

**FLORIDA ENDANGERED AND THREATENED SPECIES
MANAGEMENT AND CONSERVATION PLAN -
FY 2002-2003 PROGRESS REPORT**

by the

Florida Fish and Wildlife Conservation Commission

**Prepared by Staff of the
Florida Fish and Wildlife Conservation Commission**

Submitted by:



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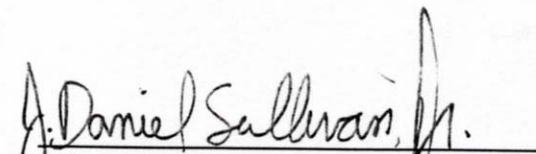
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PREFACE

This document constitutes the 25th progress report and update of the Florida Endangered and Threatened Species Management and Conservation Plan as required under Section 5 of the Florida Endangered and Threatened Species Act of 1977 (s. 372.072, F.S.). That section of the Act required the preparation of an initial plan for submission to the 1978 Florida State Legislature, and that a "...revision and update of this overall management and conservation plan...be submitted annually, along with a progress report and budget request."

The initial plan was submitted in March 1978, and remains the basic reference document for the annual updates. Subsequent annual reports may be consulted regarding a chronological history of the endangered and threatened species activities of the former Florida Game and Fresh Water Fish Commission (GFC) and the Florida Department of Environmental Protection (DEP). These activities have since become the responsibility of the Florida Fish and Wildlife Conservation Commission (FWC) upon the merger of the GFC and certain organizational functions of DEP, including those involving endangered and threatened species activities on July 1, 1999. Copies are available from the Division of Wildlife, Bureau of Wildlife Diversity Conservation, Protected Species Section of the FWC, Tallahassee.

Many persons contributed to preparation of this report. Robin Trindell and Elsa Haubold provided information regarding endangered marine species activities; and Angie Raines, Karl Miller, Mike Delany, Stephanie Simek, Brad Gruver, Paul Hoover, Angela Williams, Darrell Land, Richard McCann, Joan Berish, Steve Nesbitt, Jennifer Swan, Katherin Haley, Stuart Cumberbatch, Robin Boughton, Nancy Douglass, David Cook, Jim Feiertag and Jim Rodgers provided information regarding endangered land wildlife activities that were conducted during FY 2002-2003. Special appreciation is expressed to Ms. Christine Yannett for her assistance with preparation of this report.



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OFFICIAL LISTS OF ENDANGERED SPECIES, THREATENED SPECIES AND SPECIES OF SPECIAL CONCERN

The first Florida Endangered species list consisted of 23 species and was promulgated in 1972. The listing concept was expanded in 1973 to include Threatened species, and again in 1979 to include Species of Special Concern. The state lists are revised as needed and constitute Rules 68A-27.003 (endangered), 68A-27.004 (threatened) and 68A-27.005 (species of special concern) of the Florida Wildlife Code (Title 68A, F.A.C.). Currently, the FWC lists 118 species as endangered (41), threatened (26), and species of special concern (51; Table 1). Fifty-four species listed by the United States Fish and Wildlife Service (USFWS) occur in Florida. A complete listing of Florida's imperiled wildlife species may be accessed at the Florida Administrative Code Website, located under Chapter 68 - Florida Fish and Wildlife Conservation Commission (FWC), section 27.003 - .005 <http://fac.dos.state.fl.us/>. A listing of plants that are protected under the jurisdiction of the Florida Department of Agriculture and Consumer Affairs may be accessed at <http://www.doacs.state.fl.us/~pi/index.html>. Additional information regarding federal listings may be accessed at <http://endangered.fws.gov/wildlife.html#Species>.

Table 1. Summary of Official Lists of Florida's Endangered Species, Threatened Species and Species of Special Concern.

Status Designation	Fish	Amphibians/ Reptiles	Birds	Mammals	Invertebrates	Total
<u>FWC</u>						
Endangered	3	6	8	20	4	41
Threatened	2	10	10	4	0	26
Special Concern	<u>10</u>	<u>13</u>	<u>18</u>	<u>6</u>	<u>4</u>	<u>51</u>
Subtotal	15	29	36	30	8	118
<u>USFWS^a</u>						
Endangered	2	5	5	18	6	36
Threatened	<u>1</u>	<u>7</u>	<u>5</u>	<u>1</u>	<u>4</u>	<u>18</u>
Subtotal	3	12	10	19	10	54

^a U.S. Fish and Wildlife Service

FLORIDA ENDANGERED AND THREATENED TERRESTRIAL WILDLIFE PROGRAMS

Coordination¹

Endangered species coordination involved overseeing, monitoring, facilitating and otherwise organizing endangered species projects and research; ensuring adherence to all federal and state reporting and documentation requirements and guidelines; implementing or facilitating protection through regulatory measures and permit review; providing or facilitating consultation and technical assistance to private interests and interacting with state and federal agencies, conservation organizations and others regarding a wide range of endangered species matters. Mr. J. Daniel Sullivan, Jr. (and formally Mr. Tom H. Logan) was principally responsible for such duties as the Endangered Species Coordinator and Protected Species Section Leader of the Bureau of Wildlife Diversity Conservation (BWDC) within the Division of Wildlife (DOW).

Funding for coordination was jointly derived from the USFWS via Section 6 of the Federal Endangered Species Act of 1973, the Nongame Wildlife Trust Fund and the Florida Panther Research and Management Trust Fund. Coordination included initiating and/or responding to correspondence dealing with various endangered species issues, processing numerous requests for endangered species information and representation of the FWC at various meetings and conferences. All endangered species activities funded from federal sources were monitored and overseen, and annual reports were prepared to document their progress. Draft recovery plans for various Florida species and Federal listing petitions were reviewed and comments prepared and submitted upon USFWS request. FWC representation on the Florida Panther Interagency Working Group and the U.S. Fish and Wildlife Service's Whooping Crane, Bald Eagle, Florida Scrub Jay and Florida Panther Recovery Teams was maintained. Technical assistance in endangered species matters was provided to a number of state and federal agencies, consulting firms, private individuals and local regulatory authorities.

In May 2003, the FWC adopted a policy in May that stated “...it is the policy of the FWC to protect native wildlife from predation, disease, and other impacts presented by feral and free-ranging cats.” Although the policy addressed all native wildlife, the policy statement noted that the protection of listed species and public lands would be considered the highest priority. Recommended strategies included developing and implementing a comprehensive education program to increase public awareness of the impacts that feral and free-ranging cats present to wildlife; eliminating the threat cats pose to the viability of local populations of wildlife, particularly species listed as state Endangered, Threatened, or of Special Concern; prohibiting the release, feeding, or protection of cats on lands managed by the FWC; providing technical advice, policy support, and partnerships to land management agencies in order to prevent the release, feeding, or protection of cats on public lands that support wildlife habitat; opposing the creation and support elimination of “Trap, Neuter and Release” colonies and similar managed cat colonies wherever they potentially and significantly impact local wildlife populations; and evaluating the need for new rules to minimize the impact of cats on native wildlife.

¹ Coordination activities involving marine wildlife are discussed in those sections of this report for “MARINE MAMMALS and MARINE TURTLES”.

Technical Assistance And Permitting

The DOW's Protected Species Section and the Office of Environmental Services provided federal agencies, other state agencies, consultants and regional and local regulatory authorities with technical assistance in protecting listed species on managed lands and lands slated for development. Such technical assistance was provided as: 1) comments regarding individual species management plans, 2) development of individual species management plans or guidelines and 3) on-site visits to determine species management needs. Information most often provided to the public concerned: 1) life history and general biological information regarding individual species, 2) locality/occurrence data, 3) listing status and 4) solutions to nuisance situations (i.e., education on the species and suggestions for coexisting with the species). Staff of the Protected Species Section provided these types of information through more than 2,314 telephone accounts and hundreds of formal letters and emails. The Bald Eagle Nest Site Data Coordinator responded to 437 public requests for status and location information regarding active bald eagle nesting territories in Florida. Several hundred (~900) requests were made monthly of the Eagle Nest Locator web site, <http://wildflorida.org/eagle/eaglenests/Default.asp>.

A total of 519 wildlife scientific collection, possession and relocation permits and 136 permit amendments were issued this year. A portion of those permits was issued conditioned upon implementation of an approved management plan, which demonstrated that the permitted activities would result in a conservation benefit for the involved species. Other permits required adherence to species management guidelines. Management guidelines are in place for Florida burrowing owls (*Athene cunicularia floridana*) in urban areas, ospreys (*Pandion haliaetus*) nesting on man-made structures, gopher tortoises (*Gopherus polyphemus*) on lands slated for development and bald eagles (*Haliaeetus leucocephalus*). Scientific permits were conditioned upon an approved research proposal. The permit review process usually involves coordination between FWC offices, consultations with consultants, other state agencies, federal agencies and regional and local regulatory entities.

The Protected Species Section maintains a website at <http://wildflorida.org/permits/> to provide permit information, guidelines, policies and applications for those interested in applying for wildlife scientific collecting and relocation permits. Staff direct callers to the website as a matter of routine. Several calls were received to inform staff that the site was quite informative.

The Office of Environmental Services issued 263 permits for the incidental taking of gopher tortoises. Developers mitigated the destruction of gopher tortoises and their habitats related to development activities by setting aside 1,612 acres of occupied tortoise habitat, primarily within their developments and/or mitigation parks.

State Listing Process

In September 2002, the FWC reconvened the Listing Process Stakeholder Panel (LPSP), a group that assisted the agency in developing the current listing process, to address issues that had developed with the listing process since its adoption in June 1999. The LPSP met three times during the fiscal year, and expected to meet three additional times and present its final report to the FWC in the next fiscal year.

The FWC received two petitions requesting listing actions and worked on an additional three ongoing listing actions in 2002-2003.

A petition to delist the bald eagle (*Haliaeetus leucocephalus*) was received in July 2002. Further work on the petition was suspended until the LPSP and FWC review of the listing process is completed.

An emergency petition to list the Miami blue butterfly (*Cyclargus [=Hemiargus] thomasi bethunebakeri*) as endangered was received in November 2002. A final biological status report was completed and the FWC determined that listing the butterfly as endangered was warranted in May 2003. A draft management plan was under development, and a comment period requesting conservation recommendations and expected economic and social impacts of implementing the management plan was still open at the end of the fiscal year. Final action on the reclassification is expected next fiscal year.

Work continued on a listing action to reclassify the Red-cockaded woodpecker (*Picoides borealis*) from threatened status to species of special concern status. During 2002-2003, a draft management plan was developed and advertised for public comment. A final management plan was nearly complete by the end of the fiscal year, and final action on the listing action was scheduled for the first regular Commission meeting in the next fiscal year.

Work also continued on a listing action to re-evaluate the status of the Florida manatee (*Trichechus manatus latirostris*). A final biological status report was completed in December 2002, and an addendum was completed in May 2003. The FWC postponed consideration of the listing action until next fiscal year.

Work also continued on a listing action to reclassify the Panama City crayfish (*Procambarus econfina*) from species of special concern status to threatened status. A draft management plan was completed and advertised for public comment. A final management plan is expected to be completed very early in the next fiscal year.

Research

Research is a systematic means of generating the scientific information that is necessary to guide conservation of endangered and threatened species, and it is a critical process for addressing the biological and management needs of those resources in a way that affords consistent monitoring and evaluation. Significant research has been conducted on many listed species during the past three decades, and results are leading to a better understanding of the extinction process and clues for how we may alter this process through management actions that may assist in the recovery of some species and preclude further population declines of others. Many of our findings have since been applied toward the design and implementation of recovery actions, and it is our ongoing evaluation of these strategies that could provide the information of most significance for the recovery of other species in Florida. This section describes the progress of ongoing listed species research by the DOW. Annual reports of these activities are available upon request.

Florida Panther Genetic Restoration and Management.--

Telemetry data were collected on 41 radio collared Florida panthers (*Puma concolor coryi*) and 3 Texas cougars (*P. c. stanleyana*) in southern Florida during the reporting period. Fifteen radiocollared panthers and 11 uncollared panthers died during the reporting period. Eleven panthers died from vehicular trauma and seven panthers, including 5 females, died from intraspecific aggression. Three dependent-aged kittens orphaned by the deaths of their mothers were captured and placed into temporary captivity. One radiocollared panther died of a septicemia that was likely secondary to concurrent feline leukemia virus and feline immunodeficiency virus. A 15 year-old radiocollared panther is suspected to have died from malnutrition. Six panthers died of unknown causes, 5 of which may have a common etiology. Six new panthers were added to the radiocollared population monitored by FWC this past capture season. Our current verifiable population count is 87 adult and subadult panthers and does not include kittens at dens. We documented 6 panther dens during the study period producing a total of 17 neonate kittens (8♀, 6♂). All of these kittens were handled successfully at their dens, permanently marked with subcutaneous transponder chips, and skin biopsies taken. No Texas cougars produced litters during the study period and the 3 remaining Texas cougars were placed in permanent captivity per genetic restoration protocol. We have radiocollared a total of 118 panthers since 1981 and handled 153 neonate kittens at dens since 1992.

Genetic analyses continue through our cooperative relationship with Dr. Stephen O'Brien at the National Cancer Institute. We have completed genotyping at 25 microsatellite loci of over 200 animals from several groups of different genetic ancestry. These included individuals from the Everglades subpopulation, the canonical Florida panther group, Texas females, crosses with some Texas heritage, captive animals of generally unknown origin held in various facilities throughout Florida, and cougars from Florida of unknown origin. For a large percentage of the population we have assigned probable dams and sires; for animals that we were not able to assign parents, we were generally able to determine their ancestry. We continue to compare results from molecular genetic analyses with panther field data. We have also completed, to a large extent, a pedigree of the Florida populations spanning the last 30 years.

We recovered the Global Positioning System (GPS) radio collars we deployed on 4 panthers during FY 01-02. Two of the GPS collars only stored location data on-board the unit and the remaining 2 stored data on-board as well as transmitted data to a remote receiver at pre-determined times. Our preliminary evaluations show that these units will perform well in south Florida, but dense vegetation types may reduce the number of successful GPS acquisitions. The remote downloads proved to be difficult and we would not recommend use of this technology. This study has been extended to evaluate new technology that will utilize ARGOS satellites for data retrieval.

We are continuing our evaluation of the use of remote cameras to survey Florida panthers. Data collection has been completed and we are now analyzing these data and summarizing results from this feasibility study. The remote cameras were successful at "capturing" panthers and provided other observations beyond mere presence and/or absence. We captured images of radio collared and uncollared panthers, females with kittens, males and females consorting, and other life history observations. Remote cameras show promise as an additional tool for monitoring panthers throughout their range.

Black Bear Research and Management.--

FWC continues research and management efforts to ensure the long-term perpetuation of the Florida black bear (*Ursus americanus floridanus*). FWC personnel received a record number of calls (1,391) regarding bears during FY 2002-2003, while the number of bear roadkill decreased from 104 documented in 2001 to 99 in 2002.

The Bear Management Section (BMS) completed the Conservation Strategy for the black bear in Florida. This strategy was the culmination of two years of meetings, mailings, and deliberations by 13 stakeholder organizations. The strategy lists three broad goals, which are supported by a total of 20 objectives and 133 activities. This strategy will serve as the blueprint for statewide conservation of black bears within Florida.

BMS staff and personnel from the Bureau of Wildlife Management in the Northeast Region were awarded funding from The Wildlife Foundation of Florida, Conserve Wildlife Tag monies to continue the Bears Response Agent Program. Additionally, the program was extended to include Marion County. The continuation of this program allows further independent utilization of the private individuals, previously selected, to respond to human/bear conflicts. Agents were assigned to 56 events by the end of June 2003.

Data collection ended spring 2003 for the study entitled "Northern St. Johns River Black Bear Assessment". This project was a small, one-season project to provide insight on the presence of bears in Northeastern Florida, between Daytona and Jacksonville. Hair samples will be analyzed this fall to examine sex and abundance of black bears throughout the area.

BMS staff finished the third and final year of fieldwork for the 3-year statewide assessment of road impacts on bear populations. A total of 23,388 hair samples were collected during the three field seasons (2001, 2002, 2003). The average recapture rate from 2001 to 2002 field season was 63% statewide. Abundance estimates for the first two field seasons were highest for the Ocala (153 and 156) and Osceola (101 and 120) study areas. Efforts were continued to work with other state and federal agency personnel to determine bear range within and surrounding the six core study areas.

The fourth and final field season of "Black Bear Movements and Habitat Use Relative to Roads in Ocala National Forest" was completed in June 2002. The project was designed to investigate movements, habitat use, and population dynamics of black bears along a portion of State Road 40 in Ocala National Forest. A total of 139 bears was captured, 5,633 telemetry points were collected, 2,037 road crossing documented and 1789 hair samples collected. Data analysis has begun and a final report is due March 2004.

The BMS staff, working in conjunction with personnel from the Bureau of Wildlife Management in the Northwest Region has initiated a study to examine black bear movements and abundance relative to U.S. 98 within the Aucilla Wildlife Management Area (WMA). This is a smaller version of the Ocala Bear Study, designed specifically to examine a section of US 98 that bisects the Aucilla WMA. This area is ranked third in importance out of 15 statewide

roadkill problem areas. Hair collection to estimate the population has been completed, but data collection to examine bear road crossings will continue until July 2004.

Whooping Crane Reintroduction.--

Thirteen whooping cranes (*Grus Americana*) were released in 3 cohorts during FY 2002/2003. We recovered 6 mortalities during the fiscal year. Initial survival among this year's released birds was very good, with 1 bird lost in a collision with a power line; this is a 7.7% annual lost rate, well below recent averages. We tested all released birds for *infections bursa disease* (IBD), but saw no evidence of this highly contagious virus. IBD was the suspected cause of a majority of the mortality we saw last year. One bird of the 1996 release year birds that suffered a broken leg died as a result of aspiration of a kernel of corn that occurred during capture. Only 2 birds were considered killed by predators last year.

At the end of the fiscal year there were 72 whooping cranes that we were monitoring on a regular basis and 20-30 others that were unaccounted for, but likely surviving. We make efforts to keep functioning transmitters on all the birds, but that becomes a challenge as the population ages and the radio transmitters begin failing. This year 18 older whooping cranes were captured and new radio transmitters attached. Several unique techniques were developed by project staff to accomplish these captures.

There were no unusual dispersals documented in the population again this year. Water levels, in the central Florida marshes, have remained at normal levels since summer rains in June of 2002 began to refill our drought stricken wetlands. The availability of more adequate crane habitat in Florida may reduce the frequency of what might be considered "extraordinary" movement.

Again in the spring and summer of 2003 we documented a number of adults becoming flightless while undergoing simultaneous molt of the primary and secondary wing feathers. In past years we have seen increased mortality among flightless, molting adults. With improved wetland conditions the mortality associated with flightlessness may decline.

The whooping crane chick produced last year in Florida left the company of its parents in early January and soon joined this year's release birds; which were some 7 km to the south of his parent's territory. This year 16 pairs of whooping cranes showed signs of nesting (copulation and territory acquisition, nest building, etc.), and of these, 7 pairs laid 8 nests; median first egg date was 3 April (Table 2). Six of these nests hatched 8 chicks (Table 2). This is the largest number of hatched nests and the largest number of chicks produced in project history. This year, for the second time, whooping cranes in Florida produced chicks (2) that survived to fledge. Also for the second time, this year a pair of Florida whooping cranes renested. However this year the renesting followed the loss of chicks, not just a nest failure. Renesting after hatching and rearing chicks for over 30 days is more evidence that whooping cranes introduced in Florida are capable of making the reproductive success necessary to reach the population goals.

Table 2. Pairing and Nesting Results for Florida Whooping Cranes 2003 Nesting Season.

Pair	Location (County)	Laying Date/ Day of Year	Eggs	Fate
800/898	Lake	Jan. 30/ 30	2	H1- Mar 3, One young fledged
503/510	Pasco	Jan. 28/ 28	2	H2- Feb 27 No young fledged
591/369	Osceola	Feb. 23/ 54	2	H2 – March 3 One young fledged
471/397	Glades	April 3/ 98	?	H1 – May 2 No young fledged
772/780	Brevard	April 13/ 103	1	H1\$1 – May 15 No young fledged
520/505	Osceola	April 24/ 114	1	Egg with embryo
503/510	Pasco	May 4/ 124	2	H1- May 28 No young fledged
588/658	Osceola	May 12/ 132	?	Nest failed June 3

Results: 8 nests from 7 pairs; 8 chicks hatched from 6 nests; 2 fledged. Median date first egg laid – April 3rd.

Bald Eagle Population Monitoring--

The number of active bald eagle (*Haliaeetus leucocephalus*) nesting territories documented in 2003 (1,133) was the same as the number documented in 2002. The estimated number of young produced (1,292) was close to the number estimated last year. The number of young produced per active territory (1.14) and the number of young per successful nest (1.54) were similar to last year and to the most recent 10 year average. These numbers represent an estimated population of between 3,014 (breeding adults and estimated non-breeder subadults) and 4,306 (breeding adults, non-breeder subadults, and young produced in 2003). The lack of increase in this year's number of active nests, compared to 2002, continues a slowing of the population growth that we have seen in the last few years. This flattening of the growth curve would be expected as available eagle nesting habitat in Florida reached the point of population saturation.

Bald Eagle Seasonal Movements/Habitat Use.--

Many of Florida's sub-adult bald eagles migrate north along the east coast to summering areas from North Carolina to Canada, where they spend 4 – 5 months. They then return to Florida, where they overwinter in areas that are often far away from their natal areas. Current bald eagle management primarily focuses on nest sites, but areas used regularly by sub-adult (non-breeding) eagles are also important resources that warrant management consideration. The FWC initiated a study in 1997 in order to describe important use areas of Florida sub-adult bald eagles, both in and outside of Florida. Seventy eagles have been fitted with satellite transmitters since 1997; 25 of these continue transmitting latitude, longitude, and mortality data. The locations are displayed on the internet with appropriate state and/or region views at <http://wld.fwc.state.fl.us/eagle/eaglestudy/default.htm>. The locations are updated to the project's web page bi-monthly for public access and to facilitate interactions with other state, federal and local land managers. The results of this study have expanded our knowledge of area and habitat requirements of Florida's sub-adult bald eagles by providing locations on migration routes and allowing us to estimate summer and winter home range sizes and location. In 2004, we will continue to analyze and map location data for the remaining transmitter-equipped eagles. We plan to publish this information as a Florida Bald Eagle Atlas.

Pelican Monitoring.--

A statewide aerial survey of brown pelicans (*Pelecanus occidentalis*) was conducted 28-29 April 2003. Ground checks could not be conducted until July. The number of nesting pairs estimated this year was 8,439 in 40 colonies (Florida Bay and the lower Florida Keys being lumped as 1 site). This is only slightly above the average number of nesting pairs statewide (8,308) since the survey began in 1968. These numbers are indicative of an estimated population of 22,450 adult and subadult brown pelican and 12,400 young of the year for 2003.

A decline of nesting effort reported in recent years (see past progress reports) was more apparent this year on the Gulf Coast particularly Tampa Bay and Charlotte Harbor. We should continue to pay close attention to nesting effort and success over the next few years. The nesting effort and production of brown pelicans in Louisiana and Texas continues to increase and may be attracting some of the pelicans produced in Florida to initiate nesting in the northwestern Gulf of Mexico.

Nesting success was measured on two Atlantic coast colonies. Based on 161 nests inspected production was estimated to be 1.47 young per productive nest. This rate was above the average for the past few years.

No die-offs of brown pelicans were investigated this year. We should conduct the statewide survey, as scheduled, in FY 2003/2004.

Productivity of Wood Storks in North and Central Florida.--

The average fledging rate of wood storks (*Mycteria americana*) breeding at 14 colonies in north and central Florida during 2003 was 1.491.11 fledglings/nest and ranged from 0.21 to

2.21 fledglings/nest (n=1,809 nests). For nests that fledged at least 1 stork, the average fledging rate was 2.150.64 fledglings/nest (n=1,281 nests). About 70.8% of monitored nests fledged at least one bird. These data are similar to stork productivity in Florida from the mid-1970s to mid-1980s.

A cluster of colonies in Pasco and Hillsborough counties (Cypress Creek, New Port Richey) in the west-central region and the Jacksonville Zoo in the northeast region of Florida exhibited the greatest fledging rates. Colonies that exhibited below average fledging success appeared to be widely distributed both in north and central Florida. Cypress Creek and Jacksonville Zoo colonies exhibited high fledging rates due to below average number of complete nest failures and above average number of 2 and/or 3-fledgling nests. Nest failures appeared to be evenly distributed during the 2003 breeding season among most colonies. However, three colonies (Chaires, Dee Dot, Croom) exhibited a sizable number of nest failures associated with severe weather as evidenced by unattended nests, fallen nest structures, and/or dead nestlings under the nest trees.

Florida Grasshopper Sparrow Surveys.--

Distribution surveys for the endangered Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) were planned as part of a contractual agreement with the Department of Defense to search for additional populations. Fewer than 400 individuals are estimated at four protected locations, however other breeding aggregations may exist. Landsat satellite data and aerial photographs were used to identify areas of potential grassland habitat in south-central Florida. Eighty-one polygons ranging from 178-7,607 ha were selected for distribution surveys from March-June 2004.

Florida grasshopper sparrows on Avon Park Air Force Range (APAFR) decreased from an estimated 162 birds at three populations in 2002 to only 17 birds at two populations in 2003. FWC personnel are working with APAFR and the USFWS to determine the cause of the decline.

Red-cockaded Woodpecker Population Surveys and Conservation Planning.--

Red-cockaded woodpecker (*Picoides borealis*, RCW) population surveys continued on 3 wildlife management areas (WMA) in southern Florida – Three Lakes WMA in Osceola County, Babcock Webb WMA in Charlotte County, and J.W. Corbett WMA in Palm Beach County. The scope of work scheduled for FY 2002-2003 included monitoring the number of active clusters, monitoring active clusters for nests, color-banding nestlings, and determining fledging success.

During the 2003 nesting season, there were 51 active RCW clusters at Three Lakes WMA. Thirty-nine of these clusters fledged young, with 56 fledglings produced (1.4 fledglings per nest). The number of active clusters at Three Lakes WMA appeared to be relatively stable since 1999. The number of active clusters at Babcock Webb WMA and J.W. Corbett WMA have also stabilized following a decline between 2000 and 2002. During the 2003 nesting season, there were 24 active clusters at Babcock Webb WMA. Eighteen clusters fledged young, with 21 fledglings produced (1.16 fledglings per nest). During the 2003 nesting season, there were 10 active clusters at J.W. Corbett WMA, an increase of 2 clusters over 2002. Eight clusters

fledged young, with eight fledglings produced (1.0 fledglings per nest). Prior to the breeding season, four juvenile males were translocated from Three Lakes WMA to female clusters at Corbett WMA to form potential breeding groups.

Color banding continued on all three WMAs, with 77 RCWs banded at Three Lakes WMA (1 adult, 76 nestlings), 30 nestling RCWs banded at Babcock Webb WMA and 9 nestling RCWs banded at J.W. Corbett WMA.

In addition, work was focused on active management to enhance reproductive success and to increase population size. Eighteen artificial cavities were installed at Three Lakes WMA, 29 were installed at Babcock Webb WMA and 17 were installed at J.W. Corbett WMA. Data from the previous 3 years was used to prepare a draft RCW management plan for each WMA. Plans outline recovery activities for each WMA, including fire and mechanical treatments to improve habitat quality, installing cavity inserts in existing occupied clusters and in recruitment clusters, and translocating RCWs to recruitment clusters.

During FY 2003-2004, active clusters will be monitored for nests, nestlings will be banded, and fledging success will be determined on each of the three WMAs. Work will continue to focus on active management to enhance reproductive success and to increase population size. In addition, draft RCW management plans for each WMA will be finalized.

Statewide conservation planning for the RCW continued throughout FY 2002-2003. Following the proposed change in listing status for the RCW, staff developed a species management plan. That plan was available for public comment and review during FY 2002-2003 and was revised accordingly. This management plan fulfills the requirements of Rule 68A-27.0012, F.A.C. that went into effect June 29, 1999. The species management plan was scheduled for approval by the FWC on September 3, 2003. If approved the change in classification will continue the prohibition of direct take except through permit authorized by the executive director or his delegate.

Implementation of the species management plan will begin in FY 2003-2004. Planned management activities include drafting a statewide Safe Harbor agreement, developing and maintaining a statewide RCW database, and coordinating conservation activities.

Florida Scrub Jay Translocation Study.--

The Florida scrub jay (*Aphelocoma coerulescens*) is endemic to the unique oak scrub habitat of peninsular Florida. It's required habitat naturally occurs on isolated patches of sandy, well-drained soil. Because these sites are highly prized for residential development and agricultural cultivation, habitat loss through development and degradation from fire exclusion have resulted in a rapid decline in the scrub jay population. Translocation is generally referenced as a potential recovery tool for this species.

A research project was designed to experimentally translocate scrub jays from a population with virtually no probability of long-term viability to a currently unoccupied area of suitable habitat with potential for long-term management and viability. In February 2002, 4 male

and 4 female nonbreeding jays were to be translocated from an area of continually degrading habitat in South Venice, Sarasota County, to the recently restored Balm Boyette West (BBW) tract in Hillsborough County. Although scrub jays were found in the vicinity of the proposed recipient site, we believed natural colonization to be unlikely because it is surrounded by continuous habitat over which jays are reluctant to fly. However, on 29 January 2002, while conducting the final site inspection prior to the translocation we observed 2 scrub jays on the recipient site. We put the translocation on indefinite hold and modified the objectives of this project, to avoid the risk of disrupting the newly established pair.

The objective of the project for 2001-2002 was to document the natural colonization of the recently restored scrub site by Florida scrub jays. We monitored the established pair of jays on BBW to determine nest success for the 2002 breeding season. Periodic checks were conducted at BBW to watch for additional immigration or emigration throughout the year. The colonizing pair nested successfully and fledged one chick. No additional migrations were observed. In order to identify where any future immigrants to the BBW might come from, we continued surveying the dispersal area and banding unmarked birds. Approximately 40 jays were banded in a 10-15 mile radius of the BBW site in 2002.

Florida Scrub Jay Population Monitoring at Cedar Key Scrub State Reserve and Vicinity.--

Monitoring of the Florida scrub jay population in and around Cedar Key Scrub State Reserve in Levy County, Florida, continued during FY 2002-2003. In April 2000, the FWC, in cooperation with the Florida Park Service, initiated a study to assess the status of this isolated scrub jay population, the northernmost population on Florida's Gulf coast. During the 2003 breeding season, FWC staff color banded 9 Florida scrub jays (7 adults, 2 fledglings). The known population currently consists of 7 resident family groups, totaling approximately 25 scrub jays. Staff continued to train volunteers to monitor scrub jays and provided other types of technical assistance to the Florida Park Service during FY 2002-2003.

During FY 2003-2004, FWC staff will continue to work with the Florida Park Service to monitor the number and composition of family groups, to color band adults and fledglings, and to compile historical data in a comprehensive database. Staff also will collect blood from Cedar Key scrub jays for genetic analysis.

Gopher Tortoise Research and Conservation.--

Within the last decade, research has revealed an upper respiratory tract disease (URTD) in wild gopher tortoises (*Gopherus polyphemus*) in Florida. One causal agent of URTD is a bacterium, *Mycoplasma agassizii*. A second bacterium, *M. cheloniae*, has been recently described and found to occur in at least one Florida tortoise population. A blood test has been developed to detect antibodies to *M. agassizii* and is currently the most effective diagnostic tool. Presence of the bacterium can be determined by nasal flush samples, but this technique is more problematic. In recent years, FWC has investigated the prevalence and distribution of URTD in Florida and the effects of this disease on tortoise populations occupying public lands. Results from the prevalence study indicated that 30% of 386 tortoises tested positive for exposure to mycoplasma. Data regarding the effects of URTD on tortoises on 4 public lands are currently being analyzed.

In 2002, FWC collaborated with an inter-disciplinary team from the universities of Florida and South Florida to initiate a 5-year study regarding URTD and gopher tortoise population dynamics and health, with special emphasis on effects of relocation and habitat alteration. This study is being funded by a National Science Foundation grant to the University of Florida School of Veterinary Medicine. In 2003, blood and nasal flush samples were taken from tortoises on 14 sites. FWC has monitored disease status on 4 of these sites since the late 1990's. Data from this study are already yielding valuable insights regarding seroepidemiology and changes in populations over time.

The gopher tortoise has been listed as a Species of Special Concern in Florida for over 2 decades now. A biological status review in 2002 indicated that, under current FWC listing criteria, the gopher tortoise would warrant elevation to threatened status. However, Commissioners postponed consideration of this proposed status change until a recently convened stakeholders' group has reviewed the listing process. In the meantime, FWC is creating an internal team to address the many issues associated with tortoise mitigation and management. FWC is also preparing a management plan for the gopher tortoise; a preliminary draft was circulated for internal review in February 2003. That draft is currently being revised to incorporate format changes and reviewers' comments. Two of the many strategies being advocated are implementing prescribed fire on public lands and restocking the vast areas of tortoise-depleted sandhills on Eglin Air Force Base and other public lands in the Panhandle.

Flatwoods Salamander Conservation Project.--

The flatwoods salamander (*Ambystoma cingulatum*), federally listed as Threatened in 1999, was listed by the State of Florida in 2001 as Species of Special Concern, based on evidence of habitat loss and the estimate of only 38 extant populations in Florida. The flatwoods salamander management plan developed as part of the listing process proposes that 129 self-sustaining populations would need to be located in Florida in order to de-list the species statewide. Progress in FY 2002-2003 toward that goal is presented below in terms of implementation of the 8 priority actions identified in the plan.

Develop a Memorandum of Agreement with Federal Land Managers – A Memorandum of Agreement (MOA) with the USFWS was prepared and approved in February 2002; this document clarifies the respective roles the USFWS and the FWC will play in flatwoods salamander conservation activities in Florida. Preparation of MOAs with individual agencies for flatwoods salamander conservation on specific lands has not been pursued because interagency cooperation and communication has been forthcoming. The Department of Defense has actively supported salamander surveys on Eglin Air Force Base (AFB) by Virginia Tech, on Hurlburt Field by Florida Natural Areas Inventory (FNAI), and on Holley Outlying Landing Field (OLF) by the FWC. The USDA Forest Service (USFS) has actively supported surveys on Apalachicola National Forest (NF) and Osceola NF by The Nature Conservancy (TNC) and FWC personnel. The FWC continued a contract with the USFS to support continued flatwoods salamander surveys on USFS lands, and to elicit assistance in developing management plans and public information materials. St. Marks National Wildlife Refuge (NWR) provided the FWC a special-use permit to conduct flatwoods salamander surveys, and has supported the US Geological

Survey efforts on drift fence studies through the Amphibian Research and Monitoring Initiative (ARMI) program. Preparation of population-specific management plans for flatwoods salamanders on federal lands (Apalachicola NF, Osceola NF, St. Marks NWR, Eglin AFB/Hurlburt Field, Holley OLF) has begun, but is in the early stages for most sites, delayed in part while the plan format is being revised to be more comparable and field-useful among sites. FWC personnel are participating on the USFWS flatwoods salamander recovery team to revise and expand the draft flatwoods salamander federal recovery plan, which is targeted for completion in 2004.

Coordinate Initiation of Conservation Actions on WMAs – The FWC is not the lead management authority on the 4 WMAs currently known to harbor flatwoods salamander populations (Pine Log State Forest (SF), Point Washington SF, Tate’s Hell SF, Flint Rock WMA). However, these are among the 24 public lands where FWC personnel conducted flatwoods salamander surveys in 2003 and population-specific management plans for Pine Log and Point Washington are close to finalization. Despite extensive survey efforts across the Florida Panhandle, where presumably sufficient and timely rainfall occurred to break the 4-year drought, flatwoods salamander larvae were encountered on very few areas in 2003. They were confirmed only on St. Marks NWR and adjoining Flint Rock WMA, Apalachicola NF, Eglin AFB/Hurlburt Field, and Holley OLF. In addition to surveys, drift fences were installed and run in 2003 by FWC personnel at Blackwater River SF, Pine Log SF, and Point Washington SF. Non-FWC biologists ran drift fences on Eglin AFB, Apalachicola NF, and St. Marks NWR. For the 2004 survey season, drift fence studies have been initiated in Aucilla WMA, including areas of potential flatwoods salamander habitat. FWC personnel are also planning to supplement dipnet surveys with aquatic traps on some sites, perhaps St. Marks NWR and Apalachicola NF.

Explore the Feasibility for Cooperative Agreements or Conservation Easements for Long-term Management for Flatwoods Salamanders on Private Lands – The FWC received Safe Harbor grant funds from the USFWS to support survey work on non-federal lands and to develop a statewide Safe Harbor program for flatwoods salamanders. The latter is being developed in collaboration with Georgia and South Carolina, with consultation with USFWS personnel. A Safe Harbor program for flatwoods salamanders will need to be innovative to accommodate conservation of such a cryptic and seldom seen species as the flatwoods salamander. Extensive survey efforts were conducted on the lands of 2 large private landowners in 2003. FWC personnel are planning to extend surveys to many additional private lands in 2004, where landowner permission for access is granted.

Maintain a Comprehensive Database – Flatwoods salamander survey data from 2002 and 2003 have been entered, and improvements to the database have been made to make it more interactive and surveyor-friendly in the 2004 season.

Explore the Potential for a Statewide Habitat Conservation Plan (HCP) – This is not currently being pursued. Instead, the feasibility of a statewide Safe Harbor program for flatwoods salamanders is being investigated (see 2 paragraphs above).

Collaborate with State Wildlife Agencies in Georgia, South Carolina, and Alabama – Constructive interaction among staff of the respective state agencies continues, and information

pertinent to flatwoods salamander conservation is shared. With the exception of the Florida Panhandle, extended drought across most of the range generally reduced survey efforts in 2003 and led participating states to request a 1-year extension to the Safe Harbor grant agreement with USFWS. This will provide an additional season (2004) to spend allocated funds on surveys and the development of statewide Safe Harbor programs. State and independent biologists from all 4 states have also been meeting and participating on the USFWS flatwoods salamander recovery team, which is charged with revising and expanding the draft federal recovery plan.

Prepare a “how-to” Pamphlet for Land Managers – FWC personnel are developing a full-color, folded brochure on the flatwoods salamander that will be distributed to the public. Along with color photographs of animals and habitat, the brochure will provide basic life history information, habitat requirements, and recommendations for land management activities that could enhance flatwoods salamander populations. Besides serving as an educational tool to promote conservation of the species, the brochure may be helpful in encouraging private landowners to allow salamander surveys to be conducted on their property.

Encourage Research – Current emphasis on conducting statewide surveys for flatwoods salamanders has delayed proactive support of research.

Federally Funded Research.--

During FY 2002-03, the Division of Wildlife (DOW) Contracted Projects and Technical Publications Section administered 11 projects for listed species that were supported by federal funding (Table 3). The FWC maintains a Cooperative Section 6 Agreement (Endangered Species Act of 1973) with the U.S. Department of Interior’s, Fish and Wildlife Service to facilitate the obligation of federal funds to the state in support of federally listed species. During this period the FWC also received funds from the Department of Defense for a Florida grasshopper sparrow study and grants from the USFWS for snowy plover status, and the long-term whooping crane reintroduction project. The following 11 studies of listed species were supported by federal funding during the reporting period.

1. Bald Eagle Surveys: For information on this project, please see ‘Bald Eagle Population Monitoring’ on page 7.
2. Flatwoods Salamander: For information on this project, please see ‘Flatwoods Salamander Conservation Project’ on page 12.
3. Florida Grasshopper Sparrow: For information on this project, please see ‘Florida Grasshopper Sparrow Surveys’ on page 9.
4. Red-cockaded woodpecker Safe Harbor: For information on this project, please see ‘Red-cockaded woodpecker Population Surveys and Conservation Planning’ on page 9.
5. Snowy Plover Surveys: The cooperative agreement grant with the United States Fish and Wildlife Service (USFWS) provides funds to conduct a literature search and survey work to support USFWS’s listing efforts. An annotated bibliography has been submitted to the USFWS. Initial field work has been completed. Extension of this agreement provides for additional funds to determine effective techniques for assessing productivity, monitor plover populations, and the effectiveness of posted warning signs.
6. Traditional Section 6 – Endangered Wildlife Coordination: Funding for this project supported many of the activities covered in the “Coordination” section, page 1.

7. Whooping Crane Reintroduction: For information on this project, please see ‘Whooping Crane Reintroduction’ on page 6.
8. Wood Stork Survey: For information on this project, please see ‘Productivity of Wood Storks in North and Central Florida’ on page 8.
9. Sarasota County Scrub Jay Habitat Conservation Plan Development: The FWC began its obligation as State Partner for Grant Agreement E-19, *Sarasota County Scrub Habitat Conservation Plan (HCP) Program Grant (HCP Planning)* during the reporting period. This grant was awarded under the Cooperative Endangered Species Conservation Fund (CFDA 15.615) HCP Land Acquisition Program.
10. Sebastian Highlands Scrub Land Acquisition: Under the terms of the Section 6 Cooperative Agreement between the FWC and the USFWS, the FWC participated as State Partner to accommodate the dispersal of funds awarded for Grant Agreement E-15, *Sebastian Highlands Scrub Acquisition*. The FWC completed the dispersal of funds for the grant to the Indian River County School Board for the acquisition of undeveloped residential lots adjacent to Pelican Island Elementary School in Indian River County, Florida. The lots will be perpetually managed by Indian River County and supported by other parties to the project - Pelican Island Audubon Society, US Fish & Wildlife Service, School Board of Indian River County. In addition to the demographic benefits afforded scrub jays, the acquisition of the xeric uplands has also served to protect habitat for several State-listed species, including the gopher tortoise (*Gopherus polyphemus*), large-flowered rosemary (*Conradina grandiflora*), sand spike-moss (*Selaginella arenicola*), and nodding pinweed (*Lechea cernua*).
11. Topsail Hill Choctawhatchee Beach Mouse Land Acquisition: Under the terms of the Section 6 Cooperative Agreement between the FWC and the USFWS, the FWC began its obligation as State Partner for Grant Agreement E-18, *Beach Mouse HCP Land Acquisition I*, during the reporting period. The purchase of the Topsail Hill State Preserve is benefiting one of three recovery populations of the endangered Choctawhatchee beach mouse (*Peromyscus polionotus alloparys*) (CBM), by ensuring protection of occupied and designated critical habitat of the CBM in perpetuity as well as by providing a buffer between the State land and coastal beachfront development. Other state and federal protected species are also benefiting from the land acquisition, including the threatened loggerhead sea turtle (*Caretta caretta*), the endangered green sea turtle (*Chelonia mydas*), the endangered leatherback sea turtle (*Dermochelys coriacea*), the threatened wintering piping plover (*Charadrius melodus*), and the snowy plover (*Charadrius alexandrinus tenuirostris*), a species of concern.

Contract Sponsored Projects.--

The following five studies of listed species were sponsored by the FWC through contracts with state and non-state entities during the reporting period.

1. Crested Caracara Habitat: Dr. Joan Morrison, Trinity College, initiated continuing studies on the crested caracara (*Caracara plancus audubonii*) population. A habitat suitability model and map was tested using field verification at known breeding areas. Additionally, a spatially explicit population model was developed to simulate changes in population size, dynamics, and persistence given changes in land use across the region.
2. Gopher Tortoise & URTD: Drs. Earl McCoy and Henry Mushinsky from the University of South Florida continue to work on the final product for the study “Population Consequences

of Upper Respiratory Tract Disease on Gopher Tortoise.” This study resurveyed ten populations, collecting blood samples to determine serum levels that can be linked to chronic stress. It is believed that an increase in stress levels could compromise the animal’s ability to recover from URTD.

3. Miami Blue Butterfly: Dr. Thomas Emmel of the Association of Tropical Lepidoptera, Inc. led the “Captive Propagation of the State- Endangered Miami blue butterfly (*Cyclargus* [=*Hemiargus*] *thomasi bethunebakeri*)” project. The project objectives were to establish a captive population and initiate a captive propagation program capable of producing a significant number of viable adults for study and future reintroduction, and to develop the propagation program to allow for reintroduction of captive bred individuals back into the wild within the species’ historic range in order to enhance existing population numbers at select colony sites, provide an influx of new genetic material, and potentially establish new active colonies on protected land sites.
4. Nongame Fish Surveys: Dr. Stephen Walsh of the U.S. Geological Survey, Florida Caribbean Science Center led the “A Distribution of the crystal darter (*Crystallaria asprella*), river redhorse (*Moxostoma carinatum*), and cypress minnow (*Hybognathus hayi*),” project. Dr. Walsh conducted literature and field surveys to gather and present details on the current distribution and life history of the fish species. Particular emphasis was placed on surveying and collecting data from the Escambia River system in Northwest Florida.
5. Shoal Bass: Dr. Mike Allen of the University of Florida led the “Shoal Bass Microhabitat Study in the Upper Chipola River, Florida” project. This study located and characterized the previously unstudied microhabitats of the shoal bass, a presently undescribed species that is restricted primarily to the upper Chipola River. Emphasis was placed on the identification of nursery areas for young-of-year fishes, and the development of habitat-based models and GIS maps useful for this species’ long-term conservation.

DOW, Bureau of Wildlife Diversity Conservation Projects.--

The following five studies of listed species were accomplished through staff directed projects or contracts with state and non-state entities during the reporting period.

1. North Arizona University Florida Panther Data: Dr. Paul Beier coordinated a comprehensive review of all available Florida Panther data and analyses. The report identified strengths and weaknesses of existing panther data and previously conducted analyses of the data; identified incorrect or incomplete analyses and interpretation of the data; identified critical data gaps and elucidated questions that need to be examined. The report also provided recommendations and a framework for how these gaps and questions should be addressed.
2. Florida Panther Capture: Rancher’s Supply, Inc. provided the Commission with assistance in the location, capture, and handling of Florida panthers. Additional services included training, consultation, necessary personnel, dogs, equipment and expertise necessary to assist with the location, capture, and handling of Florida panthers.
3. University of Florida Wildlife Disease - Florida Panther: Dr. Marilyn Spalding investigated injured, sick, and dead specimens of panthers as they became available in order to determine the cause of morbidity and/or mortality. Specimens were treated and their health was evaluated and monitored. Additionally, analyses were provided of panther blood, tissue, fecal material and parasites for the diagnosis of medical conditions and for biomedical research.

4. University of Florida Wildlife Disease - Whooping Cranes: Dr. Marilyn Spalding investigated injured, sick, and dead specimens of whooping cranes as they became available in order to determine the cause of morbidity and/or mortality. Specimens were treated and their health was evaluated and monitored. Additionally, analyses were provided of whooping cranes' blood, tissue, fecal material and parasites for the diagnosis of medical conditions and for biomedical research.
5. HawkWatch - Peregrine Falcon: HawkWatch International conducted annual systematic population monitoring on peregrine falcons (*Falco peregrinus*) at Curry Hammock State Park. The results of this study were submitted as a Technical Report and will be included in later, multi-year analyses that will analyze variation in weather, comparison with other sites, and studies.

Table 3. Projects for Listed Species Administered by the DOW, Contracted Projects and Publications Section During FY 2002-03.

Project	Federal	State/Local	Total
Federally Funded Projects			
<i>Bald Eagle Surveys - Ocala National Forest</i>	\$3,000.00	\$0.00	\$3,000.00
<i>Flatwoods Salamander</i>	\$39,930.00	\$19,846.00	\$59,776.00
<i>Florida Grasshopper Sparrow</i>	\$0.00	\$0.00	\$0.00
<i>RCW Safe Harbor</i>	\$0.00	\$0.00	\$0.00
<i>Snowy Plover Surveys</i>	\$0.00	\$0.00	\$0.00
<i>Traditional Section 6 – Endangered Wildlife</i>	\$132,000.00	\$230,771.00	\$362,562.00
<i>Whooping Crane Reintroduction</i>	\$150,000.00	\$136,370.00	\$286,370.00
<i>Wood Stork Survey</i>	\$10,500.00	\$0.00	\$10,500.00
<i>Sarasota County Scrub Jay HCP Development</i>	\$0.00	\$0.00	\$0.00
<i>Sebastian Highlands SCJ Land Acquisition</i>	\$14,375.00	\$0.00	\$14,375.00
<i>Topsail Hill CBM Land Acquisition</i>	\$1,984,815.00	\$2,855.00	\$1,987,770.00
Sub Total:	\$2,334,620.00	\$389,842.00	\$2,724,353.00
Contracted Projects			
<i>Crested Caracara Habitat</i>	\$0.00	\$4,977.00	\$4,977.00
<i>Gopher Tortoise & URTD</i>	\$0.00	\$0.00	\$0.00
<i>Miami Blue Butterfly</i>	\$0.00	\$19,424.00	\$19,424.00
<i>Nongame Fish Surveys</i>	\$0.00	\$4,154.00	\$4,154.00
<i>Shoal Bass</i>	\$0.00	\$15,511.00	\$15,511.00
Sub Total:	\$0.00	\$44,066.00	\$44,066.00
BWDC Projects			
<i>NAU Panther Data</i>	\$0.00	\$35,637.00	\$35,637.00
<i>Panther Capture</i>	\$0.00	\$48,720.00	\$48,720.00
<i>UF Wildlife Disease (Panther)</i>	\$0.00	\$6,021.00	\$6,021.00
<i>UF Wildlife Disease (Whooping Cranes)</i>	\$0.00	\$27,851.00	\$27,851.00
<i>HawkWatch Peregrine Falcons</i>	\$0.00	\$0.00	\$0.00
Sub Total:	\$0.00	\$118,229.00	\$118,229.00
Total:	\$2,334,620.00	\$552,137.00	\$2,886,648.00

Law Enforcement

Division of Law Enforcement officers continued their statewide enforcement activities to protect specific endangered and threatened species during the year. These special programs consisted of the following:

1. Regular patrols of the three Florida panther reduced-speed zones in Collier County (two on State Road 29 and one on US41).
2. Enhanced patrols of the speed zones in all manatee sanctuaries and expanded public outreach efforts statewide with particular emphasis on high mortality areas.
3. Regular patrols and close coordination with the Monroe County Sheriff's Office in enforcing reduced-speed zones and other special accommodations on behalf of the key deer (*Odocoileus virginianus clavium*).
4. Florida panther enforcement support, which includes officers in the nine-county core of existing and potential panther habitat. The nine counties are Collier, Hendry, Sarasota, Charlotte, Lee, Hardee, Highlands, DeSoto and Glades. The purpose of the program is to provide enhanced targeted law enforcement patrol, intensified landowner coordination, investigation of panther sightings, panther/vehicle collision and depredation reports, assistance in conducting standard field surveys in proposed reintroduction areas, and assistance to the DOW for panther research and management.
5. Regular patrols in Lee County in the wildlife corridor to reduce vehicle speeds for purposes of panther and prey protection and motorist safety.
6. Patrol efforts aimed at providing protection for marine turtles, especially during the nesting season when the turtles and their eggs are most vulnerable to poaching.

Information/Education

The Media Relations section of the Office of Informational Services (OIS) issued three statewide and six regional news releases on alligators, one statewide and eight regional news releases on Florida black bears, two statewide and two regional news release on the Florida panther, two regional news releases on gopher tortoises, 10 statewide and 20 regional news releases on manatees, three statewide and two regional news releases on the Miami blue butterfly, two statewide and one regional news releases on red-cockaded woodpeckers, two regional news releases on sandhill cranes (*Grus canadensis pratensis*), two statewide and two regional news releases on sea turtles, two statewide and two regional news release on whooping cranes, and three statewide news releases on endangered and threatened species in general. OIS Media Services staff also sent photographs and video footage of American alligators (*Alligator mississippiensis*), Florida black bears, manatees, sandhill cranes and whooping cranes to eight requestors.

OIS initiated or responded to 175 news media contacts regarding American alligators, 10 news media contacts regarding bald eagles, 121 news media contacts regarding Florida black bears, one news media contact regarding brown pelicans, 19 news media contacts regarding Florida panthers, 25 news media contacts regarding gopher tortoises, six news media contacts regarding gulf sturgeon (*Acipenser oxyrinchus*), 175 news media contacts regarding manatees, 35 news media contacts regarding red-cockaded woodpeckers, five news media contacts regarding sandhill cranes, 30 news media contacts regarding sea turtles, two news media contacts

regarding whales, five news media contacts regarding whooping cranes, three news media contacts each regarding least terns (*Sterna antillarum*), black skimmers (*Rynchops niger*) and wood storks, four news media contacts each regarding burrowing owls (*Athene cunicularia*) and Florida scrub jays, and 17 news media contacts regarding endangered and threatened species in general.

OIS Conservation Education staff coordinated or participated in 24 wildlife-oriented festivals or events, attended by approximately 20,000 persons. Through these events, staff communicated information about various endangered and threatened species. The agency's exhibit at the Florida State Fair in Tampa was visited by approximately 425,000 and featured exhibits and information on American crocodiles (*Crocodylus acutus*), Florida panthers and many other endangered and threatened bird species. South Region staff coordinated and/or participated in 4 wildlife-oriented festivals or events and 1 children's day festival, attended by approximately 2,000 people. Through these events, staff communicated information about various endangered or threatened species. FWC staff hosted The Florida Black Bear Festival in Umatilla with an estimated 10,000 people attending. There were presentations, exhibits and field trips with a focus on the Florida black bear. Other festivals hosted by FWC were two Welcome Back Songbirds festivals – one at Merritt Island National Wildlife Refuge and the other at Wakulla Springs State Park. Various activities educated participants about the plight of Neotropical migrants during their migration activities and other local wildlife. Listed species addressed during specific presentations or tours at the Wakulla Springs event included the red-cockaded woodpecker (40 people), American alligator (60 people), gopher tortoise, Suwannee cooter (*Pseudemys concinna suwanniensis*) (40 people on turtle tours and presentation), pine barrens treefrog (*Hyla andersonii*), gopher frog (*Rana capito*), Florida bog frog (*Rana okaloosae*) (50 people in frog presentation). There were 1100 attendees for the entire event and 800 people attended the Merritt Island event where species included were the; American alligator, American oystercatcher (*Haematopus palliatus*), bald eagle, black skimmer, brown pelican, least tern, limpkin (*Aramus guarana*), little blue heron (*Egretta caerulea*), osprey (*Pandion haliaetus*), piping plover (*Charadrius melodus*), reddish egret (*Egretta rufescens*), roseate spoonbill (*Platalea ajaja*), roseate tern (*Sterna dougalli*), Southeastern American kestrel (*Falco sparverius paulus*), snowy plover, snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*) and wood stork.

The K-12 Coordinator produced and sent an electronic newsletter to 300 subscribers including all K-12 volunteer facilitators and other interested parties throughout the state, along with program updates and useful information for workshops or professional development. Along with regional staff and volunteer facilitators the K-12 Coordinator also provided approximately 100 one-day workshops to approximately 1,500 educators, including workshops in Project WILD, Aquatic WILD, Schoolyard Activities and Ecosystems and the Florida black bear. K-12 program volunteers throughout the state continue to donate thousands of hours of their time and expertise annually, to provide one-day and weekend workshops to educators and promote our programs through their workplaces and networks. Species covered in Project WILD include the Florida panther, gray bat (*Myotis grisescens*), West Indian manatee, Florida black bear, American alligator, osprey, whooping crane, red-cockaded woodpecker, burrowing owl, gopher tortoise, Kemp's Ridley seaturtle, hawksbill seaturtle, green seaturtle, loggerhead seaturtle, and leatherback seaturtle.

The Watchable Wildlife staff produced a Wildlife Viewing Web site that includes many listed species: American alligator, Southeastern American kestrel, American oystercatcher, bald eagle, black skimmer, burrowing owl, Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*), crested caracara, Eastern indigo snake (*Drymarchon corais couperi*), Florida grasshopper sparrow, Florida scrub jay, snail kite (*Rostrhamus sociabilis plumbeus*), gray bat, key deer, least tern, Florida tree snail, limpkin, loggerhead seaturtle, North Atlantic right whale (*Eubalaena glacialis*), peregrine falcon (*Falco peregrinus*), red-cockaded woodpecker, whooping crane, wood stork and Florida sandhill crane.

Regional staff facilitated two workshops, involving 60 participants, and presented five presentations, involving 300 participants related to shorebird conservation and education and the Shorebird Sister Schools Program. Staff also participated in the writing and editing of a Water bird disturbance video. Listed species included osprey, peregrine falcon, snowy plover, piping plover, little blue heron, reddish egret, snowy egret, tricolored heron, white ibis, wood stork, brown pelican, American oystercatcher, black skimmer and least tern.

The Northeast Regional Education Specialist coordinated distribution of 200 donated copies of “The Whooping Crane, North America’s Symbol of Conservation” to all middle and high school libraries in six target counties.

The Southwest Regional Education Specialist partnered with the St. Pete Audubon Society on a campaign to educate business owners with rooftop least tern colonies and their patrons about the importance of gravel roofs as nesting sites. An educational poster and certificate were produced. This project was duplicated by the South region education specialist with St. Lucie Audubon. The Southwest Regional education specialist also coordinated a two-day Raptor Electrocutation Workshop in Tampa to 48 participants representing 10 power companies. Listed species addressed included the bald eagle, osprey and Southeastern American kestrel.

Approximately 800 campers at the Everglades Youth Conservation Camp attended programs, which included information about listed species. The Busch Wildlife Sanctuary was invited to provide a wildlife presentation to the campers for the 2003 summer camp. During the seven-week period, 756 campers viewed the presentation.

The Be Bear Aware campaign targeting Seminole County was launched and included production of the brochure titled, “Living in Bear Country,” a flier called, “Bear Encounters”, a flier called “Please Don’t Feed the Bears”, a bear aware checklist on a bear shaped refrigerator magnet and a video called, “Understanding Human Bear Conflicts in Florida.” Five thousand packets were distributed to 27 targeted communities. In addition, 10 presentations were given to 2,000 people and another 6 school presentations to 180 students. A community bear liaison group was formed to assist regional biologists. There were also 17 Florida Black Bear Curriculum Guide educator workshops with 283 participants.

Twelve, two-page features called, “Wildlife Watching with the Florida Fish and Wildlife Conservation Commission” were produced and published in Florida Living magazine, estimated paid subscribers is 200,000 with a readership of twice that. Listed species highlighted include;

red-cockaded woodpecker, bald eagle, Southeastern American kestrel, American alligator, Florida black bear, Florida panther, snail kite, wood stork, white ibis, tricolored heron, snowy egret, gopher tortoise, Eastern indigo snake, loggerhead seaturtle, green seaturtle, least tern, limpkin, brown pelican, osprey, little blue heron and black skimmer.

Articles and accompanying photographs or illustrations of listed species featured in *Florida Wildlife Magazine* included the Florida panther, Florida black bear, whooping crane, red-cockaded woodpecker, and the West Indian manatee.

Critical Wildlife Areas

Critical Wildlife Areas (CWAs) are established by the FWC to protect wildlife concentrations from human disturbance during critical nesting, feeding or resting periods (68A-19.005). The areas are defined in establishment orders and are closed to human entry during the period of time established by the order. The 5 FWC regional wildlife diversity conservation biologists are responsible for evaluating potential CWAs, drafting rules for their establishment, modification or deletion, and administering their posting and maintenance each year.

During FY 2002-03 designated sites were monitored by biologists and signs posted seasonally to advise the public of the importance of the CWA. Protection efforts were coordinated with local government, other agencies, organizations and FWC law enforcement personnel. Seventeen of the 21 established CWAs supported varying amounts of nesting, resting or feeding habitat during the year (Table 4). All the active CWAs supported listed species, the most notable of which included: Bird Island (wading birds, oystercatchers and pelican rookeries); ABC Islands (wading birds and pelican rookeries); Fort George Inlet (terns and black skimmers); St. George Causeway (least terns); Big Marco Pass (least terns, black skimmers, plovers and wintering shorebirds); and Pelican Shoal (the primary U.S. nesting site for the Caribbean population of roseate terns [*Sterna dougalli*]).

Table 4. Name, County, closure period, and status with species and numbers of nests, for Critical Wildlife Areas in Florida in FY 2002-03.

Region	CWA name	County	Closure period	Primary taxa	Status ^a	Managed area
Southwest						
	Bird Island	Hillsborough	1 Dec. to 1 Sept.	Hérons, egrets, ibis, pelicans, spoonbills, oystercatchers	18,720 pairs	75 acres
	Little Estero Island	Lee	1 April to 1 Sept.	Terns, plovers	95 tern nests, 2 Wilson's plover nests,	25 acres
	Anclote River Islands*	Pasco/Pinellas	1 Feb. to 1 Sept.	Hérons, egrets pelicans	Inactive ^b	--
	Myakka River	Sarasota	1 March to 1 Nov.	Wood storks, egrets, herons, anhingas	99 nests, 297 juveniles	1 acre
Northwest						
	Tyndall	Bay	Year-round	Terns, gulls, skimmers, shorebirds	Unquantified	10 acres
	Alligator Point	Franklin	1 April to 1 Sept.	Terns, oystercatchers	Unquantified	145 acres
	St. George Causeway	Franklin	1 April to 31 Aug.	Terns, gulls, oystercatchers, skimmers	137 least tern nests, 3747 gull nests, 835 royal tern nests, 128 sandwich tern nests	32 acres
	Gerome's Cave*	Jackson	1 March to 1 Sept.	Bats	Unquantified	2 acres
South						
	Deerfield Island Park*	Broward	Year-round	Gopher Tortoise	10 individuals	56 acres
	ABC Islands	Collier	Year-round	Hérons, egrets, pelicans, glossy ibis	552 nests	75 acres
	Big Marco Pass*	Collier	Year-round	Terns, black skimmers, plovers, wintering shorebirds	500 nests, 3,000 individuals	60 acres
	Caxambas Pass*	Collier	1 April to 1 Sept.	Least Terns, wintering shorebirds	89 tern nests	1 acre
	Rookery Island	Collier	Year-round	Hérons, egrets, pelicans	103 nests	5 acres
	Bill Sadowski*	Dade	Year-round	Shorebirds, herons, egrets (foraging only)	1,000 individuals	700 acres
	Pelican Shoal	Monroe	1 April to 1 Sept.	Roseate terns, bridled terns	177 nests	1 acre
Northeast						
	Amelia Island	Nassau	1 April to 1 Sept.	Least terns	50 nests	4 acres
	Bird Islands*	Duval	1 April to 1 Sept.	Gull-billed terns, black skimmers, oystercatchers	200 nests	2 acres
	Fort George Inlet*	Duval	1 April to 1 Sept.	Royal terns, black skimmers, laughing gulls	2,000 nests	10 acres
	Jennings Cave	Marion	15 Feb. to 31 Aug.	Bats	Inactive	1.9 acres
	Matanzas Inlet*	St. Johns	1 April to 1 Sept.	Least terns, Wilson's plovers, willets	50 nests	28 acres
	Ponce de Leon Inlet	Volusia	1 April to 15 Aug.	Least terns	Inactive	13.7 acres

^aEstimated peak numbers of individuals and/or successful nests at each site during the closed period in FY 2002-03.

^bInactive means the site was not used during FY 2002-03.

*Indicates sites that may require re-description or merit deletion from the CWA system.

MARINE MAMMALS AND MARINE TURTLES

The State of Florida places a high priority on the Marine Mammal and Marine Turtle conservation programs. The FWC is recognized nation-wide as a leader in efforts to recover manatees and marine turtles. The State's programs are funded through designated trust funds and have separate research and management components. Research activities are coordinated by the Florida Marine Research Institute (FMRI) in St. Petersburg, while the Bureau of Protected Species Management (BPSM) in the Division of Wildlife (DOW), Tallahassee, handles management.

Manatee Program

Population Assessment.--

A biological status review of the Florida manatee was conducted based on the state of Florida's listing criteria. The future of the manatee population was assessed using a population model to determine the probability of a population decline in the future as well as the probability of extinction. The status review report is available at http://floridamarine.org/features/category_sub.asp?id=5199. A decision on the listing status of the Florida manatee has been postponed pending action by the FWC. As such, it will remain listed as endangered at the state level.

Three interagency, statewide "synoptic" aerial and ground surveys of manatees were conducted in January 2003 to meet legislative requirements of conducting an annual manatee census. These surveys yield a minimum manatee population count. Weather conditions were excellent during all three surveys and one yielded the second highest statewide count on record with 3,113 manatees counted. Manatees were counted on 16 survey routes (12 aircraft, 4 ground), by approximately 29 biologists from 11 state, federal, and county agencies, and from research labs and universities. The previous record count was 3,276 manatees in January 2001. Counts vary depending on weather conditions and manatee response to cold weather.

In July, FWC biologists began flying twice monthly distribution surveys in Indian River and Volusia counties. These surveys were designed to document the seasonal distribution of manatees in those counties and will continue until June 2004. Managers rely on this information about manatee use of waterways to help them assess the effectiveness and placement of current regulations.

A calibration study was designed to provide better results from aerial surveys conducted at the Tampa Electric Company's (TECO) Big Bend Power Plant in Tampa Bay. The goal of this study was to develop a calibration or correction factor that can adjust counts upward to correct for animals that were present but not counted during the survey. The fourth year of this study was completed with 19 animals captured, tagged and monitored near the TECO Big Bend Power Plant. Fifteen of these animals were fitted with belts with a flag attached that could be seen from an aircraft during surveys. Five also carried time-depth-temperature (TDR) recorders. The TDR data will be used to calculate the average dive time of each manatee. Six manatees had GPS satellite radio tags attached to track their location and movement on a regular basis. To

document flag sightings, calibration flights were flown for 13 days in January. Ground crews also participated in documenting flag sightings. To develop a correction factor for aerial surveys flown at TECO's Big Bend Power Plant, data from this final year and the previous three years of the study are being analyzed.

In partial fulfillment of the Settlement Agreement between various environmental groups and FWC researchers examined manatee use of the Caloosahatchee River in Lee County, eastward, to the Edison Bridge and manatee use of Mullock Creek. Scientists examined human use of the river, habitat features, large and fine-scale manatee movements (from telemetry data), manatee distribution and relative abundance (from aerial surveys), and manatee deaths (from FWC carcass recovery data). The Caloosahatchee River is an important place for large numbers of manatees in southwest Florida. Data from this "weight-of-evidence" approach can be used in a simulation model to evaluate risk to manatees. The final report is available on-line at <http://www.floridamarine.org>.

Behavioral Ecology and Movements.--

Research on manatee use of Florida's coastal habitats is essential to understanding what resources are required to sustain a healthy population. By tracking the movements of individual manatees in fresh, brackish, and saltwater habitats, valuable information is obtained about their seasonal and daily movement patterns, migratory behavior, site fidelity, and habitat use. Radio-tracking of tagged manatees helps assess movement patterns, preferred habitats, migration corridors, behavior and reproduction. Six Argos-linked GPS tags were used in the December Calibration Study at TECO. It was found that individual tagged manatees leaving the warm water discharge of the power plant to feed typically went to a preferred site. The final year of the Warm Mineral Springs (WMS) study was conducted in January 2003. Four manatees, recognized from photo identification as animals that regularly use this warm water site, were radio-tagged. The frequency of these four animals' use of the site was studied in relation to time, tidal state, and water temperature. Staff monitored three animals that had been rehabilitated at oceanaria facilities and released into the wild.

FWC staff in cooperation with USGS Sirenia Project and Mote Marine Laboratory, maintains an image-based, computerized database called the Manatee Individual Photo-Identification System (MIPS) that is used for photo-identification of individual manatees. FWC maintains the west-central and southwest MIPS catalog that currently consists of 9000+ sightings representing close to 600 manatees. FWC staff added 15 fully documented animals to the catalog this fiscal year. A major upgrade to the MIPS occurred in June 2003. These data provide life history information and assist scientists in estimating survival and reproduction rates, critical data required for determining the status of the manatee population.

Human Dimensions.--

Traditionally, wildlife managers have relied on biological data to assess manatee status and set recovery goals. Managers use laws, regulations, and outreach as tools to achieve these goals. Consequently, wildlife management can be viewed as management of people, because human behavior can determine the success of wildlife management actions. During the fiscal

year, FWC staff conducted a preliminary demonstration of a remote-sensing device that would be used to assess vessel compliance and vessel traffic. Staff also initiated a study on regulatory signs in manatee speed zones. The purpose of this grant-funded study was to assess whether different signs influence boater compliance with speed zones. A manuscript on boater compliance with manatee speed zones at locations around the state was completed.

Manatee Mortality and Rescue.--

A network of researchers and law enforcement agencies was established in 1974 to recover manatee carcasses and provide assistance to injured manatees. This mortality and rescue program now rests largely with FWC. During calendar year 2002, 305 carcasses were recovered and a record high 95 mortalities were attributed to watercraft (31.2% of the total). For the fiscal year from July 1, 2002 through June 30, 2003, 361 manatee carcasses were documented in Florida. All but 9 of these carcasses were retrieved and necropsied in order to determine causes of death. Ninety-three (25.8%) were determined to be natural mortality with an additional 39 (10.8%) attributed to cold stress. Human causes accounted for 87 (24%) of the deaths; 75 (20.8%) of these were watercraft related, 10 (2.8%) categorized as other human factors such as entanglement, and two were caused by floodgates or locks. Sixty-eight (18.8%) were perinatal deaths and 65 (18%) were too decomposed to determine cause of death. An interactive searchable web-based database with manatee mortality information is available at <http://www.floridamarine.org>.

For the second year in a row, there was an increased manatee mortality event in southwest Florida suspected to be due to red tide. Approximately 84 manatees recovered in southwest Florida this past year were suspected to have died of red tide, bringing the two-year total to approximately 118. The event is continuing in FY 2003-04.

FWC staff and cooperators rescued 49 sick or injured manatees statewide under the federal rescue program; 23 of these animals have been released, 11 have died, and the remaining animals are still being rehabilitated in facilities around the state. Three oceanaria participate in the rehabilitation program for critical care treatment and are reimbursed for costs by the state of Florida through FWC. Manatee rescues provide specific information on causes and geographic locations of manatee injuries and illness. The information obtained during manatee rehabilitation, treatment and necropsy assist in reducing manatee mortality.

Data Distribution and Technical Support.--

Technology has become a crucial tool in management decisions. Access to quality data in a timely fashion can help managers make better-informed decisions. Use of a geographic information system (GIS) allows for spatial display and analysis of data. Data from FWC and many other sources is collected by our section for use by managers in their daily evaluations of rules, Manatee Protection Plans, permits, habitat concerns and various other projects.

FWC staff distributed approximately 120 GIS maps, 200 AutoCAD maps, and 175 digital data sets to external customers. The manatee protection zones are kept current on our website and many customers are now able to download and print their own maps without contacting us.

This year we have expanded our services from standard countywide maps to special projects and custom zoom areas. As the public becomes more proficient in the use of GIS software, their requests have become more complicated because they are able to do their own maps and basic analysis. They request digital data that they can use themselves or for more complex projects.

Most FWC staff produce their own maps, graphic presentations, and posters so quality hardware is essential. All of our computers have been upgraded to be "People First" compliant, the standard for the state of Florida. The technical support section provides in-house support of all our hardware, software, and peripheral devices. We can usually fix the problem or help diagnose problems to be referred to the help desk.

Manatee Education and Outreach.--

Items printed and distributed in 2002-2003 through FWC included: Commonly Asked Questions booklets - 29,500; Miss Her Now Miss Her Forever brochures - 50,000; Middle School/High School Workbooks - 20,000; Manatee/Boater Awareness Placemats - 10,000; Where are the Manatees? - 20,000; Manatee Decal Collection - 2,000; Brevard Speed Zone brochures (3 versions)- 27,000; Coloring Activity Book (Elem. Level) - 95,000; Manatee News Quarterly newsletter - 2,900; Manatee Note Pads - 2,000; Manatee Sea Stats - 12,000; Lee County Speed Zones - 1,500.

Staff updated, developed, printed and delivered these items to numerous interested parties around the state. As word spreads about the "Way of the Manatee" educator boxes, more schools and counties are starting to request the use of these boxes to help supplement their science education requirements for the state. New boxes that introduce students to right whales, marine turtles and habitat are now in development.

A few cable companies agreed to air the "A Closer Look at Manatees" and "The State of Manatees" as public service programs (Time Warner Cable, Sunshine Network, Lee County Public Resources, Orange TV and The Villages News Network). These videos are also part of a campaign to educate boaters through the Coast Guard Auxiliary boating safety classes held around the state.

Staff continues to support requests for manatee materials from reporters, freelance writers or producers. A video loan library and a slide library provide graphics to enhance publication or production needs. In-house scanning equipment has increased our public service support since requests for materials are easier to create in digital form.

The manatee decal contest was again opened up to middle school students in Florida. More schools participated this year, which generated several nice artwork entries.

The Manatee News Quarterly mail list was updated this year - very few names were dropped and several more people were added to the growing list of readers. Grant money for the Advisory Council of Environmental Education was eliminated from the Save the Manatee Trust Fund budget even though the council is still intact statutorily. As a result, funding for various

manatee-related studies and educational programs were discontinued, which will affect local education efforts for manatee protection around the state.

Habitat Characterization, Assessment and Protection.--

In order to assure that manatee issues are considered in habitat management decisions, FWC staff serves on a number of intergovernmental task forces, working groups and committees. By partnering with other agencies, a landscape community approach can be fostered to support manatee recovery. To help accomplish this objective, FWC Habitat Protection Staff actively participated in several interagency teams (Table 5).

Table 5. Interagency teams in which FWC Habitat Protection Staff were actively involved during FY 2002-03.

Interagency Teams	Focal Task/Manatee Interests
Springs Task Force	Protection of Florida springs systems/natural manatee warm water refuge sites
Florida Boating Improvement Program	Provision of grants for boating access facility improvements/consideration of manatee use in adjacent waters when viewed with planned activities
Florida Forever/ Florida Communities Trust	State environmental lands purchasing programs/protection of uplands and watersheds near recognized manatee habitat from development
Manatee Habitat Working Group	Development of habitat-related criteria for the federal Manatee Recovery Plan
Warm Water Task Force	Planning research and management activities to address manatee habitat concerns for artificial warm water facilities
Crystal River/Blue Spring Aquatic Plant Management Working Groups	Address concerns for control of aquatic vegetation in the Crystal and Homosassa Rivers and Blue Spring/ensure adequate forage for large cold season manatee population
Blue Spring Minimum Flow Working Group	Development of a biologically based minimum flow level for Blue Spring (Volusia Co.)/protection of a primary manatee warm water refuge

Manatee Protection Plans (MPPs).--

A manatee protection plan was approved for Brevard County. FWC staff provided assistance to Volusia, Lee, Sarasota and Broward Counties in working towards completing their manatee protection plans. We have increased our coordination with the Department of Community Affairs regarding the review and inclusion of manatee protection plans into county comprehensive plans, as required by 2002 statute amendments. Staff is coordinating closely with the USFWS in the review and approval process for new MPPs.

Regulatory Permit Review.--

Staff reviewed a total of 515 projects during the year and offered biological opinions and recommendations to reduce or eliminate potential negative effects of the proposed activities. Forty-five percent (45%) of the projects reviewed required standard conditions, and seven percent (7%) were critical reviews that could significantly impact manatees or their habitat. Forty-four percent (44%) were information requests and seven percent (7%) was miscellaneous correspondence.

Rule Making (July 2002 – June 2003).--

In July 2002, the Commission proposed new or amended manatee protection rules in portions of the following counties: Charlotte (and DeSoto), Citrus, Hillsborough, Indian River, Manatee, and Sarasota. Multiple public hearings were held in the affected areas. All of the rules were approved in September 2002 and formally adopted in November (except for the Citrus County amendments, which were adopted in October).

In late 2002 staff began the process of developing a rule proposal for the Tampa Bay area; in April 2003 staff notified the Hillsborough, Manatee, and Pinellas county governments that they needed to form a Local Rule Review Committee, as is now required by §370.12(2), F.S. The Tampa Bay rule process is expected to be completed in 2004.

In addition to approximately 150 requests for permits submitted by commercial fishers and professional fishing guides, staff processed several permits to allow access to limited entry areas by residents, and to allow higher speed vessel operation for research-related activities in Hillsborough County and to allow a Brevard County resident to operate his vessel above Slow Speed so that the boat can access his property.

Measurable Biological Goals for the Recovery of the Manatee.--

During the 2002 legislative session, section 372.072, Florida Statutes, was amended to include new requirements: “No later than February 15, 2003, the commission, working in conjunction with the USFWS, shall develop measurable biological goals that define manatee recovery. These measurable biological goals shall be used by the commission in its development of management plans or work plans. In addition to other criteria, these measurable biological goals shall be used by the commission when evaluating existing and proposed protection rules, and in determining progress in achieving manatee recovery.” In January 2003 FWC adopted the

demographic benchmarks contained in the Third Revision of the Florida Manatee Recovery Plan as it felt that at the current time they provide the best measurable biological goals presently available. The adopted benchmarks are as follows: a) statistical confidence that the average annual rate of adult manatee survival is 90% or greater; b) statistical confidence that the average annual percentage of adult female manatees accompanied by first or second year calves in winter is 40% or greater; and c) statistical confidence that the average annual rate of population growth is equal to or greater than zero. The plan further indicates that these benchmarks should be achieved with a 95% level of confidence.

Contracts for Manatee Research.--

FWC managed a contract for Mote Marine Laboratory to conduct the following manatee research studies: assessment of thermal biology and potential for thermal stress; diagnostic indicators of manatee immune function; manatee sensory processes; studies in Matlacha Isles and other areas of southwestern Florida: Facilitating adult survival estimations in southwestern Florida, and documenting manatee habitat use patterns; developing numerical calibration indices at power plants; and manatee rescue and verification.

In addition, contracts related to manatee avoidance technology were managed through FWC. Several of the first seven funded projects were completed with the remaining anticipated to be completed in FY 2003-04. Completed project final reports are available at <http://www.floridamarine.org>. Some of the technologies investigated by various scientists were the use of thermal imaging and voice-recognition designed to detect the presence of manatees. None of the technology investigated is yet ready to be used in Florida waterways to alert boaters to the presence of manatees. A request for proposals will be issued in FY 2003-04 to solicit further projects.

Marine Turtle Program

Biology, Ecology, Life History, Migration.--

Most research on marine turtles has been conducted on the nesting beach although turtles spend only a small fraction of their lives there. Recovery efforts depend on a broad knowledge of population biology, life history, ecology and migrations. Ongoing projects in the Western Florida Current, Florida Bay, the Key West National Wildlife Refuge, Bermuda, and Panama involve capturing live animals at sea. Studies target four species of marine turtles and several life history stages, and address population structure (including natural sex ratios), growth rates, genetic identity, life history, health, diet, habitat preferences, and migrations.

In 2003, FWC captured 170 posthatchling loggerheads, one posthatchling green turtle, and one 20 cm pelagic hawksbill during excursions to the Western Gulf Stream off Central Florida. Staff recorded physical oceanographic measurements, turtle behavior, their relationships to floating objects and other organisms, turtle weights and measures, and evidence of ingested plastics and tar. The data help describe the importance of certain oceanographic surface features to young sea turtles and help researchers and managers understand threats to sea turtle survival.

In March 2003, 34 loggerhead turtles were captured during a five-day sampling session in Florida Bay. Eighteen of the turtles had been previously marked, providing data on growth and residency in Florida Bay. All animals were measured and tagged. Twenty-seven were transported to the Keys Marine Laboratory for brief further study prior to release. All turtles underwent ultra-sound evaluations and laparoscopic examinations were conducted on the male turtles to determine their reproductive status. Satellite and sonic transmitters were placed on five of the adult males and three of the adult females to document reproductive movements and diving behavior. In June 2003, 10 loggerhead sea turtles were captured during a one-day sampling session in Florida Bay. Four of these turtles were then tracked for a period of 24 hours as part of a larger study to investigate the patterns of habitat use and the behavior of loggerheads in Florida Bay. Related to the Florida Bay project, FWC staff participated in a collaborative assessment of turtle abundance in the Key West National Wildlife Refuge from September 8-12 during which 71 loggerheads, 48 green turtles, and 14 hawksbills were sighted and/or captured.

As part of a cooperative research project with the government of Bermuda, 185 green turtles were captured in nets, tagged and released during 2002. Over 2600 green turtles have been tagged as part of this project, which has been ongoing since 1968. DNA sequence data have shown that one-third of the population of immature green turtles that inhabit Bermuda waters are derived from Florida nesting beaches. DNA sequence data analyzed and presented in 2002 showed that hawksbills in Bermuda waters are derived from Cuba, U.S. Virgin Islands, Mexico, and Costa Rica. Captures of flipper-tagged turtles from this project have documented migrations to feeding grounds in Nicaragua, Cuba, Colombia, Florida, the Dominican Republic, Panama, Venezuela, St. Lucia, and Grenada, showing the need for international cooperation in research and management of this endangered species. In conjunction with field sampling in Bermuda, staff co-taught a course on the Biology and Conservation of Sea Turtles to nine resource managers and students drawn from Anguilla, Bermuda, the Cayman Islands, Costa Rica, and Venezuela.

Data on sex, size, maturity, and genetic identity were collected from 23 green sea turtles and 1 hawksbill sea turtle captured in nets or on the nesting beach at Zapatilla Cays, Panama. Satellite transmitters were attached to one subadult green sea turtle and two reproductive female hawksbills to study migratory behavior, track movements and identify migratory corridors. One of the hawksbills sea turtle traveled to a reef area off Honduras where it continued to send data for 9 months. Captures of flipper-tagged turtles from this project have documented migrations to feeding grounds in Nicaragua, Costa Rica, Colombia, and Cuba.

A collaborative effort between FWC and the Archie Carr Center for Sea Turtle Research to genetically sample loggerheads from Index beaches was begun with FWC staff collecting skin biopsies from 204 turtles from Brevard County. In an additional collaborative project, nearshore transects off Indian River County were conducted during which 64 turtles were sighted. The surveys have shown that renourishment of the adjacent beach and the covering of nearshore algal sites correlated with a decrease in the number of green turtle sightings in the affected areas.

Population Monitoring.--

This long-term monitoring program involves the collection of nesting and habitat information throughout the geographic range of marine turtles in Florida. Approximately 90% of the world's largest loggerhead nesting population occurs in Florida, and the green turtle nesting population is one of regional significance. FWC assesses nesting abundance and reproductive output by monitoring nesting beaches via a coordinated network of state, federal, and volunteer permit holders. FWC establishes scientifically sound monitoring, provides training, resolves data collection problems, assesses data collection error rates, analyzes data trends, and serves as a clearinghouse for information on marine turtle populations and habitats. Two overlapping monitoring programs are carried out, each with separate objectives.

The Statewide Nesting Beach Survey Program, initiated in 1979, achieves nearly complete coverage of the state's nesting beaches to provide data on total nest numbers, nest geographic distribution, and nesting seasonality for each species. Managers use results to minimize human impacts to turtles and nesting beach habitats, and to identify important areas for land acquisition or enhanced protection. In 2002, 183 survey areas were monitored, comprising 1285 km of beaches. This program documented a total of 62,905 loggerhead nests, 9,201 green turtle nests, 596 leatherback nests, and 3 hawksbill nests. FWC disseminates results of the Statewide Nesting Beach Survey Program through scientific publications, presentations, reports, the Internet, and the compact disc entitled "Florida Atlas of Marine Resources."

The Index Nesting Beach Survey program, started in 1989, differs from the Statewide Nesting Beach Survey program in collecting more detailed data from a smaller set of index beaches. Surveyors identify each sea turtle track to species, identify the tracks as a nest or abandoned attempt, and locate nests within an approximate half-mile beach zone. Nests and nesting attempts have been monitored for 15 years at 478 index beach zones surveyed daily during each 109-day season, an effort that currently provides nearly 5 million records in the Index Nesting Beach Database. Annual surveyor training, on-site verification, and consistency of the methods used during the thirteen years of the program and among the 396 km of index beaches make the resulting database a representative and unbiased assessment of sea turtle nesting. The program provides a reliable indication of temporal and spatial trends in Florida sea turtle abundance.

Coastal armoring research data from 2002 and 2003 were compiled, verified, plotted in Arc View, analyzed and reported. We completed data collection for our 2001-2003 coastal armoring inventory project. We currently have mapped all structures that could be barriers to sea turtle nesting on approximately 450 miles of index nesting beaches and additional randomly selected stretches of turtle nesting beach around the State. Randomly selected stretches were split up into ten 5-mile stretches of beach in each of four regions of the state (i.e., Northeast, Southeast, Southwest and the Panhandle). All data have been entered into Arc View. Analyses are completed and reports and publications are being prepared. We have applied for additional funding to complete this mapping project for the entire state.

Salvage, Rescue and Necropsy.--

FWC staff coordinated the Florida portion of the Sea Turtle Stranding and Salvage Network (STSSN), an 18-state program administered by the National Marine Fisheries Service (NMFS). A total of 1538 dead or debilitated sea turtles were documented in Florida from 1 July 2002-30 June 2003. By species, there were 879 loggerheads (*Caretta caretta*), 451 green turtles (*Chelonia mydas*), 107 Kemp's ridleys (*Lepidochelys kempii*), 30 hawksbills (*Eretmochelys imbricata*), 29 leatherbacks (*Dermochelys coriacea*), and an additional 42 sea turtles not identified to species. Staff reviewed, edited, and entered all submitted STSSN reporting forms, responded to or coordinated the response to more than 900 reports of dead or debilitated sea turtles, and conducted gross necropsies on approximately 150 of the carcasses. Staff conducted five workshops to train STSSN participants in standardized data collection methodology. Florida stranding updates were provided weekly to NMFS for incorporation into the Sea Turtle-Shrimp Fishery Management Report. Detailed Florida stranding reports were generated weekly and monthly. Two peer-reviewed articles were published by staff on data collected from STSSN work. One was "The First Records of Olive Ridleys in Florida (USA)" and the other was "The First Report of Oral Tumors Associated with Fibropapillomatosis in Florida".

Scientific Consultation with Management and Educational Outreach.--

Staff conducted five training workshops around the state for permit holders who conduct surveys of turtle nesting beaches and assist with sea turtle stranding and salvage activities. FWC marine turtle staff served on several scientific advisory committees and governing boards: the Loggerhead Recovery Team, Carr Refuge Working Group, university graduate committees, The World Conservation Union (IUCN) Marine Turtle Specialist Group, and International Sea Turtle Society board of directors. Staff reviewed numerous research proposals for the Bureau of Protected Species Management and all research-related proposals submitted for consideration by the small grants program of the FL Sea Turtle License Plate. For educational outreach, sea turtle staff gave presentations to school groups at MarineQuest, held a workshop on sea turtles and beach lighting, presented a paper at the Annual Symposium on Sea Turtle Biology and Conservation in Kuala Lumpur, Malaysia, participated in the Great American Teach-in, and attended several festivals and expositions around the state to promote sea turtle conservation. In addition, <http://www.floridamarine.org> was updated with new articles, interviews, data, and video footage of research activities and turtle nesting in order to broaden educational outreach and improve efficiency in Florida's sea turtle data distribution.

Conferences, Education, and Outreach.--

During this fiscal year, staff participated in numerous workshops, scientific meetings, and public forums to disseminate information on marine turtles, marine turtle conservation and protection. Public forums attended included: the International Sea Turtle Symposium, the Marathon Annual Sea Turtle Rehabilitation Workshop, local permit holder meetings, the Florida Local Environmental Resource Agencies, Inc. meeting, interagency meetings, and presentations at local schools.

Staff co-hosted the Fifth Annual Marine Turtle Permit Holder Workshop at Sea World, Orlando Florida. Approximately 200 Marine Turtle Permit Holders and volunteers attended this meeting. The program included presentations by Marine Turtle Grant recipients, presentations by different sea turtle conservation groups, and a tour of the sea turtle rehabilitation facilities.

Staff members serve as technical experts on numerous committees involved with marine turtle protection and conservation, including the Archie Carr Working Group; or provide expertise on marine turtle issues for other committees, such as the Coastal Engineering Technical Advisory Committee (CETAC) sponsored by the DEP; a technical experts group for environmental design of beach nourishment berms; and the Threatened and Endangered Species Team sponsored by the Army Corps of Engineers and the DEP.

Marine Turtle Program staff responded to approximately 102 requests for information on marine turtles. Twelve, colorful marine turtle decals have been developed and distributed to County Tax Collectors offices by program staff. This year's decal featured a green turtle that was rescued from St. Joe Bay during cold weather and released back to the wild once recovered. Proceeds from the sale of these marine turtle decals, primarily associated with boat registrations, remain one of the two funding sources for the FWC marine turtle program.

Staff distributed two posters that depict the marine turtle species that occur in Florida and their marine habitat. This year, a third poster with information on all five species of Florida's marine turtles was developed in cooperation with the Bureau's Outreach and Education Coordinator.

FWC has educational information through <http://www.floridaconservation.org/psm/>. This excellent educational tool affords interested public from around the world an opportunity to learn about marine turtles in Florida and important conservation issues concerning them and to order marine turtle decals and posters.

This Web page now provides information on lighting manuals to limit impacts to marine turtles on coastal beaches, information on important annual events such as the Marine Turtle Permit Holder Meeting, a list of Turtle Walk opportunities for interested citizens, and links to other organizations involved with marine turtle protection. The Guidelines for Marine Turtle Permit Holders were also made available through the web site this year.

Lighting Impacts.--

As part of an ongoing project, "Resolving Lighting Impacts on Florida's Nesting Beaches", FWC staff continued to work cooperatively with the U.S. Fish & Wildlife Service to provide assistance to other state and local governments and the Marine Turtle Permit Holders to identify lighting problems across the state and to develop solutions. This effort included updating the database that details the number of disorientation events that have been documented on Florida's nesting beaches over the past 15 years. FWC staff spoke at permit holder meetings to encourage permit holders to fill out disorientation forms, to report other management measures due to lighting, such as caging, that had not previously been monitored, and to work with their local code enforcement.

Staff initiated contacts with those county and municipal governments with lighting ordinances and provided support for the adoption of three new or updated local lighting ordinances. A total of seven letters were sent to local officials supporting local ordinances.

FWC staff attended six public and county council meetings on lighting ordinances, providing presentations upon request on ordinance revision or adoption. Staff also met with four local property owners to assist with changes to lights; participated in two public workshops (including lighting fixture demonstrations) for local property owners, code enforcement, government officials, and lighting distributors/manufacturers, and conducted seven lighting surveys with local code enforcement staff and/or permit holders and their volunteers.

FWC staff continued to update, distribute and maintain a CD catalog of lighting fixtures that may have useful applications for light management near marine turtle nesting beaches. Staff met with FP&L staff to discuss the distribution of a shield for pole lights along the east coast.

A concerted effort was made to contact distributors and manufacturers of lights and ancillary equipment, such as shields. Staff worked with a lighting designer on the development of a canister fixture with baffles and a red lens to be used on beachside balconies. This fixture consists of non-corrosive materials so it can withstand the harsh marine environment.

Marine Turtle Permits.--

During 2002-2003, staff issued approximately 164 permits for conservation work with marine turtles as well as numerous authorizations to transfer turtles for rehabilitation and release or turtle parts for studies of DNA. Oversight of this program included review and management of approximately 32 research projects and approximately 22 captive facilities involved in the rehabilitation and educational display of marine turtles. Approximately 49 permits were issued for individuals or organizations involved in marine turtle stranding response. Approximately 48 letters of authorization were issued to allow work with marine turtle parts or transfer of marine turtles for rehabilitation, release, or education.

Regulatory Permit Review.--

Staff reviewed approximately 416 submittals for coastal projects and provided recommendations or final comments on 252 of these projects. This included approximately 38 beach restoration and maintenance dredging projects; 126 coastal construction control line applications including ~50 lighting reviews, 40 requests to install or repair coastal armoring, 36 requests for other projects such as dune crossovers, beach cleaning, dune restoration, and special events; and ~37 ERP (Environmental Resource Permit) applications. Staff provided comments on other types of projects (~ 32 reviews), including management plans and similar documents. Comments were sent to the State Clearing House for ten federal projects.

Staff participated in numerous site inspections, meetings, and conference calls as part of the permit review process. These meetings included training sessions focused on specific issues, such as beach cleaning and beach furniture. Staff also reviewed monitoring reports to assess the impacts of permitted activities on marine turtles, their nests and hatchlings and prepared and presented technical summaries of this information at meetings.

Marine Turtle Grants.--

FWC staff participated in the March 2003 Marine Turtle Grants Committee meeting, and provided reviews of grant applications. This year, FWC staff managed approximately ten contracts for Marine Turtle Grant projects awarded during the 2002-2003 fiscal year.

Recent Publications: (FWC authors in bold).--

- Bolten, A. B. and **B. E. Witherington** (editors). 2003. Loggerhead Sea Turtles. Smithsonian Institution Press, Washington DC.
- Bresette, M. J., **A. M. Foley**, D. A. Singewald, **K. E. Singel**, R. M. Herren, and **A. E. Redlow**. 2003. The first report of oral tumors associated with fibropapillomatosis in Florida. *Marine Turtle Newsletter* 101:21-23.
- Carthy, R. R., **A. M. Foley**, and Y. Matsuzawa. 2003. The incubation environment of nests of the loggerhead turtle (*Caretta caretta*) and its effects on hatching success and the characteristics of hatchlings. In A. B. Bolten and B. E. Witherington (editors). Pp. in *Biology and Conservation of Loggerhead Sea Turtles*. Smithsonian Institution Press. Washington D.C.
- Engstrom, T., P. A. Meylan, and **A. B. Meylan**. 2003. Origin of juvenile loggerhead turtles (*Caretta caretta*) in a tropical developmental habitat in Caribbean Panama. *Animal Conservation* 5:125-133.
- Foley, A. M.**, P. H. Dutton, **K. E. Singel**, **A. E. Redlow**, and W. G. Teas. 2003. The first records of olive ridleys in Florida (USA). *Marine Turtle Newsletter* 101:23-25.
- Geiss, A., T. Wibbels, B. Phillips, Z. Hillis-Star, **A. Meylan**, P. Meylan, C. Diez and R. Van Dam. 2003. Predicted sex ratio of juvenile hawksbill sea turtles inhabiting Buck Island Reef National Monument, U.S. Virgin Islands. *Journal of Herpetology* 37(2):400-404.
- Schroeder, B. A., **A. M. Foley**, and D. A. Bagley. 2003. Nesting patterns, reproductive migrations, and adult residence habitat of loggerhead turtles. Pp. in A. B. Bolten and B. E. Witherington (editors). *Biology and Conservation of Loggerhead Sea Turtles*. Smithsonian Institution Press. Washington, D.C.
- Witherington, B. E.** 2002. Ecology of neonate loggerhead turtles inhabiting lines of downwelling near a Gulf Stream front. *Marine Biology* (Berlin) 140:843-853.
- Witherington, B.** 2002. Beachfront lighting: what's the problem? In: K. L. Eckert, and J. A. Horrocks (eds.). *Sea Turtles and Beachfront Lighting*. Widecast Technical Report No. 1. Pp. 9-12.
- Witherington, B.**, and N. Frazer. 2003. Social and economic aspects of sea turtle conservation. In: P. L. Lutz, J. Musick, and J. Wyneken (eds.). *Biology of Sea Turtles Volume II*. CRC Press, Boca Raton. Pp. 355-384.
- Witherington, B. E.** and R. E. Martin. 2003. Entendiendo, evaluando y solucionando los problemas de contaminacion de luz en playas de anidamiento de tortugas marinas. Traducccion al Espanol de la Tercera Edicion, Revisada. Florida Marine Research Institute Technical Reports TR-2, 88 pp.
- Witherington, B. E.** 2003. The biological conservation of loggerheads: Challenges and opportunities. In: A. B. Bolten and B. E. Witherington (editors). *Loggerhead Sea Turtles*. Smithsonian Institution Press, Washington DC. Pp 295-311.

North Atlantic Right Whale Research Program

FWC is involved in recovery efforts for other endangered marine mammals, including the North Atlantic right whale (*Eubalaena glacialis*), the most endangered of the world's large whales. This work is supported entirely through grant funding provided by National Oceanic and Atmospheric Administration (NOAA) –National Marine Fisheries Service. Efforts have been heightened to prevent human-caused mortality in this species. Even one death per year has a significant impact on the population, which is estimated to number approximately 325 individuals. In 1994, NOAA Fisheries designated Florida and Georgia coastal waters as critical habitat for the right whale. This region is the only known calving ground of the northern right whale. FWC is instrumental in assisting a recovery plan implementation team whose aim is to help NOAA Fisheries by providing advice to and support of recovery activities.

Staff coordinates and conducts aerial surveys off the coastal waters of Florida in an effort to alert vessels to the presence of right whales, monitor calf production, identify unique individuals, and describe whale distribution and habitat. FWC staff conducted 35 aerial surveys this season from 01 December 2002 until 26 January 2003. This effort resulted in a total of 23 sightings of right whales. The individual breakdown of these sightings is 14 mother/calf pairs, 8 lone adults and one entangled right whale. The surveys were temporarily suspended until safety protocols could be re-analyzed when a survey aircraft crashed off of Fernandina Beach, FL with Wildlife Trust personnel. After the accident, FWC staff rotated with staff from Wildlife Trust and New England Aquarium to conduct restructured surveys using the NOAA Fisheries Twin-Otter.

In other activities, FWC staff obtained training and became certified to disentangle large whales from lines or other fishing gear at sea. Staff prepared numerous maps requested by NOAA Fisheries showing whale distribution and relative abundance in the calving grounds. All data collected on offshore aerial surveys were entered, verified, edited and included in the Right Whale Consortium database.

A leading cause of right whale mortality is collisions with ships. Since the loss of as few as one individual can negatively impact the recovery of the species, information provided by aerial observers is immediately reported to a federally implemented Early Warning System (EWS) network. Working with the Fleet Area Control and Surveillance Facility at the Naval Air Station in Jacksonville, FL, the Network disseminates right whale location information to mariners in the waters of Florida and Georgia via the typical marine communication network and a right whale pager network. FWC researchers continue to coordinate a complex communication network that utilizes alphanumeric pagers to disseminate current right whale sighting information. Using this approach, mariners are alerted to the presence of right whales in order to alter course to avoid close calls or collisions with right whales in the calving grounds.

**BUDGETARY NEEDS FOR FLORIDA FISH AND WILDLIFE CONSERVATION
COMMISSION**

Total budgetary needs of the FWC endangered species programs in FY 2004-2005 will be approximately \$15,617,537 (Table 6). These needs include funding to maintain current programs, in addition to anticipated awards from new federal grants, that are designed to assist development of new recovery programs which include assistance to local governments and private individuals for development of conservation plans, acquisitions and private conservation efforts to benefit listed species.

Table 6. Projected FWC Endangered/Threatened Species Budgetary Needs in FY 2004-2005.

Funding Source	Amount
Nongame Wildlife Trust Fund (NGWTF)	\$5,061,742
State	\$775,379
Federal recurring spending authority	\$3,436,363
Federal <i>new</i> spending authority	\$850,000
Florida Panther Research & Management Trust Fund (FPRMTF)	\$2,504,863
Save the Manatee Trust Fund (STMTF)	\$3,907,372
Marine Resources Conservation Trust Fund (MRCTF)	\$4,143,560
Total	\$15,617,537