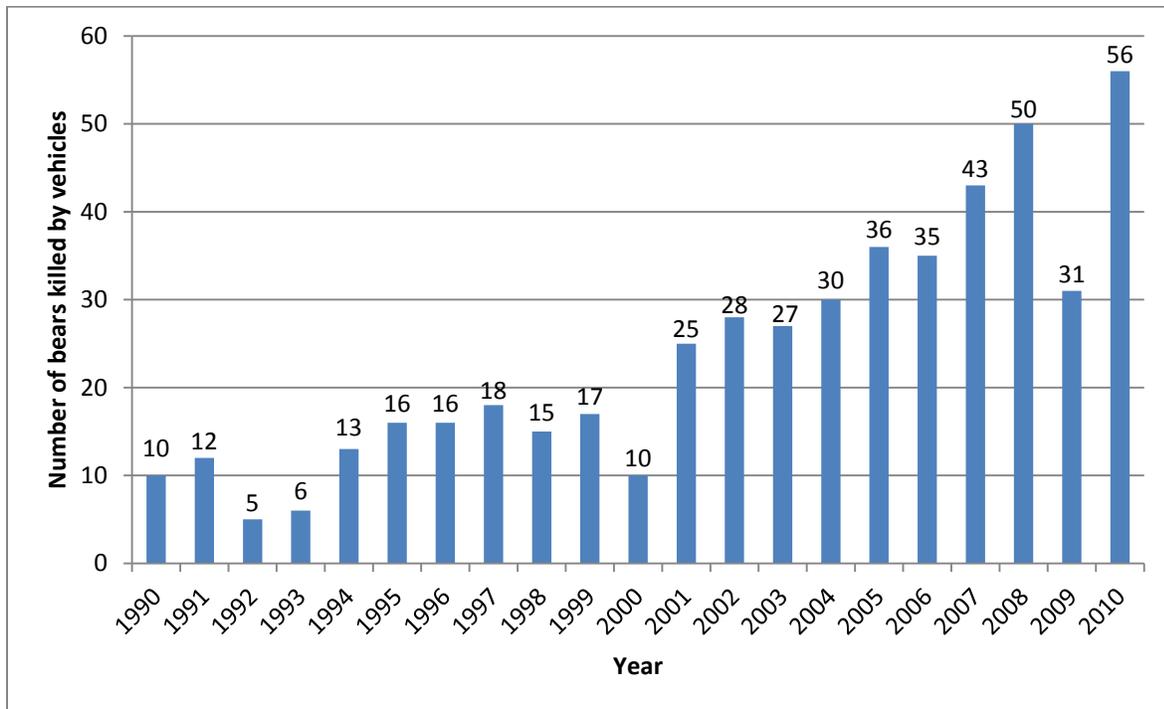
2385 **Figure 16. Bear-related reports received by FWC in the East Panhandle**
 2386 **Bear Management Unit between 1990 and 2010 (n = 3,705).**

2387



2388
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2390
2391

Figure 17. Bear-related report types received by FWC in the East Panhandle Bear Management Unit between 1990 and 2010 (n = 3,705).



2392
2393
2394
2395
2396

Figure 18. Number of bears killed by vehicles, or euthanized due to vehicle injuries, documented each year in the East Panhandle Bear Management Unit between 1990 and 2010 (n = 499).

2397 **Big Bend Bear Management Unit**2398 *Florida Counties:*

2399 Citrus, Dixie, Gilchrist, Hernando, Lafayette, Levy, and Pasco (Figure 19)

2400

2401 *Subpopulation Size:*

2402 Bears are absent or nearly so throughout most of the Big Bend BMU with the
 2403 exception of a remnant group of bears in and around Chassahowitzka WMA at the
 2404 southern extent of the BMU (Orlando 2003, Brown 2004, Wooding 2007, FWC
 2405 Unpublished Data, 2010). The Chassahowitzka bears have one of the lowest
 2406 reported levels of genetic variability (Dixon et al. 2007) and are in need of genetic
 2407 interchange and connectivity. The current estimate of bears in the Big Bend BMU
 2408 is far below the minimum subpopulation objective, and therefore the management
 2409 objective is to increase the current bear subpopulation. While significant growth
 2410 within the Chassahowitzka subpopulation is unlikely because it is surrounded by
 2411 development, this area could represent the southern extent of a growing bear
 2412 subpopulation in the Big Bend BMU.

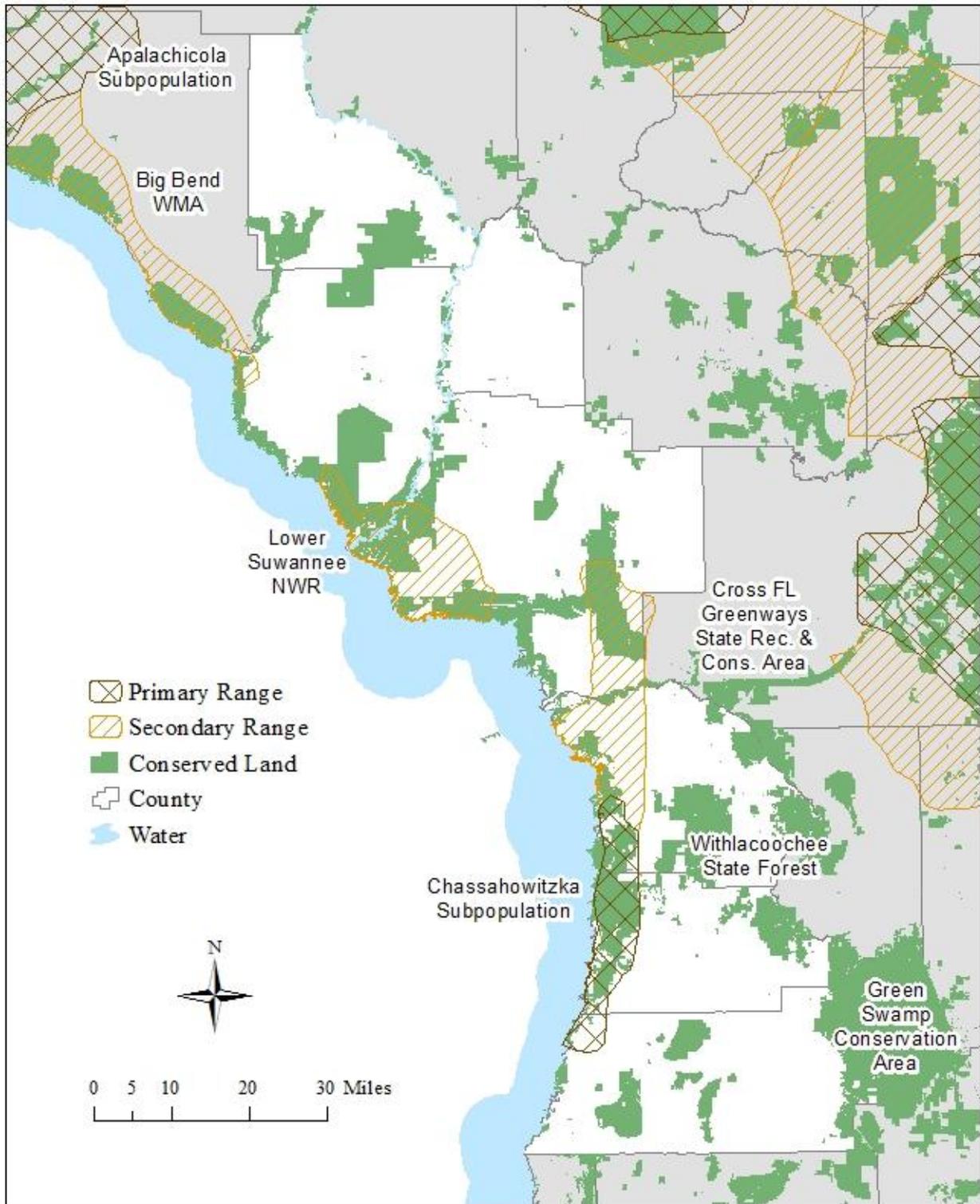
2413

2414	Minimum subpopulation objective	200 bears
2415	Estimated subpopulation in primary range	12 –28 bears
2416	Potential bear habitat in Conserved Lands could support	174 bears

2417

2418 *Habitat:*

2419 Currently, the total acreage of potential bear habitat in conserved lands is almost
 2420 sufficient to achieve the minimum subpopulation objective. However, conserved
 2421 lands are highly fragmented (Figure 19). Habitat conservation should focus on
 2422 establishing landscape connectivity between the Chassahowitzka bears and
 2423 unoccupied, quality habitat in Withlacoochee State Forest and Green Swamp
 2424 Conservation Area and north to the Apalachicola subpopulation using landscape



2425
 2426
 2427
 2428

Figure 19. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the Big Bend Bear Management Unit.

2429 connections such as the Lower Suwannee NWR, Big Bend WMA, and other
 2430 conservation lands. If landscape connectivity can be improved, existing
 2431 conservation lands provide additional opportunities to connect with occupied
 2432 habitat in other BMUs. Occupied habitat in the East Panhandle BMU already
 2433 connects with the Big Bend BMU, and improving habitat conditions in existing
 2434 secondary range, including the large tracts of commercial forests, would promote
 2435 natural re-colonization in this BMU. Although existing development in the
 2436 southern portion of the Big Bend BMU makes habitat connections tenuous, the
 2437 Chassahowitzka bears would benefit from any connection to the Ocala
 2438 subpopulation, even if only from an occasional dispersing animal. Such a
 2439 connection might be possible through Marjorie Harris Carr Cross Florida Greenway
 2440 State Recreation and Conservation Area. The Suwannee River and conservation
 2441 lands toward the Osceola subpopulation could also allow for occasional dispersals.

2442		
2443	Habitat needed for 200 bears	549,809 acres
2444	Potential Bear Habitat	1,625,339 acres
2445	Potential Bear Habitat in Conservation Lands	478,042 acres
2446	Total area of BMU	2,970,423 acres

2447

2448 *Human-Bear Conflicts:*

2449 Low bear numbers and a relatively dispersed human population in much of this
 2450 BMU contribute to the low number of complaints (Figure 20). The Big Bend BMU
 2451 has a high percentage of reports related to bears being in the area, yard, or tree
 2452 (56%; Figure 21). A high percentage of reports in those categories, coupled with a
 2453 relatively low percentage of reports of bears in garbage (13%) typically indicates
 2454 bears are passing through rather than residing near developed areas. Stabilizing or
 2455 reducing core complaints to the three-year average (2008–2010) of 15 will be
 2456 manageable (Figure 20).

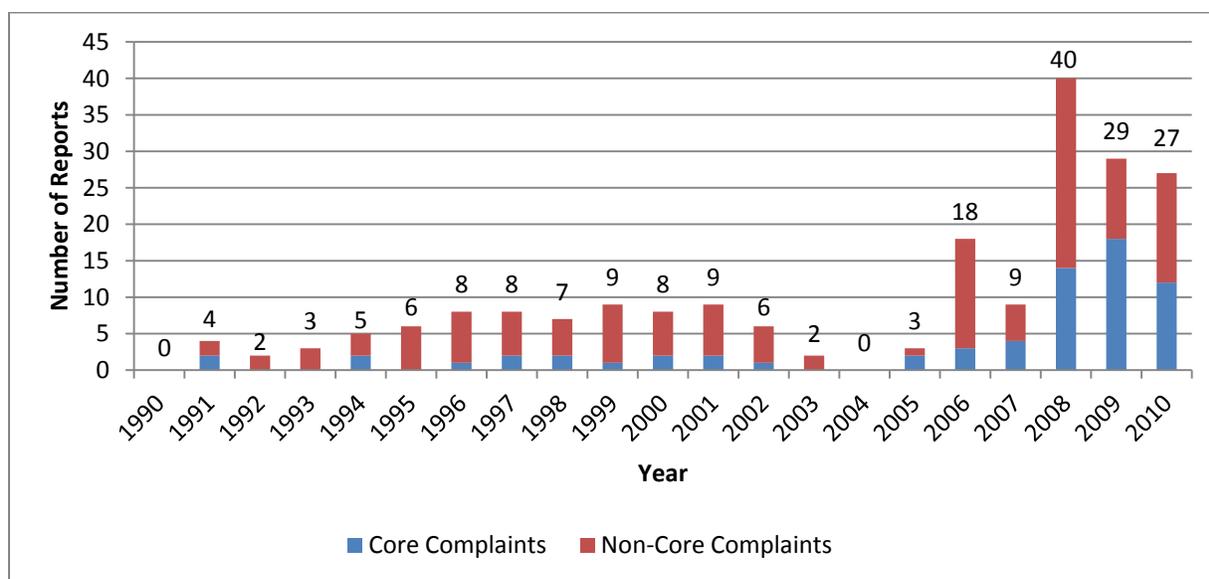
2457

2458

2459 *Threats:*

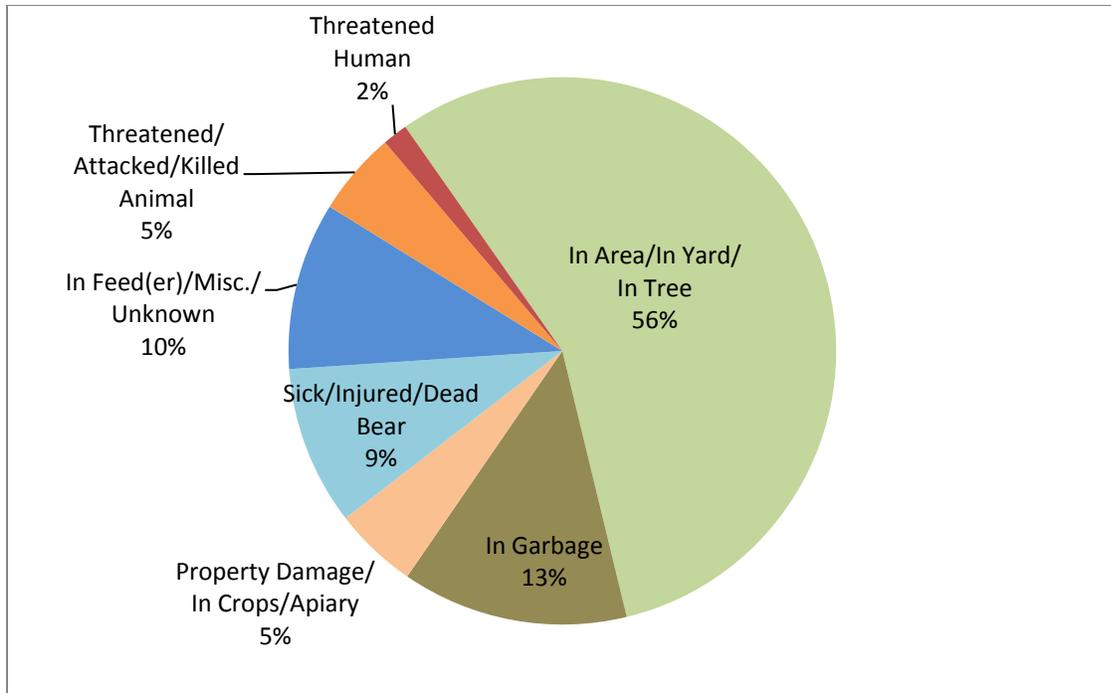
2460 Parcels of conserved habitat within the BMU are fragmented and small, and many
 2461 are not occupied. Habitat fragmentation in the southern portion of the unit causes
 2462 increased mortality and limits colonization of suitable habitat. Development could
 2463 impede natural re-colonization from occurring. The Chassahowitzka bears (< 20)
 2464 are genetically isolated and require connections with other bears to survive and
 2465 represent the southern extent of a bear subpopulation in the Big Bend BMU. While
 2466 vehicle-related deaths are negligible in this BMU (Figure 22), poaching and general
 2467 intolerance of bears by residents may be limiting range expansion south from
 2468 Apalachicola.

2469
 2470



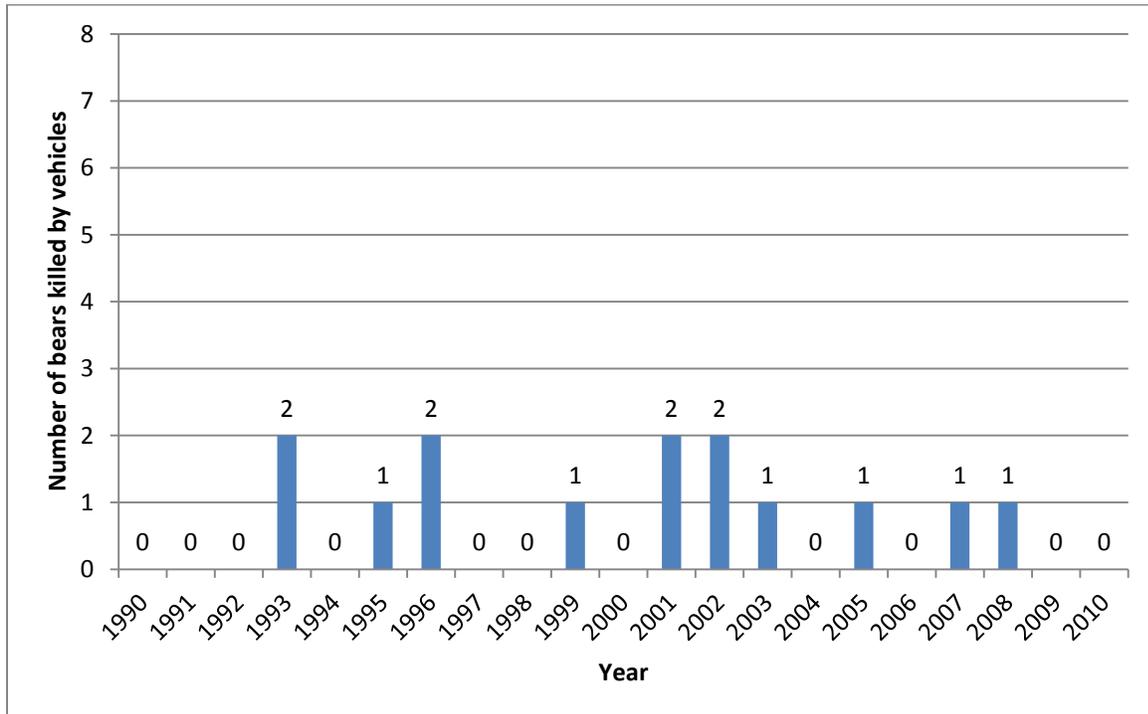
2471

2472 **Figure 20. Bear-related reports received by FWC in the Big Bend Bear**
 2473 **Management Unit between 1990 and 2010 (n = 203).**



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2475
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Figure 21. Bear-related report types received by FWC in the Big Bend Bear Management Unit between 1990 and 2010 (n = 203).



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2480
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2482

Figure 22. Number of bears killed by vehicles, or euthanized due to vehicle injuries, documented each year in the Big Bend Bear Management Unit between 1990 and 2010 (n = 14).

2483 **North Bear Management Unit**

2484 *Florida Counties:*

2485 Baker, Columbia, Duval, Hamilton, Nassau, Suwannee, and Union (Figure 23)

2486

2487 *Subpopulation Size:*

2488 Bears in the North BMU are concentrated in and around Osceola NF which
 2489 encompasses most of the occupied bear range in this BMU. The current estimate of
 2490 the Osceola subpopulation is above the minimum subpopulation objective, and
 2491 therefore the management objective is to maintain or increase the current bear
 2492 subpopulation. Bears in the Osceola subpopulation are part of a larger
 2493 subpopulation that includes bears in the Okefenokee Swamp NWR in Georgia,
 2494 which has an estimated 700 to 800 bears (Greg Nelms, Georgia Department of
 2495 Natural Resources, personal communication, 2010).

2496

2497	Minimum subpopulation objective	260 bears
2498	Estimated subpopulation in primary range	200–313 bears
2499	Potential bear habitat in Conserved Lands could support	233 bears

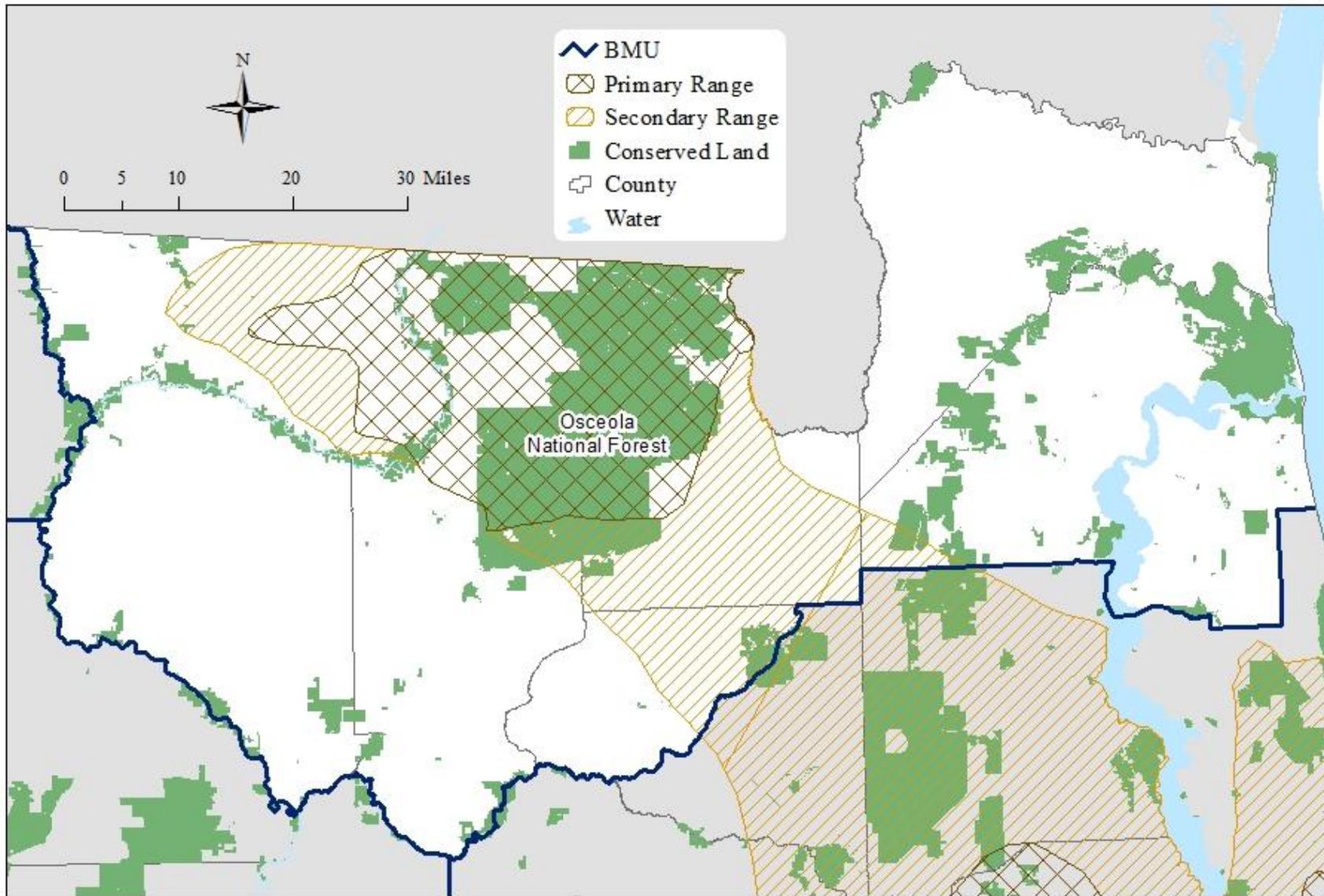
2500

2501 *Habitat:*

2502 Currently, potential bear habitat in conserved lands is almost sufficient to support
 2503 the minimum subpopulation objective. The Osceola subpopulation is connected
 2504 genetically and spatially through conserved habitat connectivity with a larger
 2505 subpopulation in Georgia. Habitat conservation efforts should focus on preserving
 2506 the functionality of the landscape connection with the Ocala subpopulation. A
 2507 landscape connection south toward the Big Bend BMU could aid periodic dispersals
 2508 if habitat was traversable.

2509

2510	Habitat needed for 260 bears	457,145 acres
2511	Potential Bear Habitat	1,741,615 acres



2512
2513
2514

Figure 23. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the North Bear Management Unit.

2515 Potential Bear Habitat in Conservation Lands 411,541 acres
 2516 Total area of BMU 2,795,156 acres

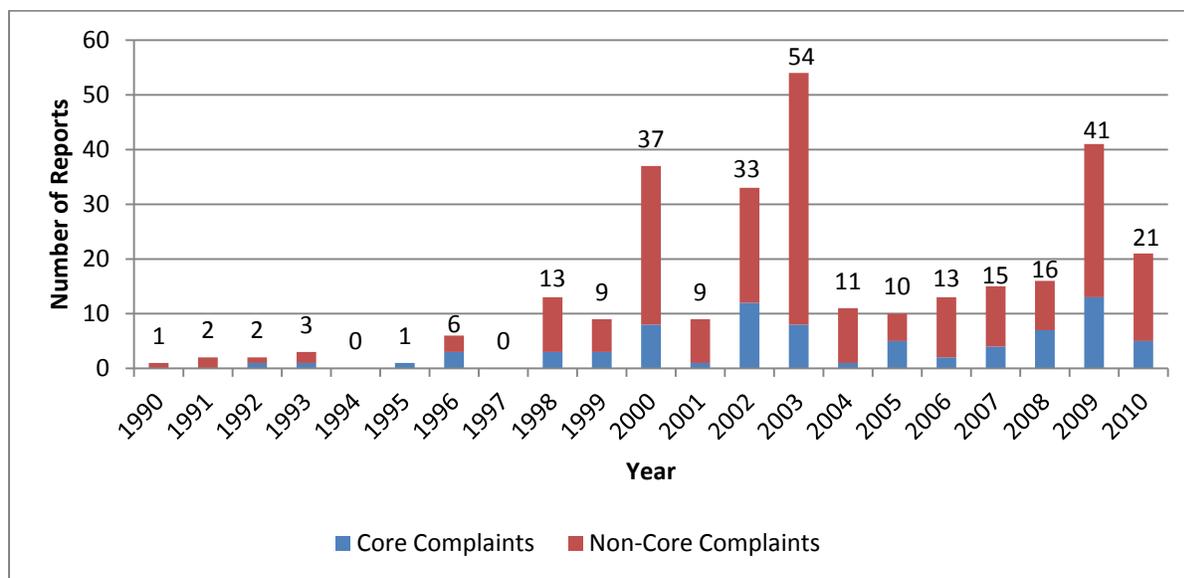
2517
 2518 *Human-Bear Conflicts:*

2519 While there has been a gradual increase in bear complaints in this BMU (Figure
 2520 24), stabilizing or reducing annual core complaints to the three-year average (2008–
 2521 2010) of eight per year should be manageable. The North BMU has the highest
 2522 percentage of reports related to bears being in the area, yard, or tree (71%) of all the
 2523 BMUs (Figure 25). A high percentage of reports in those categories coupled with a
 2524 relatively low percentage of reports of bears in garbage (10%) typically indicates
 2525 bears are passing through rather than residing near developed areas.

2526
 2527 *Threats:*

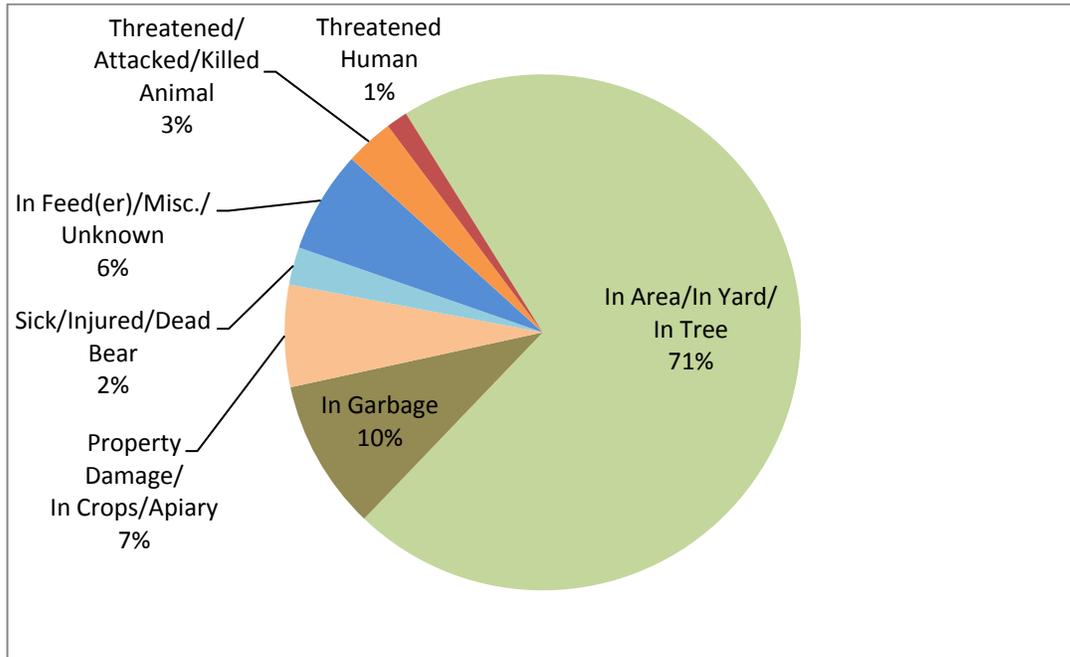
2528 Catastrophic fires and increasing development are threats in the North BMU.
 2529 Maintaining the current connection with Ocala NF and Okefenokee NWR is vital to
 2530 the long-term survival of this subpopulation. Few vehicle-related deaths occur in
 2531 this BMU (Figure 26).

2532



2533
 2534 **Figure 24. Bear-related reports received by FWC in the North Bear**
 2535 **Management Unit between 1990 and 2010 (n = 297).**

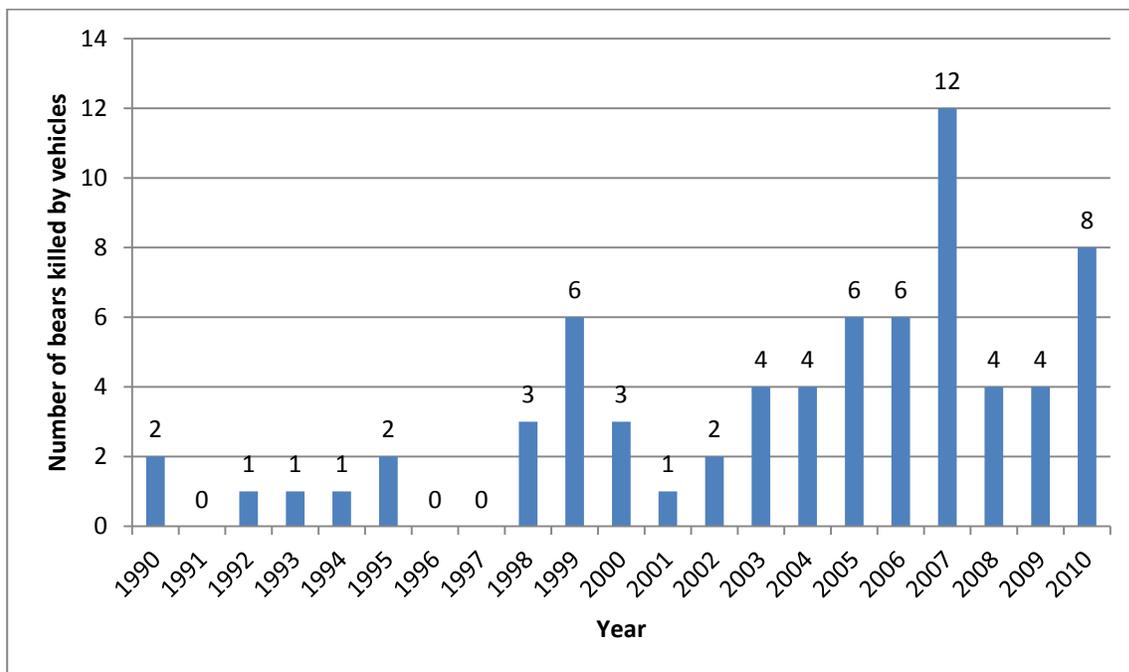
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2537

2538 **Figure 25. Bear-related report types received by FWC in the North Bear**
 2539 **Management Unit between 1990 and 2010 (n = 297).**

2540



2541

2542 **Figure 26. Number of bears killed by vehicles, or euthanized due to**
 2543 **vehicle injuries, documented each year in the North Bear**
 2544 **Management Unit between 1990 and 2010 (n = 70).**

2545

2546 **Central Bear Management Unit**2547 *Florida Counties:*

2548 Alachua, Bradford, Brevard, Clay, Flagler, Lake, Marion, Orange, Putnam,
 2549 Seminole, St Johns, Sumter, and Volusia (Figure 27)

2550

2551 *Subpopulation Size:*

2552 Bears in the Central BMU are part of the Ocala/St. Johns subpopulation, named
 2553 after the Ocala NF and St. Johns River watershed which encompasses a large
 2554 portion of occupied bear range in this BMU. The Central BMU is the only BMU
 2555 with a subpopulation estimated to be 1,000 bears, which is one of the criteria that
 2556 determines a specie's risk for extinction. The management objective is to maintain
 2557 or increase the current bear subpopulation in this BMU.

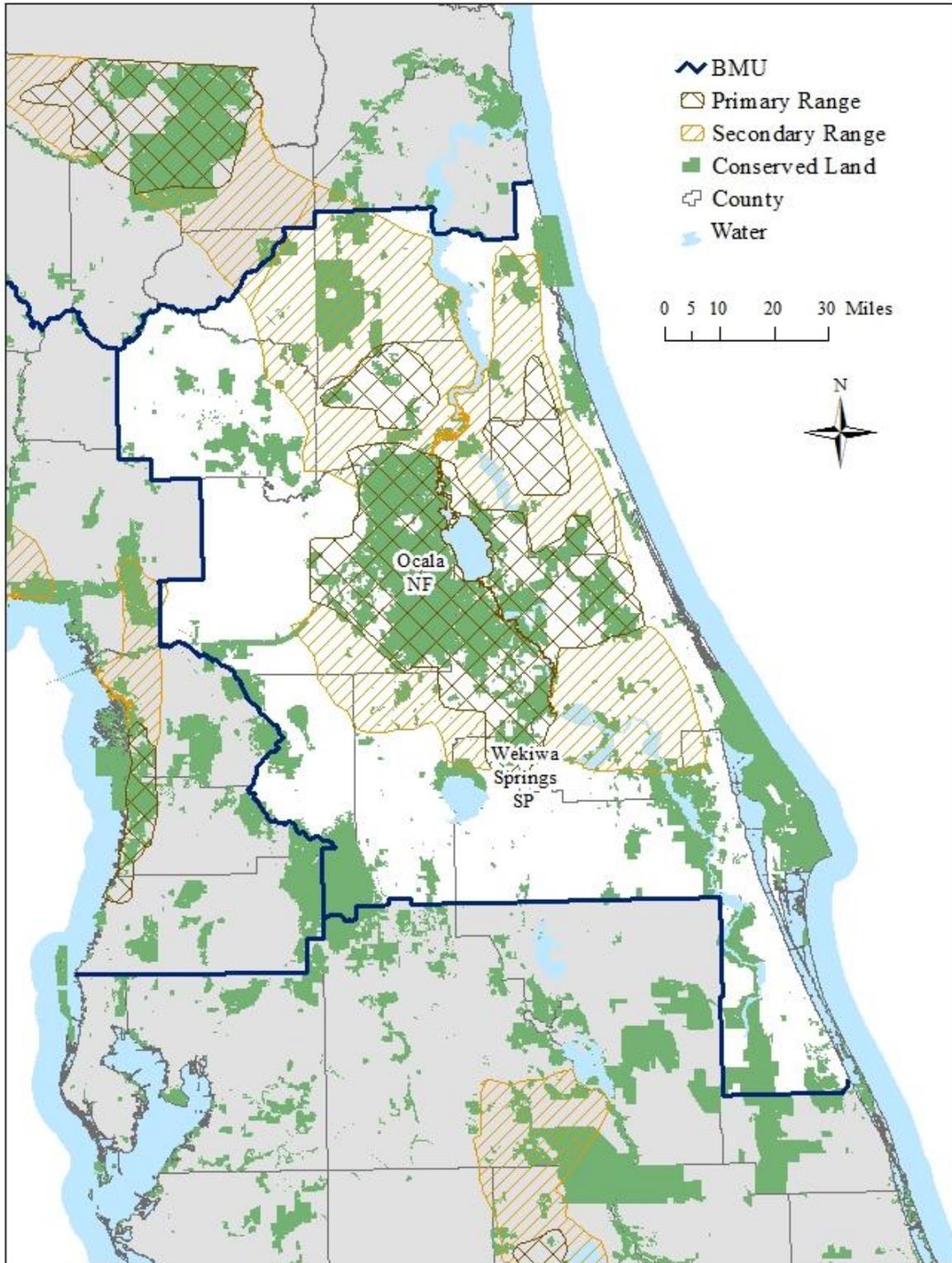
2558

2559	Minimum subpopulation objective	1,030 bears
2560	Estimated subpopulation in primary range	825–1,225 bears
2561	Potential bear habitat in Conserved Lands could support	1,273 bears

2562

2563 *Habitat:*

2564 Currently, potential bear habitat in conserved lands is sufficient to maintain or
 2565 increase bear numbers above the minimum subpopulation objective. Habitat
 2566 conservation efforts should focus on maintaining the landscape connectivity
 2567 between the North and Central BMUs. In addition, attention should be given to
 2568 maintaining the connections within the Ocala subpopulation, specifically between
 2569 the Wekiva and St. Johns areas (Figure 27). Wildlife crossing structures planned
 2570 for Interstate Highway 4 east of Deland may increase primary range
 2571 southeastward. Further habitat conservation efforts to link the Central BMU to the
 2572 Big Bend BMU would be an important step in sustaining the Chassahowitzka
 2573 bears.



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2575
2576
2577

Figure 27. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the Central Bear Management Unit.

2578	Habitat needed for 1,030 bears	1,062,553 acres
2579	Potential Bear Habitat	3,531,735 acres
2580	Potential Bear Habitat in Conservation Lands	1,310,191 acres
2581	Total area of BMU	6,999,201 acres

2582

2583 *Human-Bear Conflicts:*

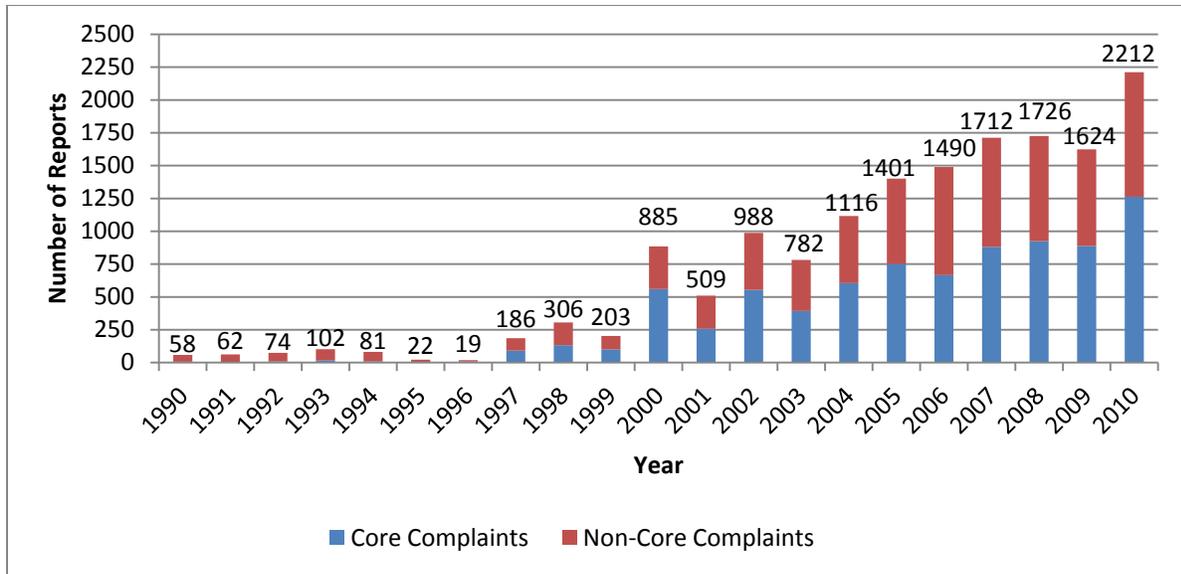
2584 Human-bear conflicts in the Central BMU have increased at a faster rate than FWC
 2585 resources have been available to respond in the most effective and timely manner
 2586 possible (Figure 28). Over 45% of statewide core complaints in 2010 came from this
 2587 BMU (Appendix I, Table 15). The relatively high percentages of reports of bears in
 2588 garbage (28%) and property damage, in crops, or in apiary (12%) received from this
 2589 BMU are indicative of a bear population that has regular access to human-provided
 2590 foods (Figure 29). FWC will continue to focus efforts on reducing bear complaints in
 2591 this BMU to try and stabilize or decrease annual core complaints to the three-year
 2592 average (2008–2010) of 1,014 per year.

2593

2594 *Threats:*

2595 Increasing frequency and severity of human-bear interactions are serious threats in
 2596 this BMU. In addition, habitat fragmentation has the potential to isolate portions
 2597 of the Ocala/St. Johns subpopulation. Vehicle-related bear deaths are exceptionally
 2598 high (Figure 30), with a large proportion of deaths occurring on state roads within
 2599 Ocala NF.

2600



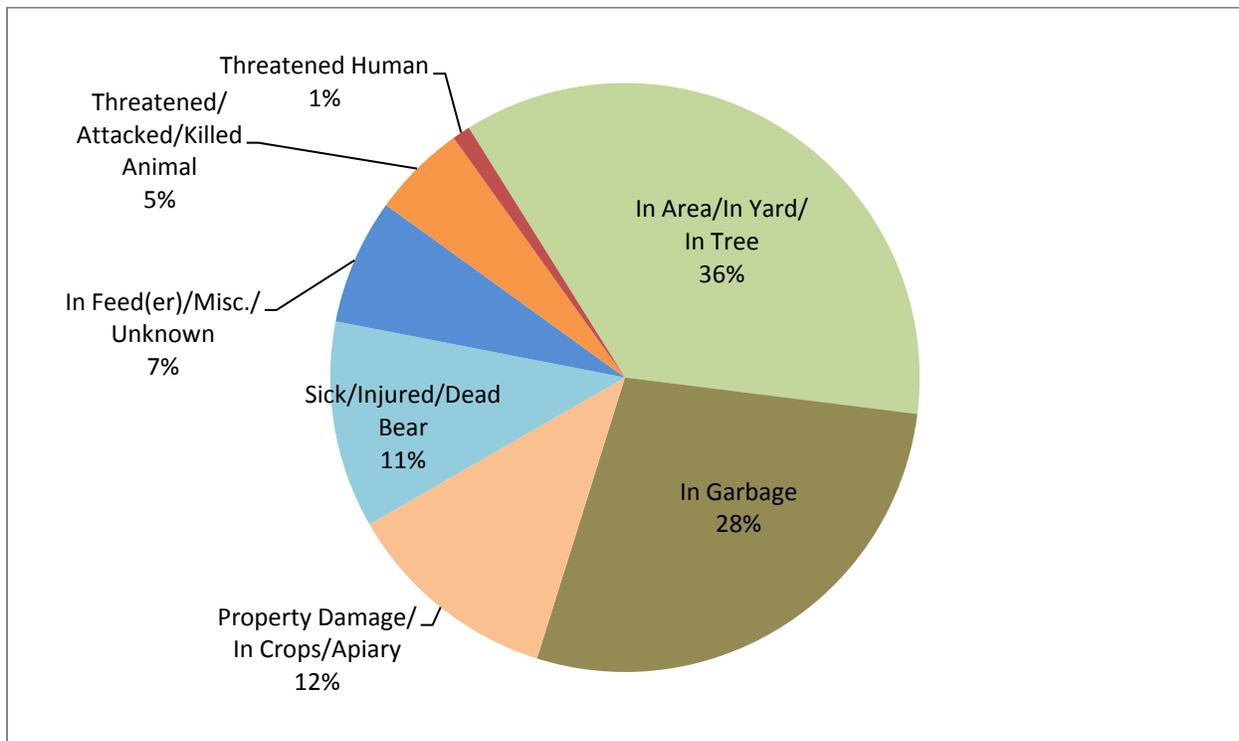
2601

2602

Figure 28. Bear-related reports received by FWC in the Central Bear Management Unit between 1990 and 2010 (n = 15,558).

2603

2604



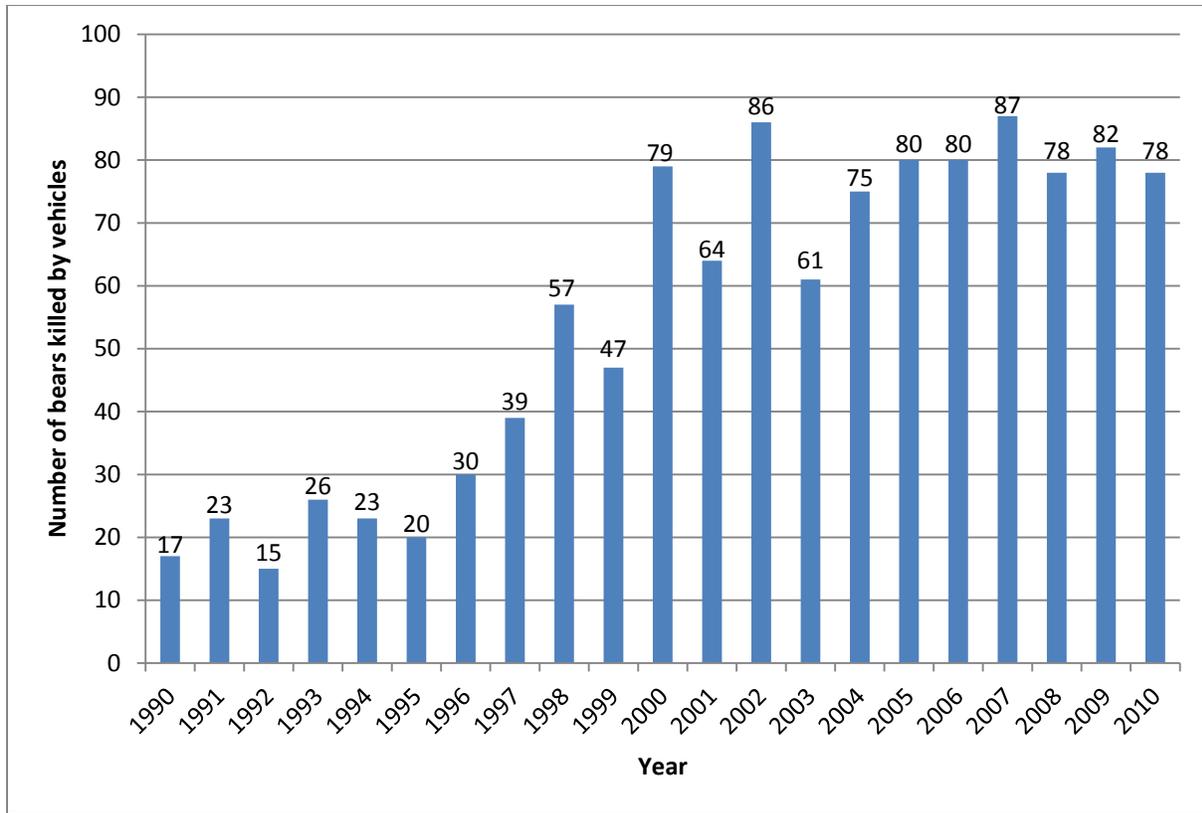
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2606

Figure 29. Bear-related report types received by FWC in the Central Bear Management Unit between 1990 and 2010 (n = 15,558).

2607

2608



2609

2610 **Figure 30. Number of bears killed by vehicles, or euthanized due to**
 2611 **vehicle injuries, documented each year in the Central Bear Management**
 2612 **Unit between 1990 and 2010 (n = 1,146).**

2613

2614 **South Central Bear Management Unit**2615 *Florida Counties:*

2616 Charlotte, De Soto, Glades, Hardee, Highlands, Hillsborough, Indian River,
 2617 Manatee, Martin, Okeechobee, Osceola, Pinellas, Polk, Sarasota, and St Lucie
 2618 (Figure 31)

2619

2620 *Subpopulation Size:*

2621 Bears in the South Central BMU exist mostly in Glades and Highlands counties of
 2622 this BMU. The current estimate of bears in the South Central BMU is at the
 2623 minimum subpopulation objective, and therefore the management objective is to
 2624 maintain or increase the current bear subpopulation. However, methods used for
 2625 this estimate were not as rigorous as those of other BMUs, and so the needed action
 2626 is to increase the subpopulation until the FWC receives more precise estimates
 2627 (expected in 2013).

2628

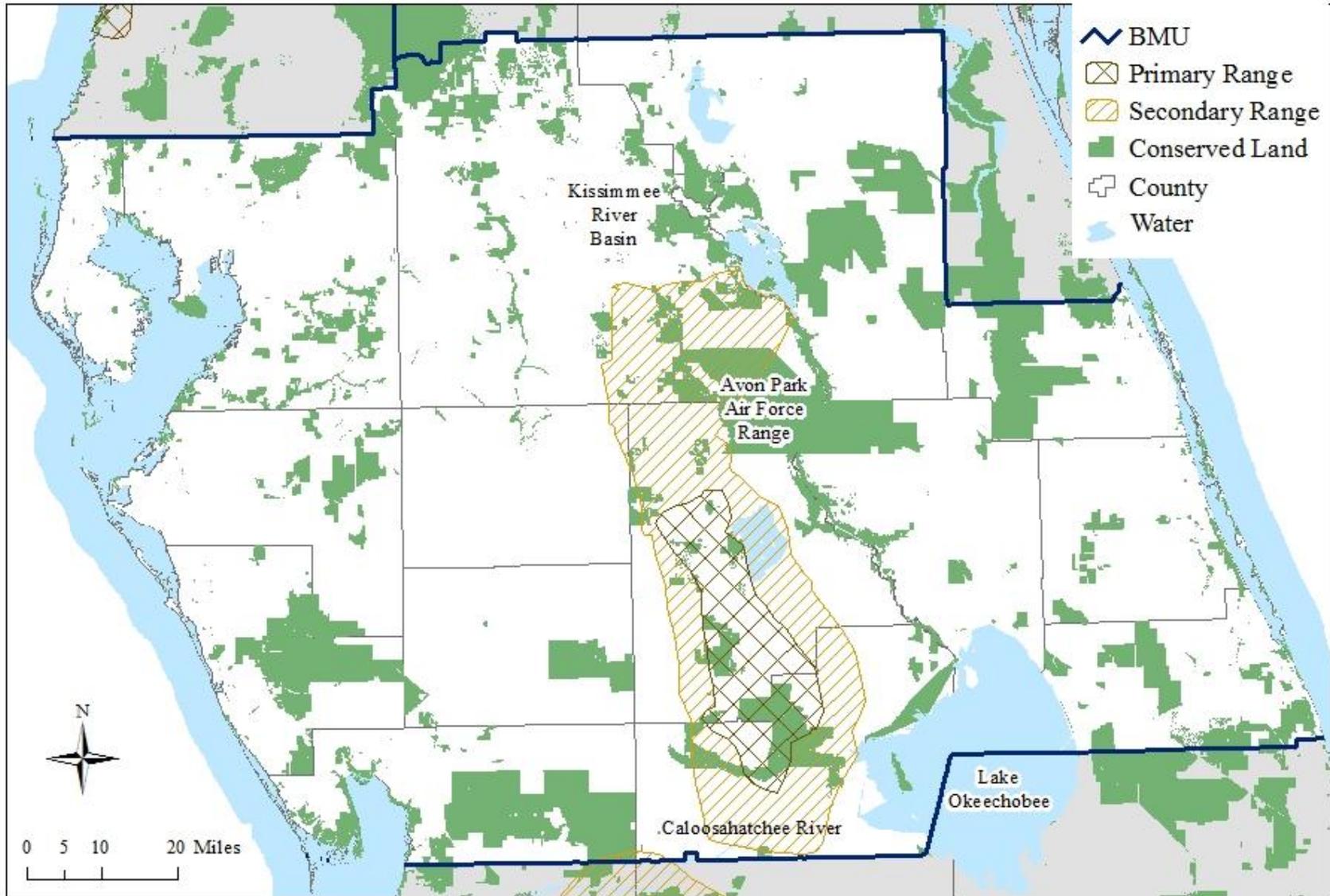
2629	Minimum subpopulation objective	200 bears
2630	Estimated subpopulation in primary range	150–200 bears
2631	Potential bear habitat in Conserved Lands could support	342 bears

2632

2633 *Habitat:*

2634 This is the most fragmented subpopulation of bears in Florida and the only one that
 2635 does not have a large block of public land as its center (Figure 31). Many parcels of
 2636 conserved lands are small, isolated and of little value to bears. Habitat
 2637 conservation should focus on increasing suitable bear habitat by working with local
 2638 agricultural interests and creating or increasing connectivity between islands of
 2639 habitat within the subpopulation, particularly toward Avon Park Air Force Range
 2640 and the Kissimmee River Basin. Establishing landscape connections with the
 2641 South, Central, and Big Bend BMU's are also priorities.

2642



2643
2644
2645

Figure 31. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the South Central Bear Management Unit.

2646	Habitat needed for 200 bears	580,698 acres
2647	Potential Bear Habitat	2,477,753 acres
2648	Potential Bear Habitat in Conservation Lands	883,270 acres
2649	Total area of BMU	8,299,619 acres

2650

2651 *Human-Bear Conflicts:*

2652 FWC should be able to stabilize or reduce core complaints to the three-year average
 2653 (2008–2010) of ten per year in this BMU (Figure 32). The South Central BMU has
 2654 a high percentage of reports related to bears being in the area, yard, or tree (44%;
 2655 Figure 33). A high percentage of reports in those categories, coupled with a
 2656 relatively low percentage of reports of bears in garbage (19%) typically indicates
 2657 bears are passing through rather than residing near developed areas.

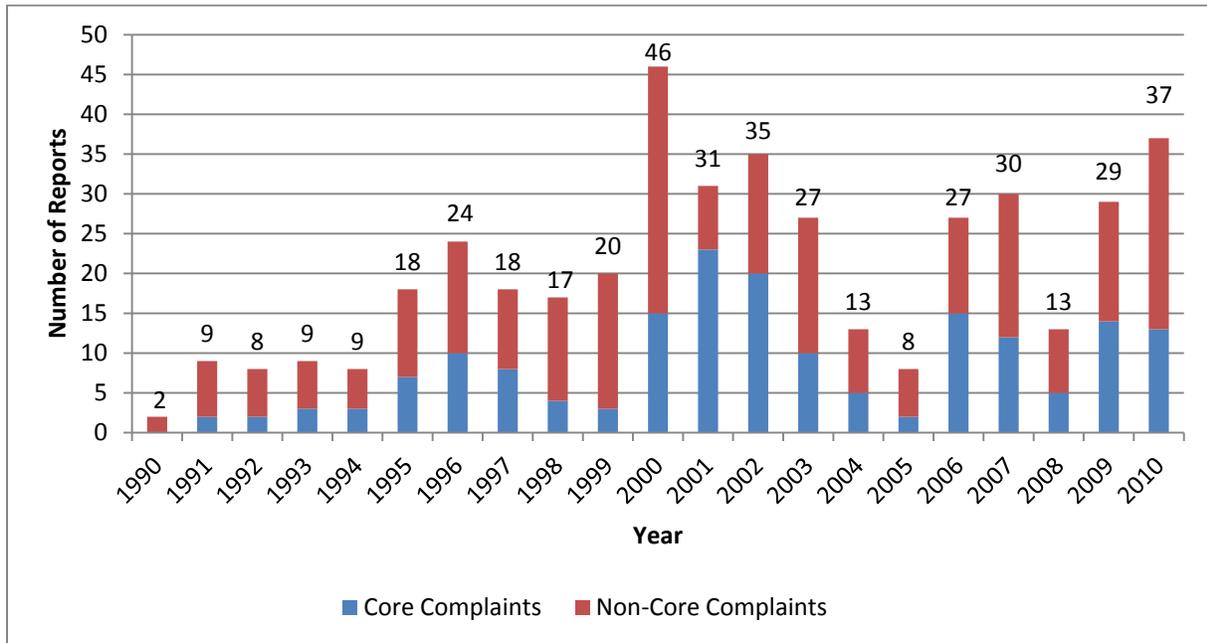
2658

2659 *Threats:*

2660 The population inhabits mostly non-conservation lands making it vulnerable to
 2661 habitat conversion. Genetic isolation increases the risk of genetic drift. Significant
 2662 parcels of conserved lands remain unoccupied and are of little value to bears.
 2663 Vehicle-related bear deaths are low and do not show a consistent pattern over time
 2664 in this BMU (Figure 34).

2665

2666



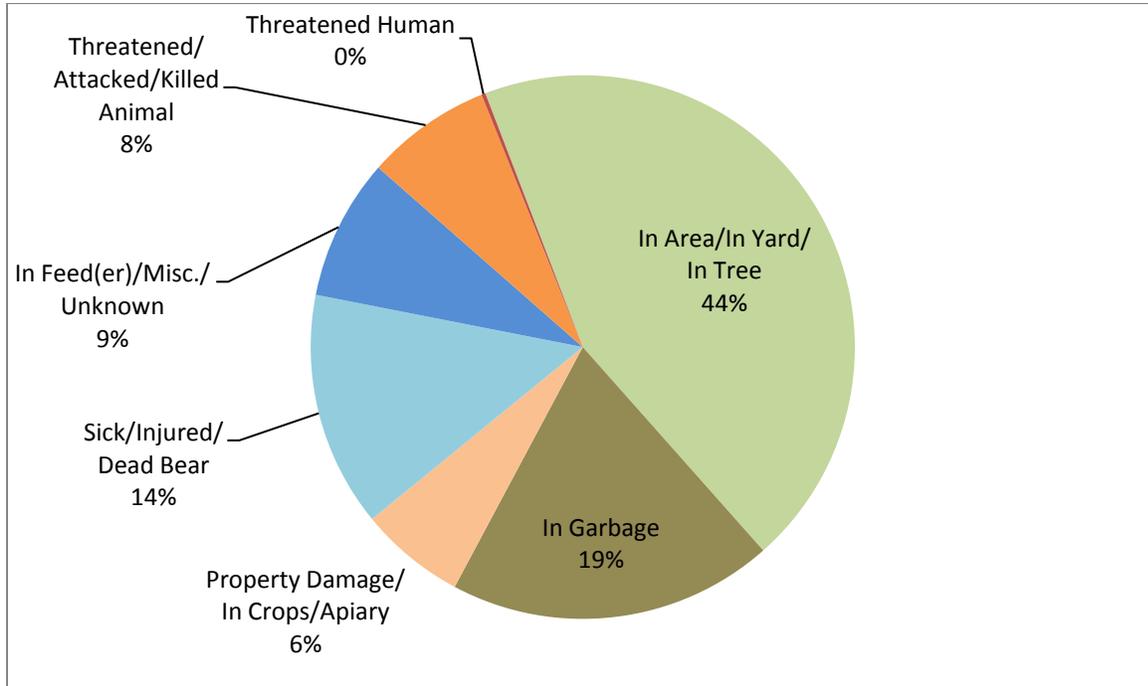
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Figure 32. Bear-related reports received by FWC in the South Central Bear Management Unit between 1990 and 2010 (n = 430).

2670



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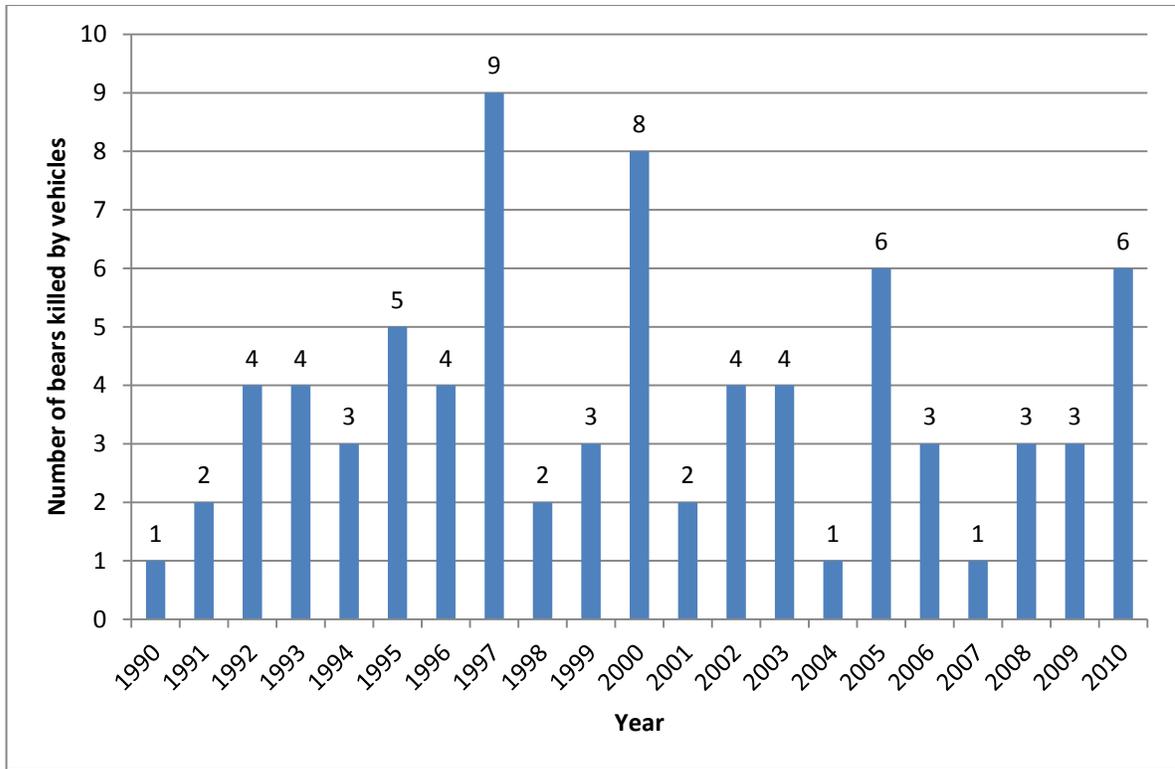
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Figure 33. Bear-related report types received by FWC in the South Central Bear Management Unit between 1990 and 2010 (n = 430).



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Figure 34. Number of bears killed by vehicles, or euthanized due to vehicle injuries, documented each year in the South Central Bear Management Unit between 1990 and 2010 (n = 78).

2680 **South Bear Management Unit**

2681 *Florida Counties:*

2682 Broward, Collier, Hendry, Lee, Miami-Dade, Monroe, and Palm Beach (Figure 35)

2683

2684 *Subpopulation Size:*

2685 Bears in the South BMU are part of the Big Cypress subpopulation, named after
 2686 the Big Cypress National Preserve which encompasses a large portion of occupied
 2687 bear range in this BMU. The current estimate of bears in the South BMU is above
 2688 the minimum subpopulation objective, and therefore the management objective is to
 2689 maintain or increase the current bear subpopulation.

2690

2691	Minimum subpopulation objective	700 bears
2692	Estimated subpopulation in primary range	516–878 bears
2693	Potential bear habitat in Conserved Lands could support	622 bears

2694

2695 *Habitat:*

2696 Currently, potential bear habitat in conserved lands is almost sufficient to meet the
 2697 minimum subpopulation objective. Habitat conservation should focus on
 2698 establishing a landscape connection northward with the Glades/Highlands
 2699 subpopulation (Figure 35). Habitat and connectivity efforts for bears should be
 2700 combined with similar initiatives for Florida panthers.

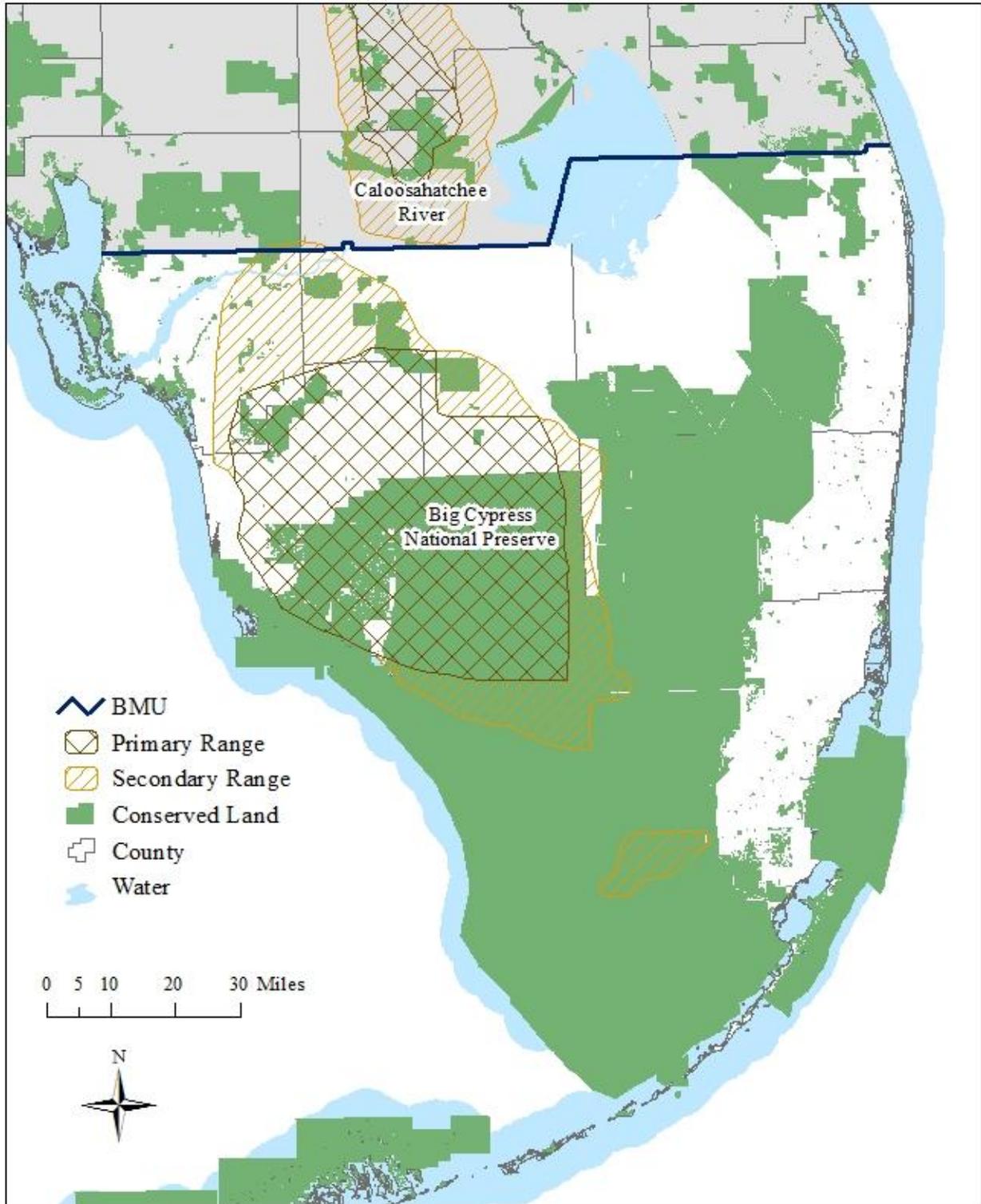
2701

2702	Habitat needed for 700 bears	1,322,014 acres
2703	Potential Bear Habitat	1,604,232 acres
2704	Potential Bear Habitat in Conservation Lands	1,173,756 acres
2705	Total area of BMU	6,756,711 acres

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Figure 35. Bear range (Simek et al. 2005) and Conserved Lands (FNAI 2009) in the South Bear Management Unit.

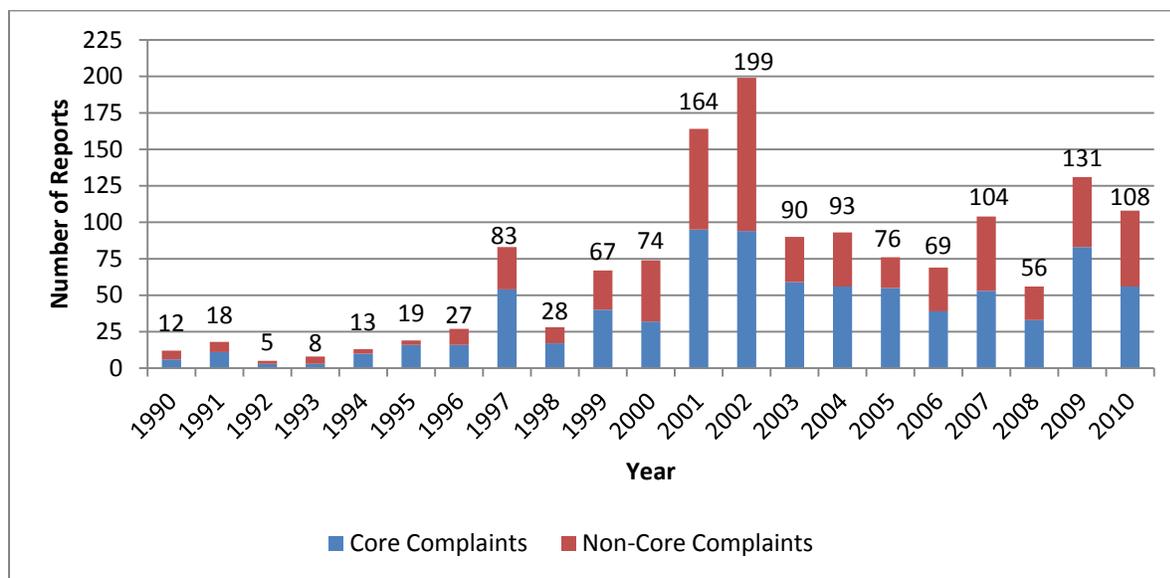
2713 *Human-Bear Conflicts:*

2714 While overall bear complaint levels are relatively low in this BMU (Figure 36), FWC
 2715 will continue efforts to reduce human-bear conflicts in locally acute areas (e.g.,
 2716 Golden Gate Estates). The relatively high percentages of reports of bears in garbage
 2717 (31%) and property damage, in crops, or in apiary (8%) received from this BMU are
 2718 indicative of a bear population that has regular access to human-provided foods
 2719 (Figure 37). Stabilizing or reducing core complaints to the three-year average
 2720 (2008–2010) of 53 per year should be manageable.

2721
 2722 *Threats:*

2723 If habitat fragmentation and degradation from residential and roadway
 2724 development continues, it could further isolate subpopulations. Vehicle-related
 2725 bear deaths are low and do not show a consistent pattern over time in this BMU
 2726 (Figure 38).

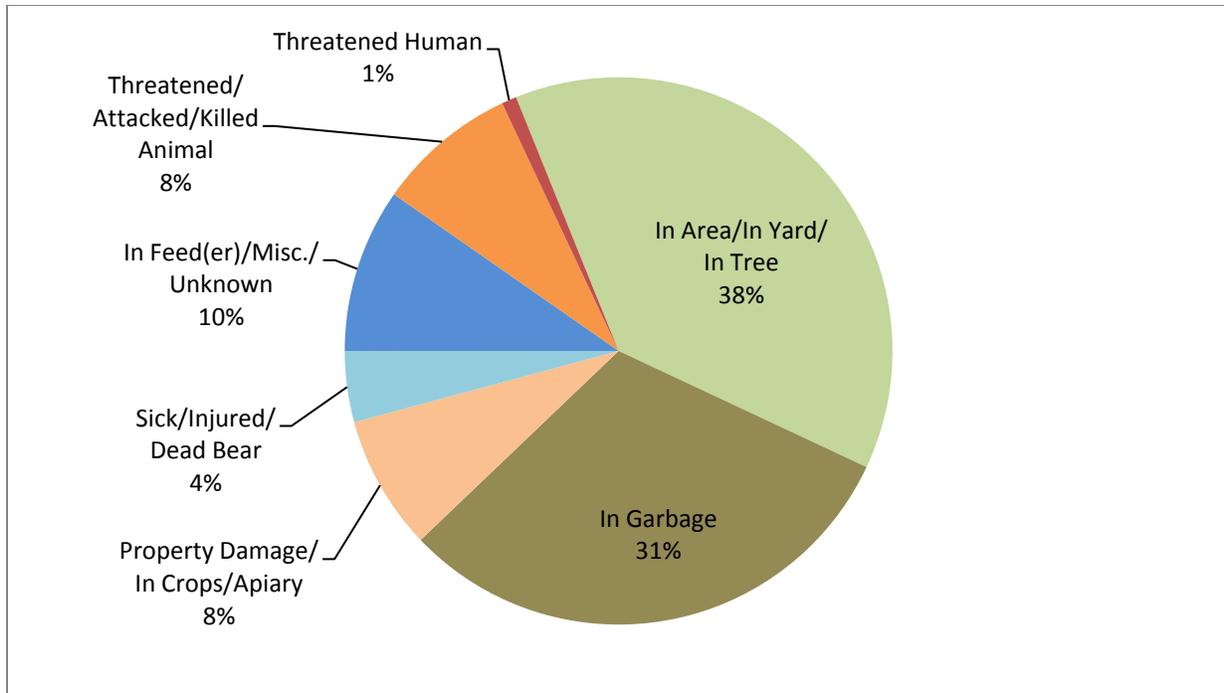
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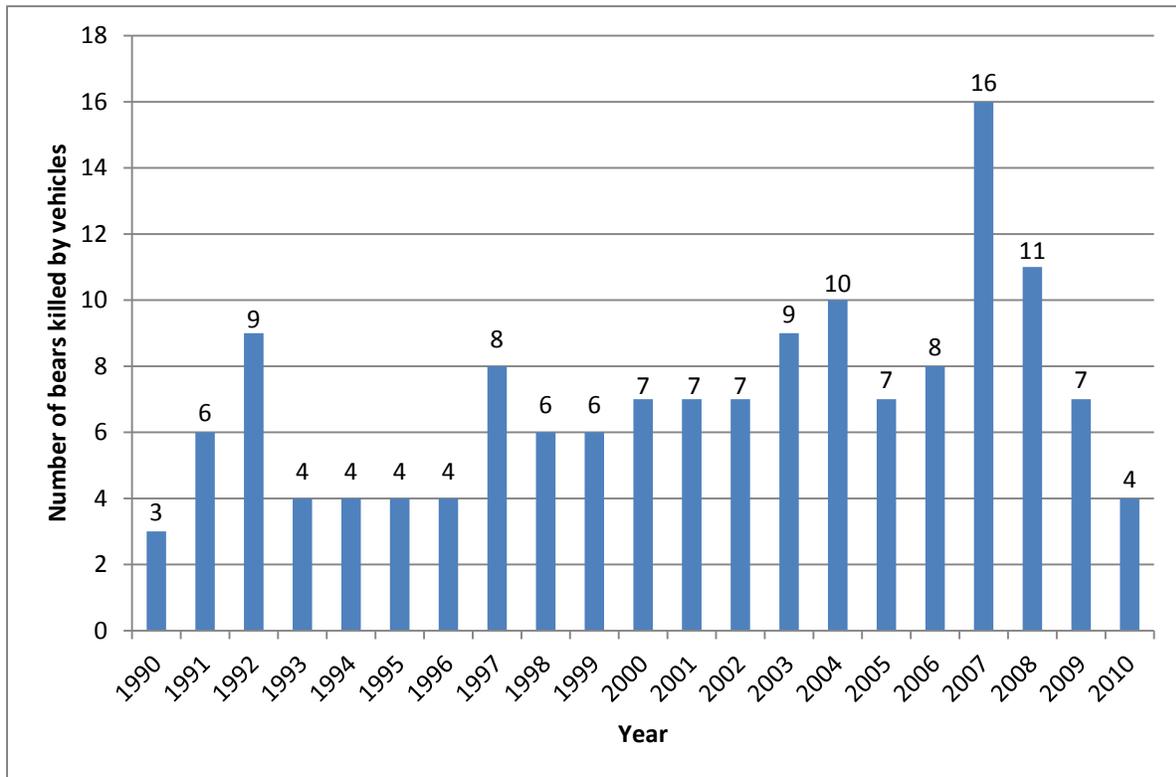
2729 **Figure 36. Bear-related reports received by FWC in the South Bear**
 2730 **Management Unit between 1990 and 2010 (n = 1,444).**

2731



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2734

Figure 37. Bear-related report types received by FWC in the South Bear Management Unit between 1990 and 2010 (n = 1,444).



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2739

Figure 38. Number of bears killed by vehicles, or euthanized due to vehicle injuries, documented each year in the South Bear Management Unit between 1990 and 2010 (n = 147).

2740

2741 **CHAPTER 5: REGULATION AND ENFORCEMENT**2742 **Regulations**

2743 The major threats to long-term survival of bears are habitat loss and
2744 fragmentation and uncontrolled human-caused mortality. Prior to the delisting of
2745 the Florida black bear, four portions of Florida Administrative Code (F.A.C.)
2746 specifically addressed bears in an attempt to minimize those threats to the species.
2747 68A-4.001(3), F.A.C., makes it illegal to feed bears if that behavior can cause
2748 conflicts with people. 68A-12.004(12), F.A.C., restricts the sale or possession of bear
2749 parts. 68A-9.010(1), F.A.C., excludes black bears from qualifying as “nuisance
2750 wildlife” (i.e., wildlife causing property damage, posing a threat to safety, or causing
2751 an annoyance in a building) eligible to be taken pursuant to the rule. 68A-27.003,
2752 F.A.C., prohibits the take, possession, or sale of any species classified as Federally
2753 Endangered or Threatened or State Threatened. While the other provisions
2754 discussed above remain in effect, 68A-27, F.A.C., no longer applies to Florida black
2755 bears subsequent to the removal of the species from the State Threatened species
2756 list.

2757 In order to meet the objectives of this management plan and ensure that the
2758 bear will not again be classified as a State Threatened species, a new rule is
2759 proposed (68A-4.009, F.A.C.; Appendix VIII). This rule will prohibit unauthorized
2760 take of bears and establish the management plan as the guidance document for
2761 future habitat conservation and protection. The proposed rule makes it unlawful to
2762 take, possess, injure, shoot, wound, trap, collect, or sell bears or their parts except
2763 as specifically provided by FWC’s rules. “Take” for the purposes of 68A-4 is defined
2764 in 68A-1 and includes “attempting to take, pursuing, hunting, molesting, capturing,
2765 or killing” by any means. Given the potential for illegal trade in bear parts and
2766 bear hides, the level of specificity and detail in this rule are considered necessary to
2767 aid in successful enforcement and prosecution. The proposed rule provides criteria
2768 that FWC considers in the authorization of intentional take that will allow the
2769 continuation of local governments and other partners assisting FWC in bear

2770 management. The rule also affirms that FWC will continue to engage with private
2771 landowners and regulating agencies to guide future land use so that it is compatible
2772 with the goal and objectives of this plan.

2773 In order to ensure that the bear remains off Florida's Threatened Species list,
2774 sufficient quantity of habitat that is interconnected to allow for interaction among
2775 bear subpopulations will be essential to support stable or increasing bear numbers.
2776 To accomplish this aim, the rule ensures that FWC will continue to work with State
2777 regulatory agencies to avoid, minimize, and mitigate impacts to bear habitat from
2778 land development. FWC currently comments on land use changes to reduce
2779 negative impacts on wildlife species. There are a number of statutes and rules that
2780 relate to FWC's role in providing comments to regulatory agencies. FWC has and
2781 will continue to provide comments and technical assistance regarding bears and
2782 bear habitat to State regulatory agencies such as the departments of Environmental
2783 Protection and Transportation, Division of Community Planning, water
2784 management districts, as well as counties and municipalities.

2785 Section 20.331 of Florida Statutes (F.S.) provides FWC with commenting
2786 authority and requires that comments be "...based on credible, factual, scientific
2787 data...". While statutes make clear that FWC's comments are not binding on the
2788 regulatory agencies, they also indicate that comments from FWC are to be
2789 considered for consistency with the Florida Coastal Management Program under
2790 subsections 373.428, 380.23, and 403.507.

2791 The goal and objectives of the plan will be considered in development of agency
2792 technical assistance, best management practices, and formal comments. Proposed
2793 projects will be evaluated on how they might affect the ability to achieve
2794 conservation objectives of a related Bear Management Unit(s). Particular attention
2795 will be given to areas where bear subpopulations are not meeting stated
2796 conservation objectives,.

2797 Penalties

2798 The Florida Constitution provides that penalties for violating FWC rules are
2799 established by the Legislature, which has been done in Part VIII of F.S. Chapter
2800 379. Most relevant for this subject, F.S. §379.401 lays out a tiered system under
2801 which various violations are grouped and the applicable penalty is prescribed. The
2802 tiers are designated as Levels One through Four, with Level One equating to
2803 noncriminal infractions for which civil penalties can be levied by a court of law and
2804 Level Four representing those violations the Legislature has determined warrant
2805 punishment as a third degree felony.

2806 Unless otherwise specifically provided for, violations of FWC rules or orders
2807 constitute a Level Two violation. Therefore, violation of the new rule is considered
2808 a Level Two violation and as such is a misdemeanor. The specific fines and/or
2809 prison time is dependent on the specifics of the case and records (if any) of prior
2810 violations. Generally, the penalty for violation of this rule is less severe than the
2811 penalties for intentionally wounding or killing a State Threatened species, which is
2812 a felony. It is not anticipated that the change in penalty for intentionally killing or
2813 wounding a bear from the present felony to a misdemeanor will have a significant
2814 impact on illegal take of bears. In fact, in some jurisdictions it may prove to be
2815 easier to successfully prosecute a misdemeanor violation under the new rule given
2816 that some state attorneys are reluctant to prosecute for a possible felony conviction.
2817 If there is evidence that the reduced penalty is hindering the protection of bears, or
2818 undermining achieving the objectives of this plan, FWC will work with stakeholders
2819 to address possible statutory changes if they are deemed necessary and appropriate.

2820 Enforcement

2821 FWC's Division of Law Enforcement (LE) has the primary responsibility for
2822 enforcing conservation laws related to bears. Consistent and fair enforcement of
2823 regulations is important in helping the public and local governments share
2824 responsibility for reducing human-bear conflicts. The key to accomplishing this

2825 task is good communication and training for the involved agencies by FWC. The
2826 establishment of agency subject matter experts that will work and share
2827 responsibility with FWC under this plan is also important.

2828 Illegal intentional take of bears as defined in this plan and under the proposed
2829 bear rule could include such activities as poaching, shooting, chasing with dogs,
2830 illegal possession, or trafficking in bear parts. FWC LE works cooperatively with
2831 other sworn officers from counties and municipalities in investigating and
2832 prosecuting such cases. FWC LE and Bear Management Program staff will
2833 continue to work with local law enforcement officials to provide training and
2834 information regarding enforcement of the black bear rule.

2835 Of the four rules that apply directly to bears, the prohibition against feeding
2836 bears presents a particular challenge for enforcement. The purpose of this rule is to
2837 reduce the likelihood of conflict with bears and the creation of potential human
2838 safety risks. Unfortunately, people continue to intentionally and unintentionally
2839 feed bears, demonstrating a need to develop more effective approaches to address
2840 this issue. Both internal and external discussions regarding the specific language of
2841 the feeding prohibition rule have led FWC to add an action to this plan to determine
2842 if any changes in the rule could make it more effective (Table 10, Action 3.1.2).

2843 Effective and consistent enforcement, whether it comes from city, county or
2844 State regulations, will be paramount in achieving compliance at a level that will
2845 successfully reduce human-bear conflicts. In addition to the existing agency feeding
2846 rule (68A-4.001(3), F.A.C.), changes in local law enforcement and regulations need
2847 to be considered. City and county ordinances will be needed to ensure the level of
2848 responsibility by the public is both recognized and adequate to deter bears from
2849 seeking garbage or other attractants (see sample ordinance in Appendix VI).
2850 Existing regulations through local sanitation departments or public health entities
2851 can be used as well. Additionally, FWC's Wildlife Alert Hotline (1-888-404-3922)
2852 should be more widely advertised for people to report individuals in their
2853 community whose actions attract bears. Increasing awareness with a strong

2854 outreach effort and accountability practices will be critical in convincing area
2855 residents to recognize their role in reducing human-bear conflicts as well.

2856 Establishing an initial education phase in the enforcement philosophy provides
2857 individuals with a fair warning system. The initial phase is followed by
2858 management practices to increase the level of enforcement based on the violation
2859 and the true intent of the violator. Additionally, direct and constant coordination
2860 with the local jurisdiction and the judicial courts system with a complete
2861 understanding of the regulations, enforcement practices, and penalties are
2862 paramount in the accountability efforts needed to achieve effective, community-
2863 oriented enforcement practices.

2864 **Permitting Framework**

2865 FWC currently issues the following bear related permits and licenses: 1)
2866 Scientific Collection (Research/Salvage), 2) Permanent Possession of Captive
2867 Wildlife, 3) Wildlife Exhibit, 4) Rehabilitation Permits, and 5) Aversive
2868 Conditioning and Hazing. Those permits will continue to be issued under this plan.

2869 Permits and licenses associated with bears are processed and issued through
2870 several programs within FWC and therefore are maintained in separate databases.
2871 This process can create confusion for users and administrators of these permits and
2872 licenses. Additionally, several of the licenses are not linked to permits, which can
2873 create further confusion. A need exists to review, refine and update the existing
2874 policies, procedures, and guidelines for permits and licenses related to bears.

2875 Bear-related permits and licenses should be consolidated where applicable.
2876 Procedures should be developed that outline how to permit and/or license
2877 individuals or entities both internal and external to FWC. Additionally, permit and
2878 license timetables, expiration dates, inspections, and reviews should be reviewed
2879 and synchronized where feasible. New methodologies should be considered in an
2880 effort to encompass needed components for permitting or licensing. Those may
2881 include shifting staff resources to allow actions that have a clear and desired

2882 conservation benefit and value, recognizing new permits or licenses needed (e.g.,
2883 depredation permits), or designating a fee schedule. FWC has initiated a permit
2884 and licensing web application system that could minimize FWC staffing
2885 requirements and provide optimal customer service. Efforts such as the web-based
2886 system could streamline the bear-related permit and license processes, thereby
2887 reducing FWC staff time and improving the end user's perspective of the system
2888 and the agency.

2889 An additional enforcement need is to provide FWC staff, contracted individuals,
2890 and response partners with training so that FWC policies and protocols are
2891 administered correctly and uniformly statewide. These actions may require the
2892 creation of permits or licenses to involve contractors and response partners to assist
2893 FWC with responding to incidents involving bears and developing Bear Smart
2894 Communities.

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2897 **CHAPTER 6: IMPLEMENTATION STRATEGY**

2898 The bear management plan is for all of Florida, not just FWC. Complex natural
2899 resource problems cannot be solved by one government agency, or by government
2900 alone. Non-governmental organizations, business interests, and the citizens of
2901 Florida will play a significant role in implementing the bear management plan.
2902 While FWC's Bear Management Program will be responsible for overseeing
2903 implementation, FWC must coordinate and work together with others outside the
2904 agency for successful implementation of this management plan.

2905 **Implementation Schedule**

2906 This plan will commence the year in which it is adopted by FWC and was
2907 designed to be in use for ten years. The plan's goal and objectives (Chapter 4) are
2908 long term; therefore, actions may be adjusted to extend the life of the plan if it still
2909 meets the state's bear management needs at the end of the ten-year period.

2910 All of the actions located in Chapter 4 have attached timeframes from one to ten
2911 years. The action tables indicate the year(s) in which the action should be
2912 implemented and the anticipated completion year. Some of the actions are on a
2913 recurring schedule and will take place throughout the timeframe. Many of the
2914 actions depend on the completion of other actions before they can be implemented.
2915 Actions supporting the Habitat Objective, for example, are aimed at identifying
2916 functioning bear corridors between BMUs. Once these areas have been identified
2917 and prioritized, other actions may be implemented to investigate the conservation
2918 status of those areas, conduct outreach to private landowners, and explore long
2919 term conservation actions. Not all of the actions identified in this plan can be
2920 initiated or worked on simultaneously. It is important to note that many of the
2921 actions which can be implemented with existing resources could be enhanced and
2922 completed sooner if other resources were made available. While fully establishing
2923 and working with BBAGs in each BMU will require other resources, for example,

2924 there are some components of establishing these groups that can be accomplished in
2925 a few BMUs with existing resources (Table 12).

2926 **Current Resources for Implementation**

2927 FWC has been successful in bear conservation efforts by maximizing existing
2928 resources, and it is expected that many priority actions in this plan will be
2929 implemented with existing resources. FWC will continue to make appropriate
2930 efforts to secure additional resources to enhance and accelerate execution of this
2931 plan. FWC's Bear Management and Research Programs have four full-time
2932 employees and three temporary part-time employees that work solely on black
2933 bears with an operating budget of approximately \$143,000 per year. The Bear
2934 Management Program also has an internship program that hosts 15 to 20 students
2935 from local universities each year to complete management projects, perform
2936 outreach, and assist in database maintenance. Grants from the Conserve Wildlife
2937 Tag (CWT) license plate fund support the Bear Response Program, which is a group
2938 of 10 contracted, private individuals who assist with human-bear conflict
2939 management. In addition to the Bear Response Program, the CWT also funds other
2940 important bear management and research projects.

2941 Outside of the bear programs, there are many other Division, Section, and
2942 Office personnel involved in bear management. Over 40 FWC employees in the
2943 Terrestrial Habitat Conservation and Restoration Section (THCR) are available to
2944 respond to human-bear conflicts. The Northwest Region, for example, currently
2945 spends the equivalent to one full-time employee spread across 14 staff dealing with
2946 bears in some capacity each year. FWC also employs five temporary wildlife
2947 assistance biologists to assist the thousands of people who call FWC each year with
2948 questions or concerns about bears and other wildlife. Those positions form an
2949 information hub between the office and field personnel, relaying information to
2950 senior staff and dispatching employees when necessary. FWC's Office of
2951 Conservation Planning employs six staff members who review and draft comments
2952 on land use changes for review by Bear Management Program staff. Numerous

2953 officers with FWC Division of Law Enforcement provide critical outreach to the
2954 public about bears in addition to their enforcement roles. Staff with the Office of
2955 Community Relations is regularly involved with outreach efforts related to bears
2956 through press releases, media interviews, and creation of outreach materials.

2957 **Resource Considerations**

2958 The temporary and part-time staff currently involved in bear management
2959 activities provide critical services to FWC's bear program. Those positions are
2960 currently funded either from CWT funds or state trust funds, neither of which are
2961 dedicated to bears. The undedicated funding sources and high turnover rates for
2962 those positions create a challenge for FWC. If additional or redirected resources
2963 were available, changing those positions from temporary part-time to full-time
2964 would increase the positions' job security and benefits, which could reduce turnover
2965 and allow FWC to attract and maintain experienced staff in these important
2966 positions. Similarly, the contractors hired under the Bear Response Program do not
2967 have a dedicated funding source. The program has been funded with CWT grants
2968 since 2009, but has no assurances that those funds will remain available for this
2969 program.

2970 The bear program is fortunate it can rely on such a large number of FWC staff
2971 to be involved with bear management activities. In particular, the large number of
2972 THCR staff allows for an efficient statewide response to human-bear conflicts.
2973 However, THCR staff members have multiple job responsibilities and, under the
2974 current agency structure, cannot be expected to dedicate a large amount of their
2975 time on bear management activities on a regular basis.

2976 The plan calls for the creation of seven BMUs across the state to accommodate
2977 the different characteristics and issues of each of the main bear subpopulations.
2978 The plan proposes the creation of a BBAG for each of the seven BMUs. The BBAG
2979 would be a forum within which interested stakeholder groups could meet with FWC
2980 and provide their input on bear management issues. Resources will be required to

2981 create and staff BBAGs. There are a number of ways FWC could redirect internal
2982 programmatic resources to accomplish effective plan implementation without a
2983 significant increase in new resources. FWC could decide, for example, to consolidate
2984 bear management activities into a few staff positions. Those positions would have
2985 an increase in time dedicated to bear management while significantly reducing the
2986 amount of time the majority of other staff would spend on bear management
2987 activities. This approach would take advantage of existing experience with the local
2988 area and bear management issues while freeing up many more employees to focus
2989 on their workloads associated with their assigned wildlife management areas. An
2990 alternative strategy is to use a matrix management approach, where staff
2991 supervision changes depending on what activities they are conducting. An FWC
2992 staff person conducting a prescribed burn, for example, would be supervised under
2993 THCR. When that same person is trapping a bear, they would be supervised under
2994 the Bear Management Program. This approach allows staff to complete a variety
2995 tasks with confidence that their supervisor will have the expertise to guide them.

2996 Depending upon the level of implementation, the actions identified in the plan
2997 could cost the bear program an additional \$300,000 annually. Those costs could be
2998 met using additional funds or from reprioritizing existing funding within FWC. The
2999 action tables indicate which actions can be implemented with existing resources and
3000 which may require other resources. A fully detailed budget based on this plan will
3001 be developed at a later date; however, the plan offers four examples of action items,
3002 one from each of the four objectives, that would benefit from other resources (Table
3003 13). Each project has a firm basis to estimate costs and is also a high priority
3004 action. Costs are estimated over the ten-year timeframe of the plan, although not
3005 all projects would be active in each of the ten years.

3006 There are several avenues of securing additional resources outside of FWC if
3007 deemed appropriate for plan implementation. The first step is to propose a
3008 comprehensive budget with estimates on both staff and resources needed for full
3009 implementation of the actions listed in this plan. The plan would provide a

3010 **Table 13. Ten-year cost estimates for one action item from each**
 3011 **objective that would benefit from other resources for**
 3012 **implementation of the Florida Black Bear Management Plan.**

Objective	Description	Ten-Year Cost Estimate
Population	Subpopulation abundance estimates ^a	\$600,000
Habitat	Identify and prioritize landscape connections among subpopulations	\$100,000
Conflict Management	Bear Response Program annual contractor costs	\$500,000
Education and Outreach	Identify, recruit and assist communities in becoming Bear Smart Communities ^b	\$70,000

3013 ^a. There are five subpopulations that will not have had abundance estimates within two years of the
 3014 plan approval, and each estimate costs \$120,000 and takes three years to complete.

3015 ^b. Implementation of the Bear Smart Community (BSC) program assumes FWC can identify, within
 3016 each of the seven BMUs, four candidate areas and will assist at least one community in meeting the
 3017 BSC criteria.

3018
 3019 blueprint with which a detailed proposal can be built that will be part of more
 3020 formal requests to external funding sources. The approach most likely to be
 3021 successful in obtaining funds in the near term would be seeking various foundation
 3022 grants for specific bear management and research projects. Implementation of long
 3023 term management or research projects described in this plan, however, would only
 3024 be sustainable if the funds were either dedicated or in multi-year grants. For long-
 3025 term projects and sustained programs, FWC could submit a funding request for
 3026 increased legislative spending authority for bear conservation.

3027 FWC also can seek greater collaboration with public and private partners to
 3028 complete actions currently lacking outside support. FWC can implement specific
 3029 actions increasing existing external resources for FWC's partners in bear
 3030 conservation. FWC can develop a strategy to increase sales of the CWT license
 3031 plate, for example, or steer corporate sponsorships, endowments, and donations to
 3032 the Wildlife Foundation of Florida's 'bear account'. These actions center on creating
 3033 formal partnerships to perform certain actions and finding funding to implement
 3034 them. Defenders of Wildlife, for example, has been a very active partner with FWC
 3035 on many occasions to assist with projects, but these funds are, of course, not

3036 dedicated and therefore cannot be relied on to support regular conservation
3037 activities. FWC can also attempt to match local sources of funding with localized
3038 bear conservation activities, like the Bear Smart Community program (Chapter 4,
3039 Education and Outreach).

3040 **Coordination with Other Efforts**

3041 Bears require large areas for sustainable populations, thus their needs
3042 overlap with hundreds of other species and therefore serve as an **umbrella species**
3043 in habitat conservation efforts. Coordination across various planning and
3044 conservation efforts will be critical to ensure effective use of limited resources. The
3045 additional 1.3 million acres of bear habitat needed to meet the minimum population
3046 objectives identified in this plan (Table 7) falls well within the range of acreages
3047 designated in other Florida planning efforts (Table 14). Many to nearly all of these
3048 bear habitat acres overlap with those in other plans. The Gopher Tortoise
3049 Management Plan (FWC 2007), for example, calls for the preservation of an
3050 additional 615,000 acres of habitat. This acreage, while not explicitly demarcated,
3051 falls largely within the same areas needed for bears. Careful consideration should
3052 be given to overlap priorities of proposed lands to maximize resources. FWC's bear
3053 programs, as currently staffed and funded, can perform some of the necessary
3054 duties, but more resources will be needed to fully coordinate with landscape
3055 conservation endeavors.

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3061 **Table 14. Landscape-scale wildlife habitat planning efforts in Florida.**

Effort / Plan	Total Acres	Total Private Acres
FWC Gopher Tortoise Management Plan	1,955,000	615,000
Florida Forever	2,009,182	2,009,182
FWC Black Bear Management Plan	7,530,536	1,263,944
FWC Closing the Gaps Report	11,700,000	4,820,000
FWC Integrated Wildlife Habitat Ranking System	14,628,639	6,054,082
The Nature Conservancy Florida Assessment	15,861,368	6,901,622
Critical Lands & Waters Identification Project (P1&P2)	25,093,930	10,709,354
Greenways and Trails Ecological Network	25,601,250	14,615,212

3062 **CHAPTER 7: ANTICIPATED IMPACTS**

3063 Humans and bears have interacted with one another throughout Florida's
3064 history. Florida's bears generally try to avoid contact with people but encounters do
3065 occur as a result of bears' large home ranges and adaptable behavior, and the land-
3066 use and lifestyle decisions of people. The development of residential communities in
3067 close proximity to bear populations and expanding bear range has created the
3068 potential for increased human-bear interactions. Negative human-bear interactions
3069 can occur when preferred bear foods are planted or maintained near homes, and
3070 when human food (e.g., unsecured garbage) is made easily available to bears.
3071 Interactions are more likely when natural bear foods become scarce, such as during
3072 years of drought or **mast** failure. This management plan addresses managing the
3073 impacts of society on bears as well as the effects bears have on people. In this
3074 section of the plan, the social, economic, and ecological impacts of implementing or
3075 not implementing this management plan will be considered.

3076 **Social Impacts**

3077 People value wildlife, including bears, for many reasons and their perspectives
3078 vary according to individual interests (Kellert 1980). Bears are charismatic animals
3079 and many people enjoy the opportunity to view bears (Kellert 1994, Jonker et al.
3080 1998, Bowman et al. 2001, Morzillo et al. 2007, Miller et al. 2008). Kellert (1994)
3081 offers that the positive attitudes people have about bears could be because bears are
3082 'phylogenetically similar to humans, intelligent, and aesthetically pleasing.' The
3083 overall impact of bears on society depends on how individuals with differing
3084 interests perceive and experience human-bear interactions (Kellert 1994).

3085 The European settlers in Florida valued bears mostly for practical reasons.
3086 They were used for their meat, hides, and other products but otherwise treated as
3087 vermin because people considered bears a threat to livestock and a competitor with
3088 humans for food. This viewpoint dominated people's interactions with bears well
3089 into the 20th century and likely resulted in severe reductions in the abundance of
3090 bears. In the second half of the 20th century, however, several factors led to a more

3091 positive attitude towards wildlife and predators in particular: a shift in the economy
3092 (from less to more sustainable); greater understanding of the ecological importance
3093 of predators (Bjerke and Kaltenborn 1999); and the listing of bears as a State
3094 Threatened species (GFC 1974). Despite this overall shift in the public opinion of
3095 bears, a wide range of attitudes towards bears still exists in Florida because of
3096 people's differing experiences with bears and varying interests in them (McDonald
3097 1998, Miller et al. 2008). Balancing such viewpoints in a management plan is
3098 challenging.

3099 The frequency and nature of a person's interactions with bears influences their
3100 opinion of those interactions as good or bad, and ultimately leads to an overall
3101 positive or negative view towards bears (Kellert 1994). For example, a beekeeper
3102 with an apiary near a forest might have low personal tolerance for bears, if bears
3103 caused severe and costly damage to the bee yard. On the other hand, urban
3104 residents traveling to the same forest to view black bears might perceive the bear
3105 population as too small if a bear is not seen while visiting. Determining the **social**
3106 **carrying capacity** for bears requires balancing benefits people gain from bears
3107 against human tolerance for negative human-bear interactions. Lower tolerance for
3108 bears in areas of higher human populations will limit bear populations before
3109 available resources become a limiting factor or the **biological carrying capacity**
3110 is reached (Kellert 1994). Measurements of social carrying capacity are somewhat
3111 subjective and involve a combination of social, economic, political and ecological
3112 perspectives.

3113 Implementation of this plan should result in fewer negative human-bear
3114 interactions and a higher social carrying capacity for bears. Residents may have a
3115 sense of ownership and increased responsibility for bears in their area if they are
3116 allowed to provide input into local bear management activities through programs
3117 such as BBAGs. Habitat conservation efforts on behalf of bears will provide many
3118 additional direct benefits to residents while negative human-bear interactions
3119 should decline as a result of changes in waste management policies by local
3120 governments and the potential relocation or removal of bears from areas of dense

3121 human populations. Education and outreach regarding living with bears is critical
3122 to the success of this plan. Although there has never been a life threatening injury
3123 or predatory attack by a black bear on a human in Florida, there have been over a
3124 dozen reported incidents of bears biting or scratching people. In those incidents, the
3125 bears were defending cubs, food, or themselves. Educating the public about bear
3126 behavior and what people can do to reduce bear activity in their neighborhoods
3127 should increase public safety.

3128 If, however, the management practices outlined in this plan are not
3129 implemented, there is a high likelihood of increasing negative interactions between
3130 bears and people. Without an outreach campaign to educate people on successfully
3131 living near bears, human food will continue to be available to bears, thus creating
3132 potential public safety issues. If current trends continue, the number of negative
3133 human-bear interactions may increase and could lead to a diminished opinion of
3134 bears by Floridians and subsequent lack of support for bear conservation. If
3135 residents are not allowed to be involved in local bear management decisions
3136 through practices such as BBAGs, there could be a lower social carrying capacity.

3137 **Economic Impacts**

3138 Positive economic benefits of bears may include the stimulation of local
3139 economies near bears and conservation easements for owners of occupied bear
3140 habitat, while negative economic impacts include property damage (including
3141 damage caused by vehicle-bear collisions) and the cost of bear management.

3142 Educational events such as the Florida Black Bear Festival in Umatilla attract
3143 visitors to rural areas. Such festivals can boost the local economy by providing
3144 opportunities for vendors to sell merchandise and promote their businesses. Bear-
3145 related activities can lead to the creation of private sector jobs and increase the
3146 sales of equipment, food, fuel, and lodging at local businesses, which then provides
3147 revenue to the State via sales taxes.

3148 The designation of bear scenic byways may further develop local economies by
3149 increasing the standing of an area and attracting more visitors. In February 2008,

3150 portions of State Roads 40 and 19 were designated as the Florida Black Bear Scenic
3151 Byway through a cooperative effort among Marion, Lake, Putnam, and Volusia
3152 county government officials, Ocala NF staff, and businesses, land owners, and local
3153 residents along the corridor. Byways such as this are eligible to receive Federal
3154 funding for the construction of informational kiosks and interpretive areas, and to
3155 apply for status as a National Scenic Highway.

3156 Another benefit of following the habitat conservation and management
3157 recommendations in this plan may be the economic stimulation of local communities
3158 through bear viewing opportunities. People enjoy visiting areas that afford
3159 opportunities to see bears. Surveys show visitors in the Great Smoky Mountains
3160 National Park preferred seeing a bear to seeing any other wildlife species
3161 (Burghardt et al. 1972). This attraction of people to bears can lead to positive
3162 economic impacts. In Florida, ecotourism near black bear populations may
3163 stimulate rural economies by attracting a portion of the State's annual 82 million
3164 tourists (Visit Florida 2009).

3165 Implementation of this plan also can result in economic benefits for large
3166 landowners of suitable bear habitat or who have bears on their land. FWC and
3167 members of BBAGs can assist landowners with negotiating conservation easements
3168 (i.e., tax saving programs associated with keeping their land in a natural state).

3169 Bears may be a financial liability when they interact negatively with humans,
3170 particularly if the interaction results in property damage. Property damage was
3171 reported in approximately 11 percent of complaints to FWC from 1980 through 2010
3172 (FWC, unpublished data, 2010). Vehicle-bear collisions are of particular concern
3173 because they not only result in property damage, but can also pose a human safety
3174 issue. Conservation actions such as warning signs, slower posted speed limits,
3175 fencing, and wildlife underpasses or elongated bridges reduce the risk of such
3176 collisions. The frequency and severity of other negative human-bear interactions
3177 can be reduced if the number of human-habituated bears declines. This can be
3178 achieved by decreasing the availability of human-provided foods. As the number of

3179 negative interactions between bears and humans drops, economic costs associated
3180 with property damage should also decline.

3181 The cost to agencies and local economies of implementing this plan is another
3182 potentially negative economic impact of bears. If meeting plan objectives requires
3183 large amounts of habitat to be purchased and placed in conservation, significant
3184 resources will be required. Alternatively, not implementing various aspects of this
3185 management plan could also result in significant economic costs to agencies and
3186 local economies. Without organized management efforts, bear ecotourism will be
3187 minimized, whereas human-bear conflicts will likely increase, particularly among
3188 rural communities and large landowners in bear range. Those individuals will have
3189 to incur the cost of repeated conflicts with bears, yet will receive limited economic
3190 benefits from them. An increase in human-bear conflicts will prove costly to
3191 agencies responsible for handling those complaints and is a significant threat to
3192 bear conservation efforts.

3193 **Ecological Impacts**

3194 Bears are an **umbrella species** because they require large home ranges and
3195 diverse natural plant communities, so preserving and managing healthy bear
3196 populations provides habitat for many other species as well. Additionally, corridors
3197 established and maintained for bears can be used by other species, either as
3198 corridors or as habitat. Bears also may serve an important ecological role in their
3199 communities as seed dispersers (Auger et al. 2002). Conserving bears and bear
3200 habitat ensures bears can continue such meaningful ecological roles.

3201 Although bears compete with other animals for certain foods such as acorns,
3202 and occasionally kill individual palms or small mammals, they are nutritional
3203 generalists that feed on a wide variety of foods based on seasonal availability
3204 (Maehr and Brady 1984). While there may be localized or seasonal impacts from
3205 increased bear numbers, no single plant or animal species would be considered
3206 vulnerable to an increased statewide bear population. Additionally, no species is
3207 reliant on bears as their primary source of prey.

3208 It is important to examine the likely ecological consequences of not
3209 implementing this management plan. Considering the high rate of urbanization
3210 and human population growth in Florida, a concerted effort is required to conserve
3211 native habitat and decrease habitat loss, degradation, and fragmentation. In
3212 addition to providing wildlife habitat, large forests offer benefits to people, which
3213 can include groundwater recharge, long-term storage of carbon dioxide, water
3214 filtration, flood water storage, wood products, and recreational opportunities (Allen
3215 et al. 2001). If the conservation actions detailed within this management plan are
3216 not acted on and adequate bear habitat is not conserved, bear subpopulations may
3217 decline and spatial and genetic isolation will increase. Populations of other flora
3218 and fauna reliant on the same intact habitat as bears will suffer similar fates, and
3219 the ecological services that benefit people will be reduced.

3220 As additional habitat is degraded and fragmented, bears will likely be forced to
3221 forage closer to human dwellings. Bears will become more habituated and food
3222 conditioned to people, causing the frequency and severity of human-bear conflicts to
3223 increase. Because those outcomes collectively could lead to a significant reduction
3224 in public support for bears, consequences to statewide conservation efforts could be
3225 far-reaching and drastic.

3226 Implementation of this plan should not only result in a healthy and genetically-
3227 connected bear population in Florida, it should also enhance the populations of a
3228 wide variety of other plants and animals.

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3611 APPENDIX I. BEAR MANAGEMENT UNIT, BEAR RANGE AND CORE COMPLAINTS IN FLORIDA COUNTIES.

3612 Table 15. Florida counties identified by Bear Management Unit (BMU), whether in primary (1)
 3613 and/or secondary (2) or in neither bear range, and the number of core complaints received from
 3614 the public by Florida Fish and Wildlife Conservation Commission in 2010.

County	BMU	1	2	2010 Core Complaints
Alachua	Central	No	Yes	0
Baker	North	Yes	Yes	2
Bay	E. Panhandle	Yes	Yes	47
Bradford	Central	No	Yes	1
Brevard	Central	No	Yes	3
Broward	South	No	Yes	0
Calhoun	E. Panhandle	Yes	Yes	2
Charlotte	S. Central	No	No	7
Citrus	Big Bend	Yes	Yes	8
Clay	Central	Yes	Yes	2
Collier	South	Yes	Yes	55
Columbia	North	Yes	Yes	3
De Soto	S. Central	No	No	0
Dixie	Big Bend	No	Yes	0
Duval	North	No	Yes	0
Escambia	W. Panhandle	No	No	2
Flagler	Central	Yes	Yes	1
Franklin	E. Panhandle	Yes	No	118

County	BMU	1	2	2010 Core Complaints
Gadsden	E. Panhandle	Yes	Yes	33
Gilchrist	Big Bend	No	No	0
Glades	S. Central	Yes	Yes	1
Gulf	E. Panhandle	Yes	No	15
Hamilton	North	Yes	Yes	0
Hardee	S. Central	No	Yes	1
Hendry	South	Yes	Yes	0
Hernando	Big Bend	Yes	No	2
Highlands	S. Central	Yes	Yes	3
Hillsborough	S. Central	No	No	0
Holmes	W. Panhandle	No	No	0
Indian River	S. Central	No	No	0
Jackson	E. Panhandle	No	No	3
Jefferson	E. Panhandle	Yes	Yes	4
Lake	Central	Yes	Yes	284
Lafayette	Big Bend	No	No	1
Lee	South	Yes	Yes	1
Leon	E. Panhandle	Yes	Yes	136

3615 **APPENDIX II. FLORIDA BLACK BEAR BIOLOGICAL STATUS REVIEW REPORT**3616 **Biological Status Review**
3617 **for the**
3618 **Florida black bear**
3619 **(*Ursus americanus floridanus*)**
3620 **March 31, 2011**3621
3622 **EXECUTIVE SUMMARY**
3623

3624 The Florida Fish and Wildlife Conservation Commission (FWC) directed staff to
3625 evaluate all species listed as Threatened or Species of Special Concern as of
3626 November 8, 2010 that had not undergone a status review in the past decade.
3627 Public information on the status of the Florida black bear was sought from
3628 September 17 to November 1, 2010. The members of a Biological Review Group
3629 (BRG) met on November 3-4, 2010. Group members were Walter McCown (FWC
3630 lead), Mel Sunquist (University of Florida, Emeritus), and Bill Giuliano (University
3631 of Florida) (Appendix 1). In accordance with rule 68A-27.0012, Florida
3632 Administrative Code (F.A.C.), the BRG was charged with evaluating the biological
3633 status of the Florida black bear using criteria included in definitions in rule 68A-
3634 27.001, F.A.C., and following the protocols in the *Guidelines for Application of the*
3635 *IUCN Red List Criteria at Regional Levels (Version 3.0)* and *Guidelines for Using*
3636 *the IUCN Red List Categories and Criteria (Version 8.1)*. Please visit
3637 <http://myfwc.com/wildlifehabitats/imperiled/listing-action-petitions/> to view the
3638 listing process rule and the criteria found in the definitions. Rule 68A-27.003,
3639 F.A.C., designates Florida black bears as State-designated threatened throughout
3640 the State, but excludes those found in Baker and Columbia counties and in
3641 Apalachicola National Forest. For the purposes of this review, however, we
3642 evaluated the taxon's status on a statewide basis, as the bears within these counties
3643 and national forest are not biologically distinguishable from those outside these
3644 areas, nor are they isolated by these areas' political boundaries.

3645
3646 In late 2010, staff developed the initial draft of this report which included BRG
3647 findings and a preliminary listing recommendation from staff. The draft was sent
3648 out for peer review and the reviewers' input has been incorporated to create this
3649 final report. The report, peer reviews, and information received from the public are
3650 available as supplemental materials at
3651 <http://myfwc.com/wildlifehabitats/imperiled/biological-status/>.

3652
3653 The BRG concluded from the biological assessment that the Florida black bear did
3654 not meet listing criteria. Based on the literature review, information received from
3655 the public, and the BRG findings, staff recommends that the Florida black bear not
3656 be listed as a Threatened species.

3657

3658 This work was supported by a Conserve Wildlife Tag grant from the Wildlife
3659 Foundation of Florida. FWC staff gratefully acknowledges the assistance of the
3660 biological review group members and peer reviewers. Staff would also like to thank
3661 Karen Nutt who served as a data compiler on the species and contributed to this
3662 report.

3663

3664 **BIOLOGICAL INFORMATION**

3665

3666 **Taxonomic Classification** – The Florida black bear was initially described by
3667 Merriam (1896) as a separate species based on its long skull and highly arched
3668 nasal bones. Subsequently, Hall and Kelson (1959) and Harlow (1961) recognized
3669 the Florida black bear as one of 16 subspecies of the American black bear.

3670

3671 **Life History** – Florida black bears are uniformly black except for a tan or brown
3672 muzzle and occasionally a white chest patch (Maehr and Wooding 1992). Adult
3673 females weigh 130 to 180 lbs., and adult males usually weigh 250 to 350 lbs.

3674

3675 The habitat used by Florida black bears is diverse and ranges from temperate plant
3676 communities in northwestern Florida to subtropical communities in southern
3677 Florida (Maehr and Wooding 1992, Land et al. 1994). Bears inhabit cypress
3678 swamps, cabbage palm forests, pine flatwoods, mixed hardwood swamps, sand pine
3679 scrub, mixed hardwood hammocks, mixed hardwood pine forests, oak scrub, pine
3680 plantations, upland hardwood forests, bay swamps, sandhill communities, and
3681 mangrove swamps (Hector 2003, Maehr and Wooding 1992). Bears are opportunistic
3682 omnivores, eating a wide variety of plant material including soft fruits, hard mast,
3683 and herbaceous material but also including insects and some vertebrates, (Maehr
3684 and Wooding 1992). Bears will alter their habitat use and home range size
3685 seasonally depending on food availability and reproductive status (Maehr and
3686 Wooding 1992, Ulrey 2008, Moyer et al. 2007).

3687

3688 Florida black bear females become sexually mature between 3 and 4 years of age
3689 (Garrison 2004). Mating takes place in June or July and females may mate with
3690 several males (Maehr and Wooding 1992). Reproductive females den for an average
3691 of 113 days beginning in mid-December to mid-January, emerging in late March to
3692 late April (Garrison 2004, Dobey et al. 2005). Dens are usually shallow depressions
3693 on the ground in dense thickets of shrubs and vines (Garrison 2004, Maehr and
3694 Wooding 1992). Cubs are born in January or February in litters of two to four
3695 offspring (Maehr and Wooding 1992, Dobey et al. 2005, Garrison et al. 2007). Cubs
3696 weigh six to eight pounds when they leave the den at ten weeks old (Garrison et al.
3697 2007). Cubs remain with their mother until they are 15-17 months old. Males
3698 disperse but females generally form a home range that overlaps their natal home
3699 range (Moyer et al. 2006). Variation in home range size and shape is influenced by
3700 the temporal and spatial distribution of food, reproductive status, and human
3701 influences. Annual home ranges of female Florida black bears vary from 3.8 km² to

3702 126.9 km² (Dobey et al. 2005, Moyer et al. 2007). Home range size for male black
3703 bears generally varies from 94 km² to 185 km² (Land et al. 1994, McCown et al.
3704 2004, Ulrey 2008).

3705

3706 **Geographic Range and Distribution** – The Florida black bear was historically
3707 widespread throughout mainland Florida and the southern portions of Georgia and
3708 Alabama (Maehr and Wooding 1992). Currently, there is one subpopulation in and
3709 around the Okefenokee National Wildlife Refuge in Georgia; one subpopulation
3710 near Mobile, Alabama; five large Florida subpopulations (Ocala/St. Johns, Osceola,
3711 Eglin, Apalachicola, and Big Cypress), and two small, remnant subpopulations in
3712 Florida (Chassahowitzka and Glades/Highlands) (Figure 1). This report assesses
3713 the portion of the Florida black bear population within the state of Florida.

3714

3715 Bear range in Florida was estimated (Simek et al. 2005) by dividing the state into a
3716 systematic grid of 4,447 ha (10,000 ac) cells based on estimates of minimum patch
3717 size needed for bears (Cox et al. 1994, Maehr et al 2001). The presence of bears was
3718 determined within each cell using 1999-2003 locations of nuisance and roadkill
3719 bears, captures, telemetry data, FWC's Wildlife Observation Data Base,
3720 observations from FWC personnel, and interviews with owners or managers of large
3721 land holdings. Based on these data, each grid cell was coded to document the
3722 distribution of bears as either breeding range (females present) or non-breeding
3723 range (no females documented). The extent of the calculated breeding range was
3724 26,099 km² and the nonbreeding range was estimated to be 19,306 km². Within this
3725 document, breeding range is considered to be equivalent to the IUCN term Area of
3726 Occupancy (AOO), and the breeding range and the non-breeding range combined
3727 (45,405 km²) are considered to be equivalent to the IUCN term Extent of
3728 Occurrence (EOO).

3729

3730 Within Florida the largest expanse of virtually unoccupied, but apparently suitable,
3731 bear habitat is in the Big Bend Region. Deforestation and persecution by humans
3732 in the early to mid- 1900s were probably the primary factors contributing to the
3733 extirpation of bears there. Subsequent regrowth and replanting of forest cover,
3734 however, has improved the potential habitat quality for bears in the area. Hctor
3735 (2006) modeled the probability of occupancy of black bear habitat in Florida based
3736 upon land cover type, patch size, distance from habitat patches, and connectivity
3737 and size of large habitat mosaics. A conservative estimate of potential density (0.08
3738 – 0.10 bears/km²) for the 5, 949 km² of the best bear habitat in the Big Bend
3739 suggests this area could support 475 – 590 bears. It currently supports < 100 bears
3740 (FWC unpublished data). Although female bears normally establish home ranges
3741 that overlap their natal home ranges (Moyer et al. 2006) and thus are poor
3742 dispersers, the Big Bend shares a landscape connection with currently occupied
3743 bear range in Apalachicola National Forest and is likely to support more bears over
3744 time.

3745

3746 Although the black bear is widespread in Florida, its distribution is fragmented
3747 with limited landscape connectivity or genetic exchange between subpopulations
3748 (Dixon et al. 2007, Maehr and Wooding 1992). Black bears in Florida currently
3749 inhabit 18% of their historic range totaling approximately 45,405 km² (17,531 mi²)
3750 (EOO), within which reproduction occurs on approximately 26,000 km² (10,077 mi²)
3751 (AOO) (Figure 1).

3752
3753 **Population Status and Trend** – The full black bear species, *Ursus americanus*, is
3754 currently listed as Least Concern by the IUCN because “this species is widespread,
3755 with a large global population estimated at more than twice that of all other species
3756 of bears combined. Moreover, in most areas populations are expanding numerically
3757 and geographically. Threats exist only in a few isolated places” (Garshelis et al.
3758 2008).

3759
3760 The sub-species of black bear in Florida became listed as a state Threatened species
3761 in 1974 but remained a game animal on private lands in Baker and Columbia
3762 counties, on the Osceola and Apalachicola national forests, and on Tyndall Air Force
3763 Base (through 1976). The threatened designation was removed from bears in Baker
3764 and Columbia counties and Apalachicola National Forest in 1978 and regulations
3765 were established prohibiting the hunting of threatened species in 1979 (GFC 1993).
3766 As a result, the black bear is currently listed as a Threatened species by the State of
3767 Florida except in Baker and Columbia counties and Apalachicola National Forest.
3768 For the purposes of this review, however, we evaluated the taxon’s status on a
3769 statewide basis as the bears within these counties and national forest are not
3770 biologically distinguishable from those outside these areas, nor are they isolated by
3771 these areas’ political boundaries.

3772
3773 Obtaining a reliable population estimate of black bears is challenging. They are
3774 reclusive animals with large home ranges and inhabit remote, densely forested
3775 habitats making direct counts impractical. Mark-recapture population estimation
3776 techniques, however, are available that are reliable and scientifically sound
3777 (Williams et al. 2002). These techniques have been used in combination with
3778 genetic analyses that allow identification of individual animals to provide accurate
3779 population estimates of a wide array of species (Luikart et al. 2010, Guschanski et
3780 al. 2009). This approach was used to estimate abundance of bears in the breeding
3781 range (AOO) of five subpopulations in the state in 2002. Study areas within
3782 representative habitat were selected in the Eglin, Apalachicola, Osceola, Ocala/St.
3783 Johns, and Big Cypress subpopulations. Mark-recapture techniques provided an
3784 abundance estimate for each study area, and, using the effective study area size, a
3785 density estimate was obtained. The density estimate for each study area was then
3786 extrapolated across the previously identified breeding range (AOO) to obtain an
3787 abundance estimate for each subpopulation. The abundance of bears outside of the
3788 breeding range (AOO) was not estimated. Resulting abundance estimates for 2002
3789 were: Apalachicola 568 bears; Big Cypress 697 bears; Eglin 82 bears; Ocala/St.

3790 Johns 1,025 bears; and Osceola 256 bears (Simek et al. 2005). Bear abundance in
3791 the Chassahowitzka (20 bears; Orlando 2003) and Glades-Highlands (175 bears;
3792 John Cox Univ. of Kentucky 2009 pers. comm.) subpopulations were estimated from
3793 field studies. The total population estimate, therefore, was 2,823 + 59 (SE).

3794

3795 Early estimates of black bear abundance in Florida (Figure 2) were primarily
3796 opinions of FWC species experts with input from local staff and, therefore, may not
3797 have been as reliable as the 2002 estimates. The various estimates do, however,
3798 suggest an increase in bear numbers over the past three decades. This apparent
3799 increase is corroborated by the increase in nuisance bear calls during that time
3800 (Figure 3) and by the increase in distribution (Figure 4). It is likely the black bear
3801 population in Florida will continue to increase over the next 24 years due to
3802 extensive conservation efforts and suitable habitat (Hoctor 2006) that is currently
3803 unoccupied but adjacent to occupied range.

3804

3805 **Quantitative Analyses** – Maehr et al. (2001) used the program VORTEX 8.21
3806 (Lacy et al. 1995) and data from individual subpopulations to predict a zero (0.0)
3807 probability of extinction for the Eglin, Apalachicola, Osceola, Ocala and Glades-
3808 Highlands populations and 0.2 – 0.4 percent chance of extinction for the
3809 Chassahowitzka population within the next 100 years. Hostetler et al. (2009) used
3810 specific demographic data gathered from long term research to estimate that the
3811 Ocala subpopulation was growing at 1-2% per year.

3812

3813 **BIOLOGICAL STATUS ASSESSMENT**

3814

3815 **Threats** – The greatest threats to Florida black bears are habitat loss and
3816 degradation and negative interactions with people. The Florida black bear is
3817 particularly vulnerable to habitat loss because of its large home range sizes, low
3818 population size and density, and low productivity (Hostetler et al. 2009, Maehr and
3819 Wooding 1992). Its habitat is also degraded by fragmentation from roads and
3820 development, which results in additional threats from increased interactions with
3821 humans and their vehicles (Hostetler et al. 2009, Maehr and Wooding 1992).
3822 Incompatible land management can also result in degradation of habitat quality.
3823 Commercial saw palmetto (*Serenoa repens*) berry harvesting and fire management
3824 regimes benefitting other species may remove important resources utilized by black
3825 bears (Maehr et al. 2001, Stratman and Pelton 2007). Although these practices do
3826 not threaten black bear populations statewide, they may lower the biological
3827 carrying capacity of some local areas.

3828

3829 The FWC addresses habitat loss and degradation in a number of ways. FWC
3830 employees provide comments and information to other agencies and non-
3831 governmental organizations to help identify and conserve parcels of high value to
3832 bears. They provide comments on county comprehensive plans and developments of
3833 regional impact in bear range and have published a wildlife conservation guide for

3834 planners, developers, and consultants seeking to reduce impacts of development on
3835 bears. They periodically update and refine bear distribution maps for use in
3836 conservation planning, have identified landscape level corridors between bear
3837 subpopulations and promoted their conservation, and will begin research in 2011 to
3838 identify high-value conservation lands in the Ocala to Osceola corridor. They have
3839 identified FWC-managed lands that support bears, produced a priority list of areas
3840 to be managed to benefit bears, and incorporated conservation measures in the
3841 Wildlife Conservation Prioritization and Recovery Plans for these areas. FWC bear
3842 staff provides guidelines for managing bear habitat to land managers and is
3843 cooperating with plant monitoring staff to develop quantitative descriptions of
3844 optimal conditions for bears in major plant communities in Florida that will be
3845 provided to managers of critical bear habitat. The FWC funded a synthesis of
3846 available literature on management of saw palmetto and scrub palmetto (*Sabal*
3847 *etonia*), critical components of Florida black bear habitat. FWC bear staff also
3848 provides instruction on managing habitat to benefit bears at multi-agency
3849 prescribed fire workshops.

3850
3851 Human-bear interactions have increased in Florida due to greater populations of
3852 both bears and humans (Figure 3). Although some human/bear encounters are
3853 positive or neutral in their outcome, many are negative and can lead to death of the
3854 bear through vehicle collisions, illegal killing, or euthanasia (Annis 2008, Hostetler
3855 et al. 2009, Maehr et al. 2004, McCown et al. 2009). Furthermore, increased
3856 conflicts between humans and bears could lead to devaluation of the bear among
3857 Florida citizens, which could threaten bear conservation efforts in the State.

3858
3859 Documented bear mortality is largely due to human factors (Hostetler et al. 2009,
3860 Land et al. 1994). Bears are illegally killed or hit by vehicles. Bears come into
3861 contact with humans more frequently in highly fragmented habitat, and human-
3862 caused mortality in such habitat can be significant (Brown 2004, Hostetler et al.
3863 2009). For example, adult female bears living adjacent to Ocala National Forest
3864 experienced levels of mortality that would not have been sustainable in a smaller,
3865 isolated population (McCown et al. 2004). Although the FWC documented 140
3866 bears illegally killed in Florida between 1989 and 2009, a rate of 7 bears per year,
3867 the total number of bears killed each year is unknown. The statewide mortality
3868 rate due to roadkill was 4.8% in 2002 (Simek et al. 2005). Roadkills can be
3869 significant to small isolated populations but do not limit larger populations.
3870 Populations of black bears that are demographically similar to Florida black bears
3871 (breed at 3 years of age, females have 2 cubs every other year) can sustain an
3872 absolute annual mortality of up to 23% before the populations begin to decline
3873 (Bunnell and Tait 1980).

3874
3875 FWC staff works to reduce human/bear conflicts with multiple partners on a
3876 number of fronts. In 2010, staff and contract employees responded to more than
3877 4,000 bear-related calls from the public with technical assistance, site visits, bear

3878 deterrent equipment loans, or, when warranted, trapping and removing problem
3879 bears (translocation or euthanasia). Responses included canvassing neighborhoods
3880 with frequent bear interactions and meeting one-on-one with residents to provide
3881 information on avoiding conflicts. FWC staff provides bear aversive-conditioning
3882 training to municipal, county, and state law enforcement personnel to enlist their
3883 help in deterring problems. Staff works with stakeholders to produce bear festivals
3884 in areas of high human-bear interactions and provides bear educational
3885 presentations to schools and civic groups., The FWC produced a video, “Living with
3886 the Florida Black Bear,” to allow educators and civic groups to share the message
3887 with their students and constituents. Staff worked with Defenders of Wildlife to
3888 produce and update the Black Bear Curriculum Guide, which helps elementary
3889 school students learn math, science, and history while learning about bears. The
3890 FWC has partnered with local governments and waste management companies to
3891 make garbage less accessible to bears and bear-resistant trash containers more
3892 available to homeowners and created and enforces a wildlife feeding rule. The draft
3893 black bear management plan, currently in preparation, calls for the creation of
3894 “Bear Smart” communities where the FWC will work with local governments,
3895 businesses, and residents to reduce bear conflicts and serve as a model for other
3896 communities.

3897

3898 In an effort to reduce bear mortality resulting from vehicle collisions, the FWC
3899 maintains a database of all roadkills. Staff uses this information to coordinate with
3900 the Florida Department of Transportation (FDOT) to identify and mitigate chronic
3901 roadkill hot spots and provide comments on road projects in bear range. The FDOT
3902 has constructed more than 24 large wildlife underpasses along highways targeting
3903 Florida panthers and/or black bears as a result. These structures have proven
3904 effective in reducing mortality of bears from vehicular collisions. Additionally,
3905 plans for future traffic enhancement projects in critical bear roadkill areas have
3906 incorporated wildlife underpasses that target bears in the design phase.

3907

3908 FWC documents basic demographic parameters of black bear subpopulations. Bear
3909 staff works to update and refine bear distribution. FWC provides guidelines for
3910 managing bear habitat to land managers. FWC bear staff has identified landscape
3911 level corridors between bear populations and promoted their conservation. FWC
3912 will begin research in 2011 to identify high-value conservation lands in the Ocala to
3913 Osceola corridor.

3914

3915 **Population Assessment** – Findings from the Biological Review Group are
3916 included in the Biological Status Review Information Findings and Regional
3917 Assessment tables following.

3918

3919

3920

3921

3922 **LISTING RECOMMENDATION**

3923

3924 The BRG concluded that the Florida black bear did not meet listing criteria. Staff,
3925 therefore, recommends that the black bear not be listed as a Threatened species.

3926

3927 **SUMMARY OF THE INDEPENDENT REVIEW**

3928

3929 Comments were received from five reviewers: Dr. Dave Garshelis, Minnesota
3930 Department of Natural Resources, co-chair IUCN Bear Specialist Group; Dr. Madan
3931 Oli, Professor, Department of Wildlife Ecology and Conservation, University of
3932 Florida; Dr. Michael Pelton, Professor Emeritus, Department of Forestry, Wildlife
3933 and Fisheries, University of Tennessee; Dr. Frank van Manen, US Geological
3934 Survey, University of Tennessee, President International Association for Bear
3935 Research and Management; and Stephanie Simek, Mississippi State University and
3936 former FWC Bear Management Section leader. Their reviews can be found at
3937 MyFWC.com. All of the reviewers supported the findings of the BRG. Appropriate
3938 editorial changes were made and additional information was added as suggested by
3939 the reviewers. Specific comments and staff's responses are as follows:

3940

3941 Three reviewers questioned the validity of the population viability analysis (PVA)
3942 conducted by Root and Barnes (2006) because it used inappropriate parameters and
3943 because it modeled one connected statewide population instead of individual
3944 subpopulations.

3945

3946 *Discussion of the results from this PVA was removed. References to results from one*
3947 *other PVA based on subpopulations and a specific population model were added.*

3948

3949 One reviewer suggested that more detail be provided on parameter estimates,
3950 assumptions, data, etc. used in the models.

3951

3952 *This detail is available in the cited references, and its inclusion would be beyond the*
3953 *scope of this report.*

3954

3955 Two reviewers suggested caution in interpreting estimates of bear abundance prior
3956 to 2002 because the methods used were subjective and not scientifically valid.

3957

3958 *Staff acknowledges the limitations of these estimates and provided comments in the*
3959 *report to reflect this.*

3960

3961 Two reviewers noted the trend in nuisance bear incidents might support the
3962 contention that bear numbers had increased.

3963

3964 *A figure reflecting the increase in calls concerning bears received by the FWC was*
3965 *added to the report.*

- 3966
3967 One reviewer noted that the number of bears killed on highways over time was not
3968 included in the report but may be an indicator of population status.
3969
3970 *When staff examined the trend of bears killed on the highways, it was more*
3971 *suggestive of traffic level trends than of bear abundance trends.*
3972
3973 Two reviewers noted that the method used to estimate 2002 bear abundance likely
3974 provided a conservative estimate, and one suggested re-analysis of the data using
3975 alternative methodologies.
3976
3977 *Staff concurs with these comments. The FWC only estimated bear numbers within*
3978 *five breeding ranges (AOO), and thus it was not an estimate of all bears in Florida.*
3979 *Text was added to emphasize that bears outside of these areas were not estimated.*
3980 *Further, staff notes that male bears comprised 55% of all sampled bears despite the*
3981 *fact that males experience a higher mortality rate than female bears and, as a result,*
3982 *there should be fewer of them. Correction factors to account for this gender-based*
3983 *behavioral response would likely result in an increase in the estimate and, therefore,*
3984 *would not change the findings of this report. Also, time did not allow re-analysis of*
3985 *the mark-recapture data for this review.*
3986
3987 Two reviewers noted that the IUCN criteria rely on an estimate of the number of
3988 mature (capable of reproduction) individuals while FWC estimates of bear
3989 abundance do not distinguish mature individuals from immature individuals.
3990
3991 *Due to their small stature, cubs were unlikely to leave hair tufts on barbed-wire*
3992 *strands 25 and 50 cm. above the ground and, therefore, were unlikely to be included*
3993 *in the population estimates. Staff acknowledges that reproductively immature*
3994 *animals (1-2 year old bears) were included in the estimates. However, we note that,*
3995 *overall, the technique provides a conservative estimate (as two reviewers noted).*
3996 *Although generating a revised estimate based upon an untested correction factor to*
3997 *include only mature individuals would reduce the population estimate, it likely*
3998 *would not change the population trend or the finding of this report (i.e., it is unlikely*
3999 *the population estimate would be fewer than 1,000 mature individuals).*
4000
4001 One reviewer recommended an alternative method for calculating and presenting
4002 variation in the statewide population estimate.
4003
4004 *Calculations were revised as recommended and changes were made to the document.*
4005
4006 Two reviewers noted there was no mention of habitat management conducted to
4007 benefit bears.
4008
4009 *A summary of habitat management efforts by FWC to benefit bears was added.*

4010
4011 One reviewer suggested that the document should explain why the black bear is not
4012 listed as Threatened in Baker and Columbia counties and Apalachicola National
4013 Forest.
4014
4015 *Staff was unable to find documentation as to why bears in these areas were not listed*
4016 *as Threatened.*
4017
4018 One reviewer suggested the variation between the criteria used to initially list the
4019 sub-species and the current IUCN criteria be reviewed.
4020
4021 *The criteria used to initially list the sub-species are not available.*
4022
4023 One reviewer suggested that, because the population of bears in Florida is
4024 fragmented into several subpopulations, the IUCN criteria may be too lax to provide
4025 any meaning for the long-term conservation of black bears within the State, and
4026 suggested a few of the subpopulations might meet the IUCN criteria for listing if
4027 the criteria were applied to them.
4028
4029 *The IUCN criteria were developed by numerous experts and tested worldwide on*
4030 *30,000 species. The decision to use these criteria to assess the biological status of 61*
4031 *state-listed species was a result of extensive stakeholder involvement in development*
4032 *of the listing process. The task assigned to the BRG of evaluating the status of the black bear*
4033 *statewide in Florida was based on this process as specified in rule 68A-27.0012, F.A.C. The criteria*
4034 *include measures of geographic range, fragmentation, and subpopulation structure. Staff, therefore,*
4035 *believes application of these criteria to assess the status of the Florida black bear on a statewide basis is*
4036 *appropriate.*
4037
4038 Supplemental Report is available at:
4039 MyFWC.com/wildlifehabitats/imperiled/biological-status/

4040
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4176

Biological Status Review Information Findings		Species/taxon:		Florida black bear (<i>Ursus americanus floridanus</i>); Entire population.
Date:			11/3/2010	
Assessors:			Walter McCown, Mel Sunquist, and Bill Giuliano	
		Generation length:		8.0 (based on ~ 500 ♀ in FWC database > 4.0 y.o. = 7.4)
Criterion/Listing Measure	Data/Information	Data Type*	Criterion Met?	References
*Data Types - observed (O), estimated (E), inferred (I), suspected (S), or projected (P). Criterion met - yes (Y) or no (N).				
(A) Population Size Reduction, ANY of				
(a)1. An observed, estimated, inferred or suspected population size reduction of at least 50% over the last 10 years or 3 generations, whichever is longer, where the causes of the reduction are clearly reversible and understood and ceased ¹	Numbers have been increasing over the past 24 years (3 generations)	S	No	GFC Historical population estimates, Pelton and Nichols 1972, Kasbohm 2004, and others (see Figures 2-4).
(a)2. An observed, estimated, inferred or suspected population size reduction of at least 30% over the last 10 years or 3 generations, whichever is longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible ¹	Numbers have been increasing over the past 24 years (3 generations)	S	No	GFC Historical population estimates, Pelton and Nichols 1972, Kasbohm 2004, and others (see Figures 2 -4).

(a)3. A population size reduction of at least 30% projected or suspected to be met within the next 10 years or 3 generations, whichever is longer (up to a maximum of 100 years) ¹	Expected to increase over next 24 years due to conservation efforts and suitable vacant habitat	P	No	Hector 2006
(a)4. An observed, estimated, inferred, projected or suspected population size reduction of at least 30% over any 10 year or 3 generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased or may not be understood or may not be reversible. ¹	Numbers have been and continue to increase due to conservation efforts and suitable vacant habitat.	P	No	Hector 2006
¹ based on (and specifying) any of the following: (a) direct observation; (b) an index of abundance appropriate to the taxon; (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 taxa, hybridization, pathogens, pollutants, competitors or parasites.				
(B) Geographic Range, EITHER				
(b)1. Extent of occurrence < 20,000 km ² (7,722 mi ²) OR	EOO > 7,722 mi ² (17,531 mi ²)	E	No	Simek et al. 2005
(b)2. Area of occupancy < 2,000 km ² (772 mi ²)	AOO > 772 mi ² (10,077 mi ²)	E	No	Simek et al. 2005
AND at least 2 of the following:				
a. Severely fragmented or exist in ≤ 10 locations				
b. Continuing decline, observed, inferred or projected in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent, and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals				

c. Extreme fluctuations in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals				
(C) Population Size and Trend				
Population size estimate to number fewer than 10,000 mature individuals AND EITHER	2,212 – 3,433 bears	E	Yes	Simek et al. 2005
(c)1. An estimated continuing decline of at least 10% in 10 years or 3 generations, whichever is longer (up to a maximum of 100 years in the future) OR	Has increased for more than last 24 years. Expected to increase over next 24 years due to conservation efforts and suitable vacant habitat.	P	No	
(c)2. A continuing decline, observed, projected, or inferred in numbers of mature individuals AND at least one of the following:	Has increased. Expected to increase over next 24 years due to conservation efforts and suitable vacant habitat.	P	No	
a. Population structure in the form of EITHER				
(i) No subpopulation estimated to contain more than 1000 mature individuals; OR				
(ii) All mature individuals are in one subpopulation				
b. Extreme fluctuations in number of mature individuals				
(D) Population Very Small or Restricted, EITHER				
(d)1. Population estimated to number fewer than 1,000 mature individuals; OR	2823 + 59 bears	E	No	Simek et al. 2005

(d)2. Population with a very restricted area of occupancy (typically less than 20 km ² [8 mi ²]) or number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a short time period in an uncertain future	AOO > 8 mi ² (10,077 mi ²) and locations > 5.	E	No	Simek et al. 2005
(E) Quantitative Analyses				
e1. Showing the probability of extinction in the wild is at least 10% within 100 years	Probability of extinction ~ zero	E	No	Maehr et al. 2001
Initial Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)			
Does not meet any criteria				
Is species/taxon endemic to Florida? (Y/N)	No			
If Yes, your initial finding is your final finding. Copy the initial finding and reason to the final finding space below. If No, complete the regional assessment sheet and copy the final finding from that sheet to the space below.				
Final Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)			
The Florida black bear does not meet any of the criteria.				

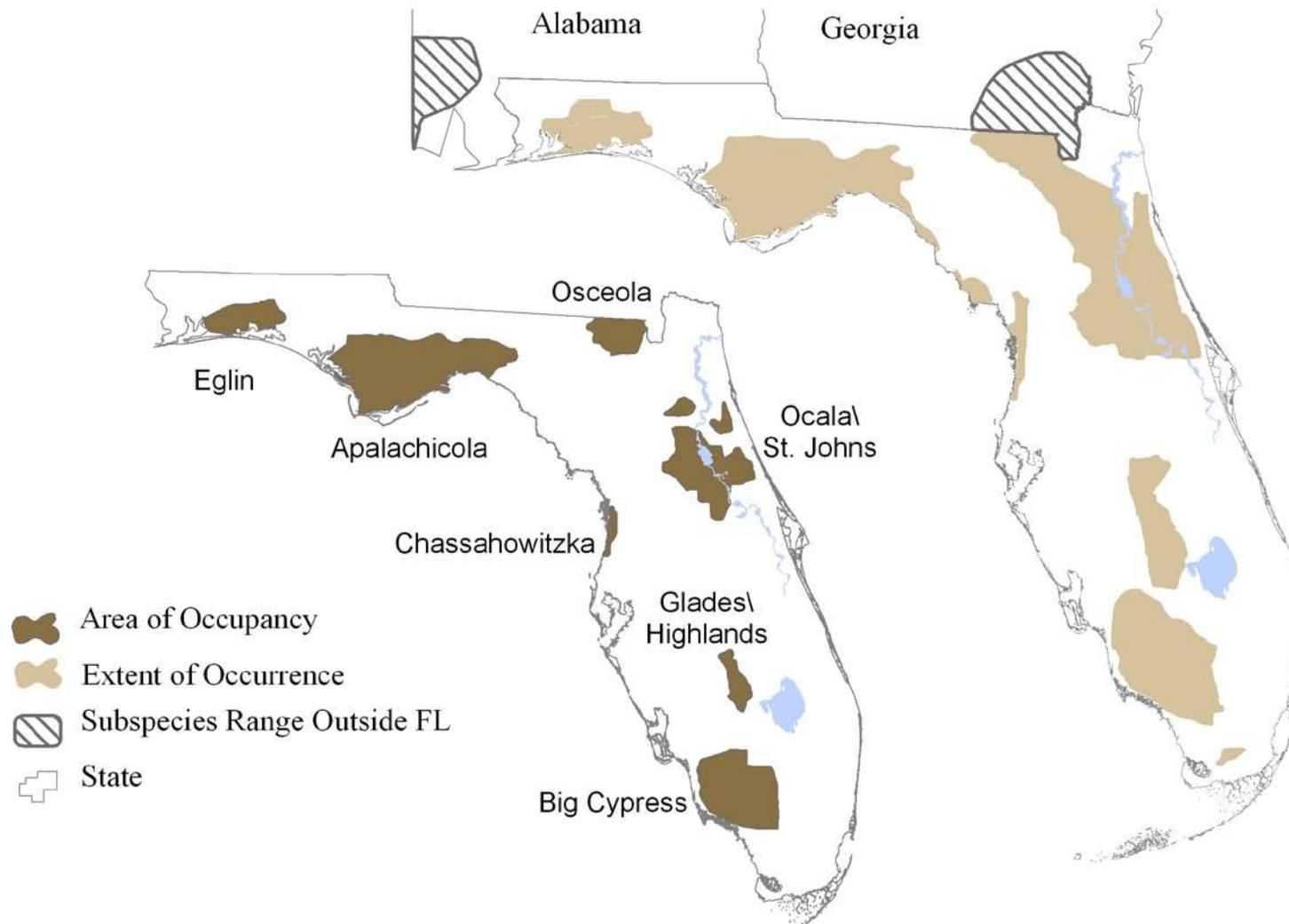
4177 **Additional information:** In regards to Criterion C2, the team recognized and
4178 discussed the potential for habitat loss predicted by Wildlife 2060 to affect the
4179 finding for this criterion. Bear populations are centered on large parcels of
4180 conserved public lands. However, the predicted loss of non-conserved habitat will
4181 be significant and will negatively impact currently occupied bear range and, we
4182 inferred, bear numbers. Hard boundaries between bear range and urban
4183 development will be created which will increase human-bear interactions which will
4184 increase the mortality rate of bears on the fringe of conserved bear habitat. This
4185 situation would likely contribute to a reduction in bear numbers from current
4186 estimates. Since the 2002 estimate for our largest subpopulation (Ocala) currently
4187 straddles the 1,000 mature individuals trigger for c2a(i), a reduction in bear
4188 numbers in the future could cause this criterion to be met. However, there is no
4189 current decline in bear numbers occurring, thus a decline cannot continue (since it
4190 does not now exist) (IUCN guidelines p. 26). The team thought that if a decline
4191 occurs due to the events predicted by Wildlife 2060, the full impact will occur
4192 further out than the specified time horizon of 3 generations. Further, the team
4193 thought the potential future reduction in bear numbers would be mitigated
4194 somewhat by the occupancy over time of > 1 million acres of currently unoccupied
4195 and under-occupied but suitable bear habitat (Hector 2006) in the Big Bend region.
4196 The Big Bend region is adjacent to currently occupied bear range (Apalachicola) and
4197 not predicted to be greatly affected by potential 2060 impacts. Additionally, the
4198 potential loss should be mitigated by the current and planned conservation efforts
4199 outlined in Current Management (above) and in the black bear management plan
4200 which is under development. After the discussion the team was unanimous that
4201 bears did not meet this criterion.

4202
4203

1	Biological Status Review Information Regional Assessment	<u>Species/taxon:</u>	Florida black bear (<i>Ursus americanus floridanus</i>) Entire population
2	<u>Date:</u>	11/3/10	
3	<u>Assessors:</u>	Walter McCown, Mel Sunquist, and Bill Giuliano	
4			
5			
6			
7			
8	<u>Initial finding</u>	Supporting Information	
9			
10	2a. Is the species/taxon a non-breeding visitor? (Y/N/DK). If 2a is YES, go to line 18. If 2a is NO or DO NOT KNOW, go to line 11.	N	
11	2b. Does the Florida population experience any significant immigration of propagules capable of reproducing in Florida? (Y/N/DK). If 2b is YES, go to line 12. If 2b is NO or DO NOT KNOW, go to line 17.	N	
12	2c. Is the immigration expected to decrease? (Y/N/DK). If 2c is YES or DO		

	NOT KNOW, go to line 13. If 2c is NO go to line 16.	
13	2d. Is the Florida population a sink? (Y/N/DK). If 2d is YES, go to line 14. If 2d is NO or DO NOT KNOW, go to line 15.	
14	If 2d is YES - Upgrade from initial finding (more imperiled)	
15	If 2d is NO or DO NOT KNOW - No change from initial finding	
16	If 2c is NO or DO NOT KNOW- Downgrade from initial finding (less imperiled)	
17	If 2b is NO or DO NOT KNOW - No change from initial finding	N
18	2e. Are the conditions outside Florida deteriorating? (Y/N/DK). If 2e is YES or DO NOT KNOW, go to line 24. If 2e is NO go to line 19.	
19	2f. Are the conditions within Florida deteriorating? (Y/N/DK). If 2f is YES or DO NOT KNOW, go to line 23. If 2f is NO, go to line 20.	
20	2g. Can the breeding population rescue the Florida population should it decline? (Y/N/DK). If 2g is YES, go to line 21. If 2g is NO or DO NOT KNOW, go to line 22.	
21	If 2g is YES - Downgrade from initial finding (less imperiled)	
22	If 2g is NO or DO NOT KNOW - No change from initial finding	
23	If 2f is YES or DO NOT KNOW - No change from initial finding	
24	If 2e is YES or DO NOT KNOW - No change from initial finding	
25	Final finding	No change

4204



4205

4206

Figure 1. The 2002 range of the Florida black bear (From Simek et al. 2005).

4207

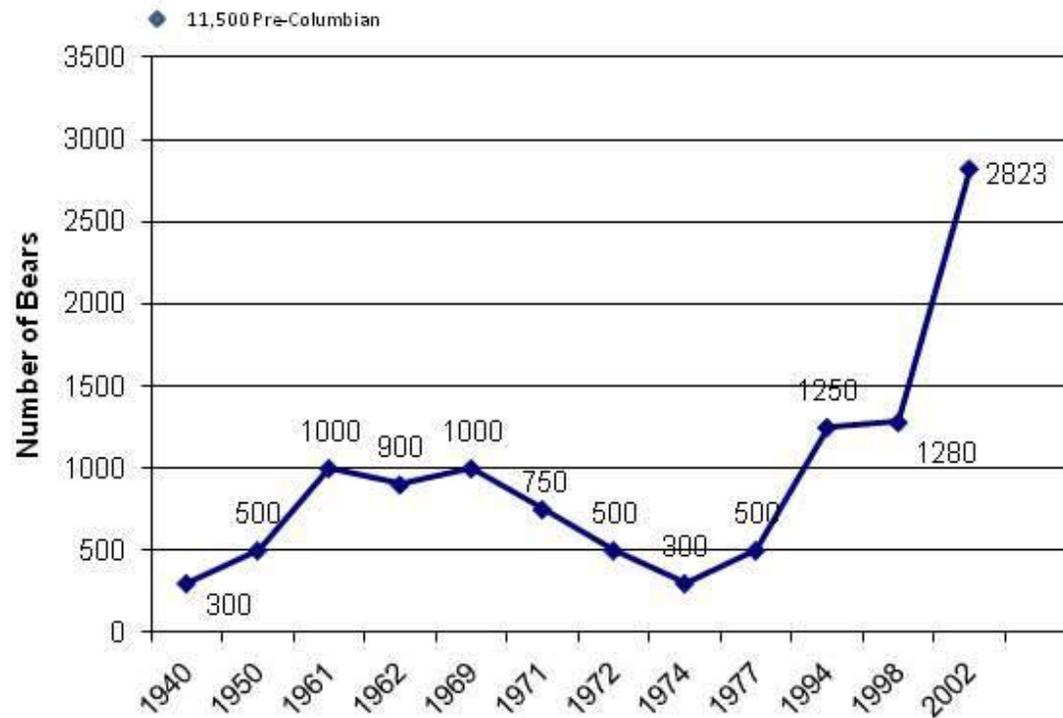


Figure 2. Estimates of black bear abundance in Florida.

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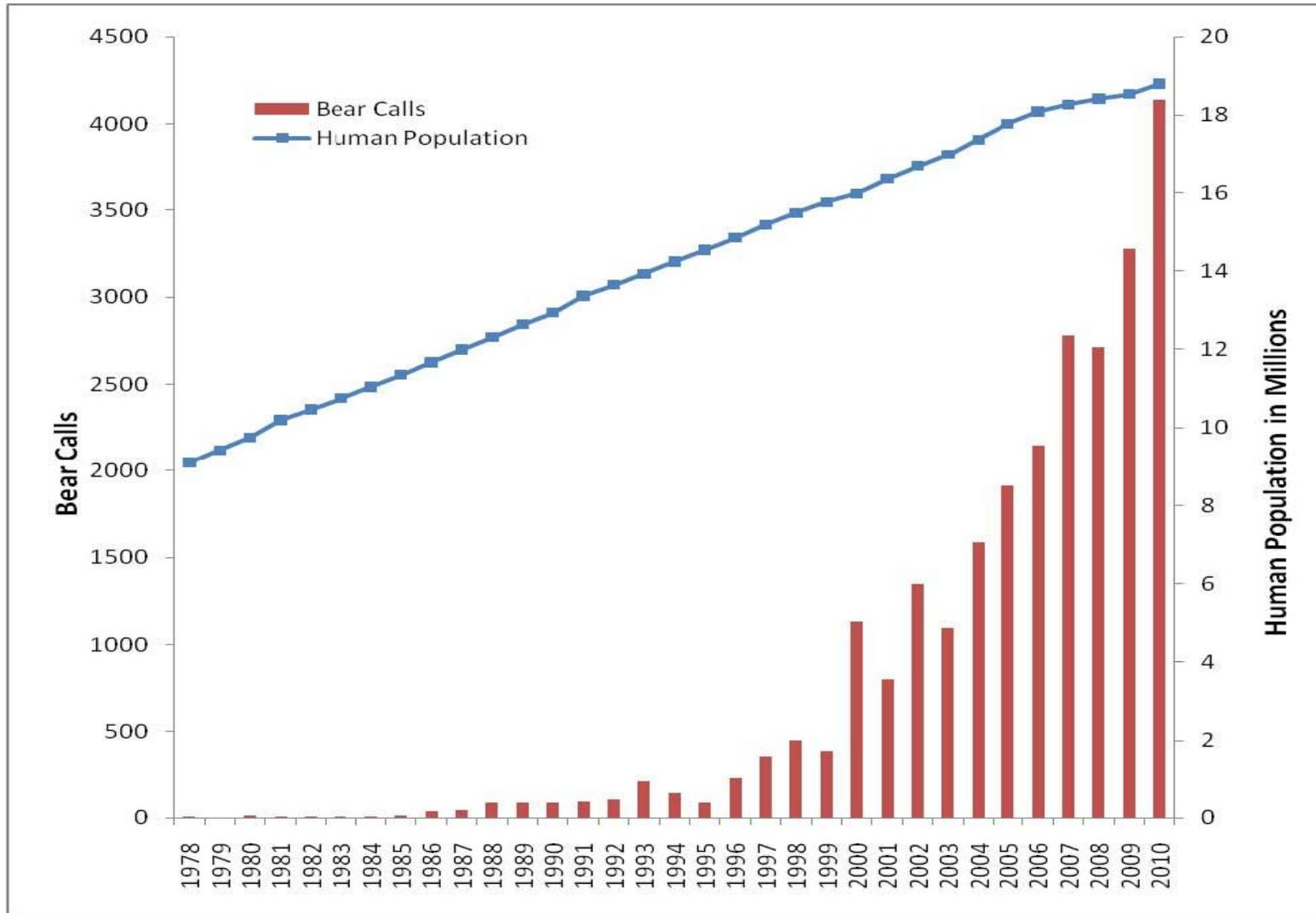
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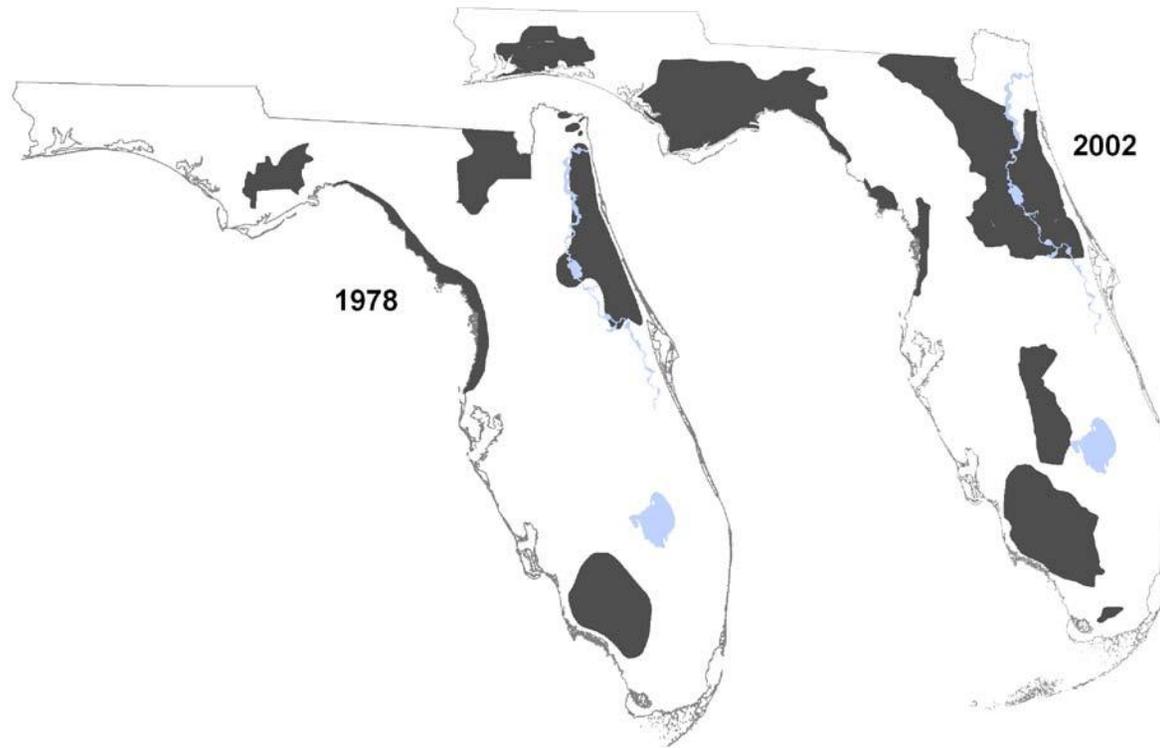
1998: Kasbohm, J.W. 2004. Federal Register 69[9]: 2100-2108.

2002: From Simek et al. 2005, Orlando 2003 (Chassahowitzka), and J.J. Cox, University of Kentucky, 2009, personal communications (Glades-Highlands).



4208
4209
4210
4211

Figure 3. Number of calls received by the Florida Fish and Wildlife Conservation Commission concerning bears and human population levels in Florida 1978 – 2010.



4212
4213 Figure 4. Black bear distribution in Florida in 1978 and 2002.
4214
4215 1978: Brady, J.R., and J.C. McDaniel. 1978. Status report for Florida. Eastern Black Bear Workshop. 4:5-9
4216 2002: Simek et al. 2005

4217 **BSR APPENDIX 1. Brief biographies of the Florida black bear Biological**
4218 **Review Group members.**

4219
4220 **Walter McCown** has a B.S. in Biology from Columbus State University. He has
4221 worked on a variety of wildlife issues with FWC and since 2004 has been a biologist
4222 in FWC's Terrestrial Mammal Research Subsection. Mr. McCown has over 14
4223 years experience in research and conservation of black bears in Florida.

4224
4225 **Mel Sunquist** has a Ph.D. in Wildlife Ecology from the University of Minnesota.
4226 He is currently a Professor Emeritus with the University of Florida. Dr. Sunquist
4227 has 20 years teaching and research experience in the UF Department of Wildlife
4228 Ecology and Conservation and has more than 30 years experience working on the
4229 behavior, ecology, and conservation of mammalian carnivores, in Florida and
4230 worldwide.

4231
4232 **Bill Giuliani** has a PhD from Texas Tech University in Wildlife Science, a MS from
4233 Eastern Kentucky University in Biology, and a BS from the University of New
4234 Hampshire in Wildlife Management with a Minor in Zoology. He currently serves
4235 as the Professor and State Extension Specialist in the Department of Wildlife
4236 Ecology and Conservation at the University of Florida. He has researched and
4237 developed management programs for a variety of wildlife species for more than 20
4238 years such as black bears, jaguars, fishers, pine martens, raccoons, coyotes, hogs,
4239 rabbits, squirrels, and various rodents, among others.

4240
4241 **(BSR) APPENDIX 2. Summary of letters and emails received during the**
4242 **solicitation of information from the public period of September 17, 2010**
4243 **through November 1, 2010.**

- 4244
- 4245 • Betsy R. Knight, Big Bend Wildlife Sanctuary, Inc. 1. Protect enough land for
4246 the survival of the Florida Black Bear and you protect enough land to support
4247 protection of most all Florida Species. There should be a corridor from Big
4248 Cypress Swamp to Eglin Air Force Base for these large mammals to range,
4249 breed and maintain a healthy population. When you divide the State in to
4250 segments you end up with bits and pieces of bear habitat such as the
4251 Chassahowitzka population where inbreeding is occurring. 2. The answer is
4252 education, education and more education; I have been signed up as a
4253 volunteer for about a year, have received my DVD for educational programs,
4254 but haven't been asked to go to one single program. We need to utilize all
4255 volunteers and saturate the State with education on the Florida Black Bear.
4256 Hunting of the Florida Black Bear should be prohibited. In an effort to
4257 compromise, I might suggest in healthy populations such as the Apalachicola
4258 National Forest, you might suggest allowing dogs to run a bear a day for a
4259 ten day period, but the dogs would not be able to continue to run the same

- 4260 bear continuously for days. The Florida Black Bear needs to be kept on the
4261 Threatened Species list!!!
4262
- 4263 • Chris Papy commented on the large number of bears in Aucilla WMA.
4264
 - 4265 • David Dapore commented on the large number of bears and bear sign in
4266 numerous wildlife management areas in central Florida. During an outing
4267 he often sees more bears than any other species of wildlife. He considers the
4268 restoration of bears to have been successful.
4269
 - 4270 • James Aldridge commented on the large number of bears he sees in Ocala
4271 National Forest.
4272
 - 4273 • Kitty Loftin saw 2 bears in Wakulla County, Florida.
4274
 - 4275 • Meagin Jackson commented on the large number of bears in northern
4276 Osceola National Forest and mentioned several encounters with bears in the
4277 area and believes that the area has as many bears as it will hold.
4278
 - 4279 • Dick Kempton has seen bears on several occasions in the Big Cypress
4280 National Preserve, 12-15 miles north of Oasis Visitor Center.
4281
- 4282

4283 APPENDIX III. Florida black bear harvest data, 1981 to 1994.

4284 Table 16. Bear harvest information for Apalachicola Wildlife Management Area (WMA), Osceola
4285 WMA, and Baker and Columbia counties, Florida 1981 to 1994 (Reproduced from GFC 1993).

Year	Apalachicola WMA (AWMA)				Osceola WMA (OWMA)				Baker and Columbia Co. (BCC)				Statewide	
	# Male	# Female	% Female	AWMA Total #	# Male	# Female	% Female	OWMA Total #	# Male	# Female	% Female	BCC Total #	Total Harvest	Total Hunters
81/82	8	8	50%	16	6	3	30%	10 ^a	5	1	14%	7 ^a	33	720
82/83	2	1	33%	3	6	3	33%	9	14	6	25%	24 ^a	36	793
83/84	5	11	69%	16	6	3	33%	9	5	5	50%	10	35	700
84/85	15	11	42%	26	0	1	100%	1	17	2	11%	19	46	858
85/86	9	14	61%	23	5	2	29%	7	27	11	29%	38	68	798
86/87 ^a	12	8	40%	20	7	7	50%	14	17	0	0%	17	51	772
87/88	12	6	33%	18	1	3	75%	4	15	8	35%	23	45	469
88/89	13	5	28%	18	0	0	0%	0	17	6	26%	23	41	256
89/90	27	7	21%	34	2	1	33%	3	17	6	26%	23	60	215
90/91	11	4	27%	15	1	0	0%	1	18	4	18%	22	38	184
91/92	24	3	11%	27	2	0	0%	2	24	7	23%	31	60	-
92/93	-	-	-	9	0	0	0%	0	-	-	-	13	22	-
93/94	-	-	-	30	0	0	0%	0	-	-	-	32	62	-

4286 ^a. Major regulatory changes in bear hunting season to reduce females and young in the harvest started in 1987.
4287

4288 APPENDIX IV. Status of black bears in states with resident bear populations.

4289 **Table 17. Population estimates, trends and hunting status of the 41 states with resident black bear**
 4290 **populations (compiled from Spencer et al. 2007, Hristienko et. al. 2010, Lackey and Beausoleil 2010,**
 4291 **and state agency websites/personnel).**

State	Population		Species Status	Hunting Season
	Estimate	Trend		
Alabama	50–100	Stable	State List	No
Alaska ^a	72,500	Stable	Game	Yes
Arizona	2,500	Stable	Game	Yes
Arkansas	3,500–4,500	Stable	Game	Yes
California	34,000	Up	Game	Yes
Colorado	12,000	Stable	Game	Yes
Connecticut	300–500	Up	State List	No
Florida	2,500–3,000	Up	State List	No
Georgia	2,300–2,500	Up	Game	Yes
Idaho	20,000	Stable	Game	Yes
Kentucky	<500	Up	Game	Yes ^b
Louisiana	500–700	Up	Federal List	No
Maine	23,000	Stable	Game	Yes
Maryland	600+	Up	Game	Yes
Massachusetts	2,900–3,000	Up	Game	Yes
Michigan	18,000	Stable	Game	Yes
Minnesota	15,000	Down	Game	Yes
Mississippi	120	Up	Federal List ^c	No
Missouri	350	Up	Game	No
Montana	16,500	Unknown	Game	Yes
Nevada	200–400	Stable	Game	Yes ^b
New Hampshire	4,900	Stable	Game	Yes

State	Population		Species Status	Hunting Season
	Estimate	Trend		
New Jersey	1,800–3,200	Up	Game	Yes
New Mexico	5,500	Stable	Game	Yes
New York	5,000–8,000	Up	Game	Yes
North Carolina	9,000–12,000	Up	Game	Yes
Ohio	50–100	Up	State List	No
Oklahoma	200	Up	Game	Yes ^b
Oregon	25,000–30,000	Stable	Game	Yes
Pennsylvania	15,000	Stable	Game	Yes
Rhode Island	<20	Up	Game	No
South Carolina	1,800	Up	Game	Yes
Tennessee	3,000–6,000	Up	Game	Yes
Texas	80–100	Up	Federal List ^c	No
Utah	2,250	Up	Game	Yes
Vermont	4,500–6,000	Up	Game	Yes
Virginia	8,000	Up	Game	Yes
Washington	25,000	Stable	Game	Yes
West Virginia	10,000–12,000	Up	Game	Yes
Wisconsin	23,000	Up	Game	Yes
Wyoming	Unknown	Stable	Game	Yes

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- a. Excludes interior Alaska.
- b. Hunts opened on/after 2009-2010 season.
- c. Either federal or state listed, depending on location.

4297 **APPENDIX V. DESCRIPTION OF POTENTIAL BEAR HABITAT**

4298 Hoctor (2006) created a model of potential bear habitat for the *Wildlife Habitat*
4299 *Conservation Needs in Florida* report (Endries et al. 2009). Potential bear habitat is
4300 based on four primary factors including: 1) land cover type, 2) habitat size, 3)
4301 distance from primary habitat areas, and 4) connectivity and size of large habitats.
4302 These factors were used to create three categories of habitat: primary, secondary
4303 and traversable. FWC did not use the traversable habitat category when
4304 calculating potential bear habitat. The following is a summary of Hoctor (2006) as
4305 it relates to the potential bear habitat model:
4306

4307 1) Land Cover Type - Primary and secondary bear habitat was delineated
4308 from the FWC land cover/land use maps (Cox et al. 1994, Maehr et al. 2001,
4309 Wooding and Hardisky 1988; Table 18), using methods similar to Cox et al.
4310 (1994). Secondary habitat differs from primary in that bears may use
4311 secondary frequently, but use of such areas depends to some degree on
4312 nearby land cover (Cox et al. 1994, p. 50). Traversable areas may not serve
4313 as habitat for bears but can be crossed to reach other patches of primary and
4314 secondary cover. Traversable areas include all other habitats except urban
4315 and extractive land uses and open water (Larkin et al. 2004). FWC updated
4316 this element of the map by excluding all areas that was classified as
4317 developed in 2009 (FNAI 2009).

4318 2) Habitat Size- The model begins by identifying “seed” areas of primary
4319 habitat (Cox et al. 1994). Seed areas had >37 acres (15 ha) of primary
4320 habitat. The 37 acre seed area size was identified as an important component
4321 of bear habitat in Osceola National Forest (Cox et al. 1994, Kautz and Cox
4322 2001, and Mykyta and Pelton 1989). The 37 acre seed area size falls within
4323 USFWS recommended guidelines for stand sizes of 25 to 99 acres (10 to 40
4324 ha) to promote stand diversity and mast production for black bears (USFS
4325 1981, 1985).

4326 3) Distance from Primary Habitat Areas - All additional primary and
4327 secondary habitat within 0.6 mile (1 km) of the seed patches are identified in
4328 blocks that contain at least 10,000 acres (4,000 ha) of primary and secondary
4329 cover. This procedure enabled small patches in close proximity to larger
4330 habitat areas to be included as habitat areas (Cox et al. 1994). The 10,000
4331 acre size was selected to identify areas that are more likely to be large
4332 enough to serve as minimum functional habitat units for black bear (Hellgren
4333 and Maehr 1992) and represents the average area of adult female black bear
4334 home ranges. The connectivity component allows the inclusion on smaller
4335 habitat areas that are close to larger habitat areas.

4336 4) Connectivity and Size of Large Habitats – see description for 3)

4337 **Table 18. Land cover/land uses identified as primary, secondary, or traversable habitat for**
 4338 **Florida black bears (Endries et al. 2009).**

Primary Habitat	Secondary Habitat	Traversable Habitat
Xeric oak scrub	Coastal strand	Sand/beach
Sand pine scrub	Sandhill	Sawgrass marsh
Mixed hardwood–pine forest	Dry prairie	Cattail marsh
Hardwood hammocks and forest	Commercial pinelands	Saltmarsh
Natural pinelands	Tropical hardwood hammock	Mangrove
Cabbage palm–live oak hammock	Freshwater marsh and wet prairie	Scrub mangrove
Bay swamp	Shrub swamp	Tidal flat
Cypress swamp	Scrub mangrove	Grassland
Cypress/pine/cabbage palm	Shrub and brushland	Bare soil/clearcut
Mixed wetland forest	Exotic plants	Improved pasture
Hardwood swamp	Australian pine	Unimproved pasture
Hydric hammock	Melaleuca	Sugar cane
Bottomland hardwood forest		Citrus
Brazilian pepper		Row/field crops
		Other agriculture

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4341 **APPENDIX VI. SAMPLE ORDINANCE TO REDUCE WILDLIFE ATTRACTANTS**4342 **City Ordinance 2188 of Gatlinburg, Tennessee**

4343

4344 **Section 8-111 Animal Resistant Garbage Collection Devices**

4345 From and after June 1, 2000, all garbage, containers, dumpsters or equipment used
4346 to store garbage, not otherwise located within an approved enclosure prior to
4347 municipal or private pick-up in the areas described as follows: The entire area
4348 within the city limits on the west side of the Foothills Parkway: the area north of
4349 the National prong of the Little Pigeon River between Parkway and the Foothills
4350 Parkway boundary bounded on the north by LeConte Street and the Skyland Park
4351 and the Winfield Heights Subdivisions: the entire area between the National
4352 Park Service boundary on the South and Southeast city limits from Low Gap Road
4353 on the east and to the South of Highway 321 and Parkway, and as shown on a map
4354 dated December, 1998 on file at the offices of the City Manager and incorporated
4355 herein by reference, shall be of a type which shall be resistant to animals being able
4356 to open, overturn or remove garbage from them. Each type of container shall be of a
4357 design approved by the City Building Official. This requirement shall not apply to
4358 containers that are also enclosed within fences or other enclosures which do not
4359 allow entry by scavenging animals or are located inside a structure such as a house,
4360 building or other enclosed structure and are taken to a City or County approved
4361 garbage collection site by the owner.

4362

4363 **Section 8-112. Enclosures**

4364 All garbage containers in said areas of a type which do not meet City standards as
4365 being animal resistant shall be fully enclosed in a manner to prevent entry by
4366 animals. Such enclosures shall be approved in advance by the City Building Official.
4367 Any enclosure which does not prevent the entry of animals and removal of garbage
4368 from the enclosure shall be modified by the owner to prevent such entry and
4369 removal. Owners who are notified of a deficient enclosure shall have
4370 60 days to cure such deficiency. All garbage containers of a type not resistant to
4371 animals shall be so enclosed by June 1, 2000. Every animal resistant enclosure shall
4372 be properly secured. Failure to keep such enclosure secured and closed shall also be
4373 a violation of this section.

4374

4375 **Section 8-113. Grease**

4376 The provisions of Sections 8-111 and 8-112 shall also apply to containers and
4377 enclosures used to store grease and the contents of grease traps.

4378

4379 **Section 8-114. Restaurants**

4380 All restaurants within the city limits of the City of Gatlinburg shall be required to
4381 comply with the provisions of 8-111 through 8-113 with regard to garbage
4382 containers and/or enclosures for the storage of garbage containers and grease.

4383

4384

4385 **Section 8-115. Garbage Collection**

4386 The City will not collect garbage which is not placed in an animal resistant
4387 container unless it is placed within an approved enclosure, as required in Sections
4388 8-111 through 8-114. The provisions of Sections 8-111 and 8-112 shall not apply to
4389 curbside garbage collection containers within the downtown business district.

4390

4391 **Section 8-117 Injunctive or Other Relief**

4392 In addition to any penalty, violation of the provisions of this chapter may be
4393 remedied by obtaining injunctive relief, or by a restraining order, or other
4394 appropriate equitable remedy by the city.

4395

4396 **Section 8-118 Penalty**

4397 Every person who shall violate any provision of this chapter shall be punished by a
4398 fine not to exceed \$500 per offense. Each day that a violation shall occur shall be a
4399 separate offense.

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4404 **APPENDIX VII. DESCRIPTION OF BEAR SMART COMMUNITIES PROGRAM**

4405 The objective of Strategy 4.1 is to reduce human-bear conflicts by providing the
4406 right materials and messages in the form of a Bear Smart Community (BSC)
4407 Program. The BSC program was developed by British Columbia's Ministry of
4408 Environment, and a representative of the Ministry has granted the FWC
4409 permission to use the name, program elements and materials.

4410 The overarching mission of the BSC program is to influence and guide
4411 communities to accept personal and communal responsibility for reducing human-
4412 bear conflicts. A BSC is a specific and defined geographical area where the
4413 residents, local government, businesses and schools take responsibility to resolve
4414 their human-bear conflicts. A BSC can be as small as a group of homes in a certain
4415 area or as large as an entire county and would include homeowner associations,
4416 municipalities, and county governments. A community or area achieves BSC status
4417 when it has met the six defining criteria (see below) and will, at a minimum, include
4418 an educational component, provisions for bear-resistant solid waste handling and
4419 containers, appropriate governance (ordinances, covenants, bylaws) and assessment
4420 measures to determine success.

4421 Steps for creating a BSC include:

- 4422 1. Prepare a bear conflicts assessment of the community and surrounding area.
- 4423 2. Prepare a human-bear conflict management plan that is designed to address
4424 the bear and land-use conflicts identified in the previous step.
- 4425 3. Revise planning and decision-making documents to be consistent with the
4426 bear-human conflict management plan.
- 4427 4. Implement a continuing education program, directed at all sectors of the
4428 community.
- 4429 5. Develop and maintain a bear-proof municipal solid waste management
4430 system (See Human-Bear Conflicts objective).
- 4431 6. Implement appropriate ordinances or bylaws prohibiting feeding bears by
4432 intent, neglect, or irresponsible management of attractants (See Human-Bear
4433 Conflicts objective).

4434 Achieving BSC status is rigorous and takes time. How much time it takes
4435 varies by community. In British Columbia, for example, many communities have
4436 made exemplary strides toward BSC status, with only one or two achieving the goal.
4437 It takes time, leadership and dedication to coordinate a community team, enact
4438 ordinances, achieve voluntary compliance and change waste management practices,
4439 and implement an education program. While achieving BSC status is rigorous, it is
4440 a positive community-based approach that has been proven effective in British
4441 Columbia and several states in the US.

4442 In total or in-part, the six steps required to create a BSC work to minimize
4443 human-bear conflicts and the number of bears killed as a result of human
4444 habituation and food-conditioning. Florida already has a State law which prohibits
4445 feeding bears (F.A.C. 68A-4.001(3)). Those who are found guilty of violating this
4446 law are subject to criminal prosecution. However, implementing municipal or
4447 county ordinances, or community bylaws which prohibit feeding bears intentionally,
4448 unintentionally or through neglect, or irresponsible management of attractants will
4449 take time and may be the most difficult to achieve. In the meantime, any non-
4450 regulatory measures taken to eliminate or bear-proof food attractants is a positive
4451 step toward solving this complex issue.

4452 The BSC Program Background Report (Davis et al. 2002) profiles four case
4453 histories as examples of communities proactively working to eliminate food
4454 attractants or access to them in their communities. While each community did not
4455 implement the BSC program exactly as designed, each community did attempt to
4456 develop bear-proofing systems to reduce the number and extent of human-bear
4457 conflicts. Each community profiled took several years to achieve success.

4458 One community that stands out as exemplary model of a BSC is Whistler in
4459 British Columbia. Whistler began to take steps to become a BSC in 1997 and by
4460 2000 they had become completely bear-proof. In 1999 they initiated an aversive
4461 conditioning program and a comprehensive education program targeting residents,
4462 businesses, and visitors. This process took a minimum of three years to accomplish.
4463 Keeping a community bear-proof is an ongoing process with vigilant maintenance

4464 and education. Peine (2001) describes several complex cases in which it took some
4465 communities ten to 25 years to formulate and enact effective policies and programs
4466 addressing their human-bear conflicts.

4467 FWC will work with BBAGs to locate interested communities willing to become
4468 a BSC. Initial efforts to create BSCs will focus on places where human-bear conflict
4469 is relatively high. Based on call data and citizen and staff information, FWC will
4470 identify and offer those communities information on how to become a BSC. BBAGs
4471 involvement can expedite cooperation among the public, local businesses,
4472 nongovernmental organizations, local governments and agencies, and local law
4473 enforcement entities. BBAGs can more easily identify local problems and
4474 conservation opportunities, and therefore facilitate changes in local policies and
4475 ordinances regarding bears.

4476 Through statewide education and outreach activities, other communities may
4477 take their own initiative to self-organize and become BSCs. Ideally, communities
4478 experiencing undesirable bear interactions will strive to become a BSC but
4479 realistically that may not always happen. In those cases, individual and community
4480 level behavioral changes are essential in reducing conflicts with bears. Residents
4481 and visitors will receive information and be asked to voluntarily take actions that
4482 improve waste management practices in order to reduce or eliminate attractants.
4483 Homeowner associations and residential management groups will be encouraged to
4484 employ recommended actions such as community-wide education, attractant
4485 prevention and waste storage solutions. Template documents for BSCs will be
4486 provided to homeowner associations, and they will be encouraged to include BSC
4487 practices in their covenants. Educational presentations, community events and
4488 supporting materials will be developed and introduced to residents in areas of high
4489 human-bear conflict.

4490 Based on the established BSC program, FWC can develop an appearance that is
4491 unique and brands the program in Florida. Key messages and materials will be
4492 developed for use in BSCs but also will be used to inform audiences statewide about
4493 BSC practices. Initial outreach will be within the 35 counties identified as

4494 containing primary bear range (Appendix I). As resources allow, outreach efforts
4495 may expand beyond primary range. Methods for message delivery may include
4496 newspaper feature articles, pre-show programming in movie theatres, a DVD
4497 program, billboards, fliers on community bulletin boards, radio announcements, or
4498 short spots for cable, public television or YouTube and other social media. FWC's
4499 black bear web site (<http://www.MyFWC.com/bear>) will include relevant
4500 information about BSCs, as well as natural history, distribution and range, current
4501 and historical management, human-bear conflict and avoidance, popular and
4502 scientific publications, and a special section for youth and educators.
4503

4504 **APPENDIX VIII. PROPOSED RULE**

4505 Rule 68A-4.009

4506

4507 (1) No person shall take (as that term is defined in 68A-1.004), possess,
4508 injure, shoot, wound, trap, collect, or sell Florida black bears (*Ursus*
4509 *americanus floridanus*) or their parts or to attempt to engage in such
4510 conduct except as authorized by Commission rule or by permit from the
4511 Commission.

4512

4513 (2) The Commission will issue permits authorizing intentional take of
4514 bears when it determines such authorization furthers scientific or
4515 conservation purposes which will benefit the survival potential of the
4516 species. For purposes of this rule, a scientific or conservation purpose shall
4517 mean activities that further the conservation or survival of the species,
4518 including:

4519 1. Collection of scientific data needed for conservation or management of
4520 the species;

4521 2. Removing bears from situations that constitute a human safety risk or
4522 a risk to the well being of the bear;

4523

4524 (3) The Commission will provide technical assistance to land owners and
4525 comments to permitting agencies in order to minimize and avoid potential
4526 negative human bear interactions or impacts of land modifications on the
4527 conservation and management of black bears. The Commission will base its
4528 comments and recommendations on the goals and objectives of the approved
4529 Florida Black Bear Management Plan. This plan can be obtained at
4530 <http://myfwc.com/bear/>.