Save the Manatee Trust Fund 2006–2007 Annual Report

Florida Fish and Wildlife
Conservation Commission

MyFWC.com

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

1-888-404-FWCC (3922)

To report fish and wildlife violations, as well as manatee injuries and mortalities

Kenneth D. Haddad, Executive Director

Gil McRae, Director
Fish and Wildlife Research Institute

Leslie Ward-Geiger, Section Leader
Marine Mammal Research, Fish and Wildlife Research Institute

Colonel Julie Jones, Director
Division of Law Enforcement

Lt. Colonel Jim Brown, Section Leader
Boating and Waterways, Division of Law Enforcement

Tim Breault, Director
Division of Habitat and Species Conservation

Kipp Frohlich, Section Leader
Imperiled Species Management, Division of Habitat and Species Conservation

REPORT CONTRIBUTORS

Editing and Coordination Dr. Thomas R. Reinert
Review Lt. Colonel Jim Brown, Jackie Fauls, Dawn Griffin, Kipp Frohlich, Carol Knox, Leslie Ward-Geiger
Content Bonnie Abellera, Bruce Butler (USFWS), Lt. Colonel Jim Brown, Major Bruce Buckson, Scott Calleson, Major Jack Daugherty, Dr. Chip Deutsch, Dr. Martine deWit, Mary Duncan, Dr. Holly Edwards, Dr. Richard Flamm, Dr. Chris Fonnesbeck, Kipp Frohlich, Captain Dennis Grealish, Dawn Griffin, Kari Higgs, Captain Jayson Horadam, Captain Leandro Isambert, Katalin Jacob, Captain Gary Klein, Carol Knox, Justin McBride (Lee County), Captain John Moran, Major Paul Ouellette, Captain Chris Roszkowiak, Donna Szemer, Leslie Ward-Geiger, Hope White, Kisha Wright
Layout Jessica Pernell
Photographs Courtesy of FWC

SAVE THE MANATEE TRUST FUND

Annual Report
2006–2007

Florida Fish and Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, FL 32399-1600

http://MyFWC.com

SUBMITTED BY

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
Fish and Wildlife Research Institute
Division of Habitat and Species Conservation
and
Division of Law Enforcement

Executive Summary

Florida law (§370.12(4)(b), Florida Statutes) requires that each year, by December 1, the Fish and Wildlife Conservation Commission (FWC) provide a report to the President of the Florida Senate and the Speaker of the Florida House of Representatives on expenditures from the Save the Manatee Trust Fund (Trust Fund). This report covers the period from July 1, 2006 through June 30, 2007.

The Trust Fund receives money from sales of manatee license plates and decals, boat registration fees, and voluntary donations. It is the primary funding source for the State's manatee-related research and conservation management activities. Revenues for Fiscal Year (FY) 2006–2007 totaled $3,307,331. Appropriations from the Trust Fund for the same period were $4,096,613.

Appropriations to FWC are provided to three divisions: the Fish and Wildlife Research Institute, the Division of Habitat and Species Conservation, and the Division of Law Enforcement. In FY 2006-2007, manatee research activities accounted for $1,677,394 in expenditures; $1,008,823 was dedicated to manatee conservation management; and $146,197 was spent by law enforcement. Details of revenues, appropriations, and expenditures are shown in the pie charts that follow. This report provides brief summaries of accomplishments and descriptions of research projects and conservation and enforcement activities.

The Florida manatee is a native species found in all parts of the State. Protections for Florida manatees were first enacted in 1892. Today, they are protected by the Florida Manatee Sanctuary Act (§370.12(2), Florida Statutes). In addition, manatees are federally protected by both the Marine Mammal Protection Act and the Endangered Species Act.

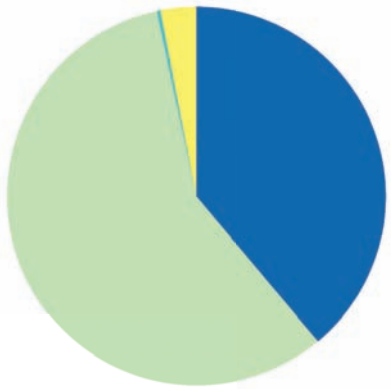
In 2006, FWC Commissioners voted to accept the results of a biological review panel that determined that the manatee qualifies as a threatened species under the State's listing rule. The uncertain future of critical warmwater habitat and the continued significant level of human-caused deaths contributed to the assessment that the manatee has a very high risk of future extinction (i.e., 'threatened,' as compared to 'endangered' which is defined as, "an imminent risk of extinction"). However, there are encouraging signs as well, and because of the protections that have been enacted over the years, manatees are more secure now than when they were added to the State's list of imperiled species in 1979. The most recent analysis shows that manatee numbers are growing in three out of four regions, with the exception of southwest Florida, where evidence suggests that estimates of adult survival are lower than in other regions.

At the direction of FWC Commissioners, staff began development of Florida's first ever Manatee Management Plan (Plan). Staff drafted the Plan with extensive public input that included multiple presentations to the Manatee Forum, a group of twenty-two stakeholder organizations. Thousands of additional public comments were received and considered during development of the Plan. The overall goal of the Manatee Management Plan is to remove the manatee from the State's imperiled species list and effectively manage the population in perpetuity throughout Florida by securing habitat and minimizing threats. The Commission approved a draft Manatee Management Plan in June 2006 and scheduled the final public hearing for late 2007. Once approved and implemented, the Manatee Management Plan will provide the framework for conserving manatees and sustaining habitat throughout its range in Florida.

Floridians can be proud of past efforts to protect and conserve manatees and it is encouraging that manatee numbers are growing in most areas of the State. However, there is still much to be done to recover this species. Human population growth in Florida will make achieving our conservation goals challenging. In addition, declining revenues to the Trust Fund and increasing costs associated with manatee conservation also create a somewhat uncertain future. FWC is taking steps to mitigate these losses, such as cost saving measures and a re-design of the manatee license plate that hopefully will renew interest and lead to an increase in sales. Provided there are sufficient state and federal resources, FWC is optimistic that Floridians, working together, can secure the long-term survival of the manatee, and that it will remain a treasured icon of Florida.

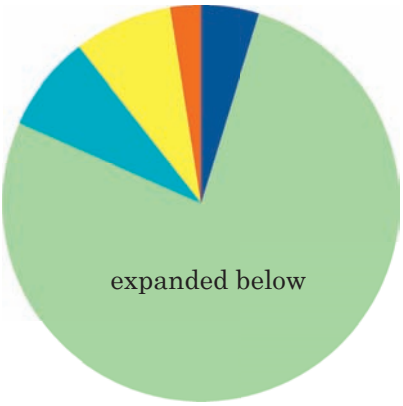
STMTF 2006–2007 Revenues and Expenditures

REVENUES
$3,307,331



- Save the Manatee License Plate ($1,289,421)
- Vessel Registration ($1,904,680)
- Interest ($11,313)
- Decals and Donations ($99,149)
- Miscellaneous ($2,768)

APPROPRIATIONS
$4,096,613

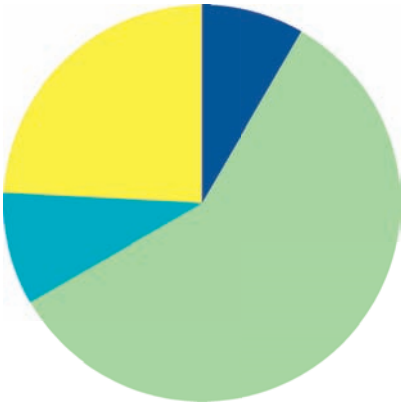


- Law Enforcement ($191,342)
- FWC Manatee Program ($3,150,052)
- Mote Marine Laboratory ($325,000)
- Administrative Overhead ($332,500)
- Service Charge to General Revenue ($97,719)

FWC MANATEE PROGRAM STMTF CONSERVATION MANAGEMENT EXPENDITURES
$1,008,823

- Rule Development ($224,967)
- Planning and Permitting ($436,711)
- Habitat Protection ($111,081)
- Data Distribution ($100,882)
- Education and Information ($135,182)

FWC MANATEE PROGRAM STMTF RESEARCH EXPENDITURES
$1,677,394



- Behavioral Ecology ($137,550)
- Mortality and Rescue ($981,560)
- Photo Identification (Life History) ($154,235)
- Population Assessment and Monitoring ($404,049)

Contents

On the Cover
Florida manatee,
Trichechus manatus latirostris

Manatee Basics

common name Florida manatee

scientific name *Trichechus manatus latirostris*

status Endangered (federal and state)

range Throughout Florida (summer months into southeastern states but reported as far north as Cape Cod and as far west as Texas)

maximum census 3,300 counted in 2001

history A native species found in the fossil record and recorded by earliest explorers

diet Freshwater and marine species of plants

reproduction Breed year-round; most calves born in spring; mature female can produce one calf approximately every three years, rarely twins

life span Can live over 50 years, but this is rare

unusual fact Age determined by counting growth layers in a thin cross section of the earbone, similar to counting rings in a tree

A CLOSER LOOK

Adult manatees average 8-10 feet in length and weigh around 1,000 pounds. The largest manatees may reach 14 feet in length and weigh over 3,500 pounds. Adults are gray in color, with sparse hairs distributed over much of the body. Algae growing on the skin may make them appear green or brown. Manatees that live in saltwater may also have barnacles growing on their skin. Stiff whiskers (vibrissae) grow around the face and lips. Despite their large size, manatees can be difficult to see in the wild because of their color and behavior. Manatees eat a variety of marine and freshwater aquatic plants and are often seen near natural or artificial freshwater sources.

During periods of cold weather, manatees aggregate, or gather, in waters warmer than 68° F. This warm water may be in south Florida or may be from an artesian spring or industrial discharge. Manatees mate year-round; however, most calves are born in the spring. Gestation lasts approximately 13 months and results in the birth of a calf (rarely twins) measuring 3-4 feet in length. The calves remain with their mothers for up to two years.

There are a variety of threats to manatees. They may die from exposure to harmful algal blooms (red tide), the effects of cold weather, and disease. Human-related causes of death include collisions with watercraft, crushing in water control gates and boat locks, and entanglement in fishing gear. Manatee habitat loss or degradation, including future changes in artificial warmwater refuges and reductions in natural spring flows used as refuges, is also of concern.

Research Activities

Mortality and Rescue
Population Monitoring and Assessment
Behavioral Ecology
Human Dimensions
Mote Marine Laboratory Manatee Research Projects
Right Whales
Research Publications and Reports

research activities

Mortality and Rescue

A network of researchers and law enforcement agencies was established in 1974 to recover manatee carcasses and assist injured manatees. The mortality and rescue program now rests largely with the Florida Fish and Wildlife Conservation Commission (FWC)'s Fish and Wildlife Research Institute (FWRI).

FWRI staff members at five coastal field stations respond to all reported carcasses and reports of injured manatees. These stations are located around the State: Jacksonville, Melbourne, Tequesta, Port Charlotte, and St. Petersburg. Most recovered carcasses are transported by field personnel from recovery locations to FWRI's Marine Mammal Pathobiology Laboratory (MMPL), St. Petersburg. Once at MMPL, carcasses are examined (necropsied) to determine cause of death. Although MMPL originally was designed to process only 150 carcasses per year, it now regularly processes over 300 annually. Injured manatees are assisted in the field when possible or transported to one of three licensed critical care facilities in the State, where they are rehabilitated and released as soon as possible.

Information gained through carcass salvage and manatee rescue and rehabilitation is crucial to providing wildlife managers with information about manatee health, mortality factors, life history, and general and reproductive biology. This program also provides data used in assessing population health and status.

2006–2007

Highlights

Carcass Salvage

- Statewide, there were 389 manatee carcasses documented in Florida (an additional four carcasses were documented in Georgia and one carcass was found near Memphis, Tennessee) during Fiscal Year (FY) 2006-2007. All but 28 were recovered and examined.
- Researchers collected tissue samples for genetic analysis from 364 of the recovered carcasses. Other tissues were collected for toxicology, histology, aging, and as requested by external researchers and partners.
- An ongoing Unusual Mortality Event (UME) due to red tide persisted in southwest Florida in the first half of FY

MANATEE MORTALITY FY 2006 – 2007

Cause of Death	*Number of Deaths*
Human – flood gate or canal lock	5
Human – other (entanglements, etc.)	6
Human – watercraft related	77
Natural – cold stress	22
Natural – other (includes red tide)	105
Perinatal (total body length less than 150 cm or about 5 feet)	65
Undetermined (decomposed or other)	86
Carcasses Not Recovered	28
Total Carcasses July 1, 2006 – June 30, 2007	394

2006-2007 and 38 manatee deaths were attributed to exposure to the red tide toxin called brevetoxin. In addition, two new red tide-related UMEs were declared by the federal Working Group for Marine Mammal Unusual Mortality Events: one was centered in Everglades National Park (24 manatee deaths); the other was in the Caloosahatchee River estuary (40 manatee deaths). Manatee UMEs related to brevetoxin also were declared in southwest Florida in 1996, 2002, 2003, and in 2005-2006. These events accounted for over half of the "Carcasses Not Recovered" cases in 2006-2007.

- MMPL staff members assisted with the necropsy of a captive manatee that died at the Columbus Zoo (Ohio), a Manatee Rehabilitation Partnership member (see Behavioral Ecology section for more info on this partnership).
- MMPL staff members conducted several necropsy training workshops and classes for the following groups:
  - Veterinarians from the American Association of Zoo Veterinarians (http://www.aazv.org)
  - Veterinarians from the International Association of Aquatic Animal Medicine (http://iaaam.org)
  - Veterinarians and students from the Envirovet Program (http://www.cvm.uiuc.edu/envirovet)
  - Veterinary students from the Seavet II Program (http://conference.ifas.ufl.edu/ame/seavet2)
  - Veterinary students from the Marine Veterinary Medicine Program (http://www.marvet.org)
  - Stranding network in Belize, hosted by Wildlife Trust
  - Stranding network in Puerto Rico, hosted by U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)
  - Veterinarians in Puerto Rico, continuing education hosted by NMFS
  - Veterinary students from the University of Florida's Senior Clerkship
  - FWC manatee field staff members
  - NMFS-Prescott Stranding Program; workshop designed to train stranding network volunteers to respond to dolphin strandings and perform necropsies.

Rescue and Rehabilitation

- Sixty-six rescues were performed statewide during FY 2006-2007. As of June 2007, 39 of these rescued manatees were released back into the wild, 17 died, and the remaining 10 animals were still being rehabilitated in facilities around the State.
- FWC biologists conducted capture and rescue training workshops for the following groups:
- Stranding network in Puerto Rico, hosted by USFWS and NMFS
- FWC staff members and local stranding networks

MANATEE RESCUES FY 2006 – 2007

Type of Rescue	*Number of Rescues*
Calf – Alone	5
Calf – With Rescued Mother	2
Human – Entanglement	19
Human – Entrapment*	4
Human – Watercraft Related	16
Natural – Includes Red Tide	20
Total	66

* includes power plant intake canals, irrigation canals, weirs, culverts, man-made canals, man-made lakes, etc.

research activities

Population Monitoring and Assessment

FWRI scientists use a variety of methods to assess and monitor the current and future status of the Florida manatee population. Population assessments currently include conducting manatee counts at winter aggregation sites, and estimating survival, population growth, and reproductive rates. Assessments also include estimates of risk to the population, including projected declines in population size and probability of persistence into the future (i.e., risk of extinction). Staff contributed to a population projection model for the Florida manatee (http://www.pwrc.usgs.gov/resshow/manatee/documents/OFR2007-1082.pdf). The model is being used to integrate information about manatee life history to predict population changes under various environmental and management scenarios. A complementary study included a quantitative "threats" analysis conducted with our federal partners (http://www.pwrc.usgs.gov/prodabs/pubpdfs/6731_Runge.pdf). The analysis suggested that watercraft-related mortality has the greatest impact on manatee population growth and resilience. In addition, staff developed Measurable Biological Goals that are related to the dynamics of the manatee population as described by the population model. These goals are a means of monitoring the contribution of management toward recovery by measuring improvements in survival rates, available warm water, and population size. Specifically, the goals include: (1) mature population size exceeding 2,500 mature individuals statewide; (2) sufficient regional adult survival rates to ensure a less than 1% probability of population declines greater than 30% (over a 60 year timeframe), given available warmwater resources; and (3) sufficient regional warmwater carrying capacity to ensure a less than 1% probability of population declines greater than 30% over the next three generations (~ 60 years), given estimates of adult survival.

FWC uses two types of aerial surveys to monitor manatees. These surveys provide minimum counts and information about habitat use and seasonal distribution. Statewide synoptic surveys provide a count of manatees at known aggregation sites and other sites in winter. These surveys are conducted to meet §370.12 (4), Florida Statutes, requiring an annual, impartial, scientific benchmark census of the manatee population. The counts, conducted 24 times since 1991, are flown after cold fronts, when animals aggregate at warm springs and thermal discharges from power plants. As currently conducted, synoptic surveys yield minimum counts of the number of manatees using these warmwater sites and cannot be used to estimate population size. FWC uses distribution surveys to determine the seasonal distribution of manatees. These regional surveys are usually flown twice monthly in specified counties for a period of two years.

Researchers are developing new aerial survey techniques that will provide precise and reliable estimates of distribution and population size. These new methods and resultant data will contribute to models that incorporate information about how well observers detect manatees from the air and will relate environmental variables to the number of animals counted by observers. Preliminary surveys incorporating the new distribution survey methods are being tested in Collier County. A preliminary survey to test new methods for the statewide synoptic survey will be flown in winter 2008. Details are described in the "Monitoring Activities" and "Ongoing and Future Research" sections of the Manatee Management Plan (http://myfwc.com/imperiledspecies/plans/Manatee-Mgmt-Plan.pdf).

Information on manatee life history is essential for assessing manatee population dynamics and recovery. Specifically, long-term data on growth and survival of individuals, reproductive performance of mature females, and health of manatees are important to the development of reliable population models. These data are gathered using a variety of research tools such

as photo-identification of distinctly scarred individuals. Manatee photo-identification is a research technique that uses the unique pattern of scars and mutilations on a manatee's trunk and tail fluke to identify individual animals over time. The scars are usually the result of encounters with boats, but they can be caused by entanglement in fishing gear and by infections. This research is conducted through a partnership between FWRI, the United States Geological Survey (USGS) Sirenia Project, and Mote Marine Laboratory. Partners work collaboratively to photograph Florida manatees throughout their range, process images, identify manatees, and manage an integrated sightings database, known as the Manatee Individual Photo-Identification System (MIPS). Photo-identification data provide insights into manatee movements, site fidelity (i.e., the tendency to return to the same location year after year), adult survival rates, and reproductive parameters such as calving intervals and length of calf dependency.

2006–2007

Highlights

- In January and February 2007, FWRI conducted the annual statewide synoptic survey—a simultaneous count of manatees over a broad area. Seventeen observers (15 in air and two on ground) counted 2,817 manatees in 20 areas on both coasts. Observers were staff members from eleven state, federal, and county agencies, as well as research laboratories, non-governmental organizations (NGOs), and universities.
  - Gulf coast count: 1,405
  - East coast count: 1,412
- Twice monthly distribution surveys were continued in Flagler and St. Johns counties, and surveys were initiated in the northern part of Collier County.
- In August of 2006, FWRI held an aerial survey safety workshop to improve the safety for FWC aerial observers.
- New distribution aerial survey methods designed to provide more precise and reliable estimates of population size and distribution have been developed and currently are being evaluated in Collier County.
- New synoptic aerial survey methods designed to provide more precise and reliable estimates of population size have been developed and will be tested in southwest Florida in winter 2008.
- Staff contributed to development of the Manatee Management Plan regarding future research in manatee population monitoring and assessment, and improvements to core monitoring.
- FWC staff members and interns spent 160+ days conducting land- and boat-based photo-identification research during 450+ visits to sites used by manatees in the Tampa Bay area and southwest Florida. FWC volunteers and outside organizations that provide images to FWC spent an additional 120+ days documenting manatees during 180+ visits to sites used by manatees. Over 18,000 images documenting the unique features of individual manatees were taken and archived.
- In a continued effort to transition to a digital platform, FWC initiated the scanning of manatee carcass slides. Over 31,500 slides dating back to 1980 have been scanned to date.
- Twenty-five manatee carcasses were identified as known photo-identification animals. Five of those carcasses were identified based on Passive Integrated Transponder (PIT) tags which are sub-cutaneous tags that uniquely identify animals and can be detected by a special scanning device.

research activities

Behavioral Ecology

Research on manatee use of Florida's coastal habitats is essential to understanding the resources required to recover and sustain a healthy population. By tracking the movements of individual manatees in fresh, brackish, and saltwater habitats, FWC biologists obtain valuable information about manatee seasonal and daily movement patterns, migratory behavior, site fidelity, diving behavior, and habitat requirements. To track manatees, researchers place a padded belt around a manatee's tail and tether a floating radio-tag containing a satellite-linked Global Positioning System (GPS) transmitter to the belt. The satellite-derived locations provide a detailed record of manatee movements over long periods. In the field, biologists locate these study animals by homing in on the tag's unique radio and ultrasonic signals in order to obtain data on behavior, group size, habitat, and movements. Processed data are mapped in a Geographic Information System (GIS); these data are made available to managers for use in developing regulatory rules, evaluating permits, and devising strategies for manatee conservation and recovery.

This year, the behavioral ecology program launched a new research initiative to study manatee interactions with motorized watercraft in collaboration with marine mammal bio-acousticians at Florida State University (FSU) and marine engineers at Woods Hole Oceanographic Institution (WHOI). A thorough understanding of the behavioral and sensory mechanisms underlying manatee-boat collisions is necessary in order to devise effective avoidance approaches, whether they are technological or regulatory. The study is proceeding in two phases: a tag research and development component (year 1); and a field/analytical component (years 2-3). Work in 2006-2007 focused on research, development, and pilot testing of a state-of-the-art digital acoustic recording tag ("dTag") designed to record manatee response to vessels. In addition to the Trust Fund, this project was funded by the FWC Office of Boating and Waterways and a Florida Manatee Avoidance Technology grant to FSU.

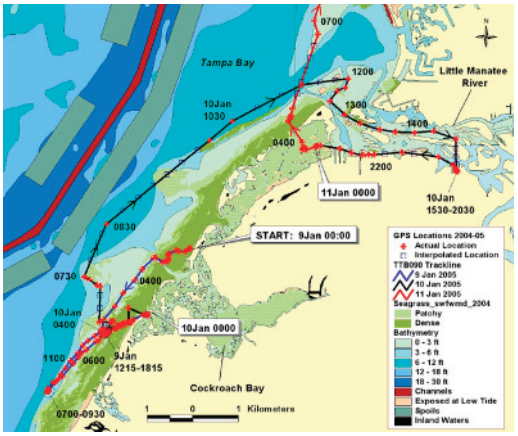
2006–2007

Highlights

- The behavioral ecology research group embarked on a study to quantify the frequency of manatee interactions with motorized watercraft and to characterize manatee response to approaching or passing vessels using multi-sensor dTags, Argos-linked GPS tags, and boat-based visual observations.
- The main research and development phase leading to the construction of a manatee-specific dTag was successfully completed through a contract with WHOI. This work included development of a quick-release mechanism to retrieve the tag without recapturing the animal; construction of a rigid low-profile housing to protect the electronics, flotation,

and VHF beacon; and modifications to the circuitry to extend the continuous recording time of the tag.

- A prototype of the attachment was tested on a captive manatee at Mote Marine Laboratory. Minor design changes were implemented by the WHOI engineering team.
- Phase two was initiated with a pilot test of the equipment on a wild manatee in Crystal River. The dTag and the entire tagging assembly released automatically, as programmed. The GPS tag provided a record of locations and movements at 5-min intervals and the dTag recorded for >48 hr, providing a continuous record of sound (ambient noise, boat noise, vocalizations), pitch, roll, fluke strokes, compass heading, and depth.
- To examine the effects of manatee foraging on seagrass communities near a major winter aggregation site in Tampa Bay, FWRI researchers from the Ecosystem Assessment and Restoration Section continued to monitor grass beds using a combination of aerial photography, exclosures (restricting manatee access), and biomass cores. Work in FY2006-2007 provided a more complete picture of the annual cycle of seagrass biomass, productivity, and areal cover, allowing an evaluation of the degree of seagrass recovery after winter. This work will contribute to an understanding of forage-based carrying capacity for manatees. The research was supported in part by a grant from the Wildlife Foundation of Florida.
- FWRI participated as a contributing organization to the multi-agency Manatee Rehabilitation Partnership (http://www.wildtracks.org/Florida/home.htm), consisting of representatives from federal (USFWS, USGS), state (FWC), academic (University of Florida), NGO (Caribbean Stranding Network, Hubbs-SeaWorld Research Institute, Save the Manatee Club, Wildlife Trust), and private oceanaria (Cincinnati Zoo, Columbus Zoo, Living Seas at Epcot, Lowry Park Zoo, Miami Seaquarium, SeaWorld Orlando) agencies/organizations. As part of that partnership, FWRI staff assisted Wildlife Trust in the release, field tracking, and periodic health assessments of several rehabilitated manatees in Biscayne Bay, Charlotte Harbor, and the St. Johns River.
- Staff contributed to development of the Manatee Management Plan regarding future research in understanding manatee behavior and habitat use.
- FWRI staff, the Habitat Working Group of the federal Manatee Recovery Plan, and the U.S. Department of Energy's Oak Ridge National Laboratory completed Phase 1 of a manatee habitat characterization: database compilation. The method being explored is called multivariate geographic clustering and provides a statistical basis for mapping manatee habitat use.



GPS tags provide a detailed record of manatee movements and habitat use.

Intro Image

A buoyant satellite-linked GPS tag is tethered to a padded belt around the base of the manatee's tail. The telemetry gear is removed at the end of the winter.

research activities

Human Dimensions

Traditionally, wildlife resource managers rely on biological data to assess manatee status and set recovery goals. Resource managers then use laws, regulations, and outreach as tools to achieve these goals. Human behavior ultimately determines the success of wildlife management actions. Human-dimension research investigates human use of habitats shared with wildlife and how to apply research results and influence human behavior to achieve cost-effective manatee protection (e.g., increased voluntary compliance with speed zones). Human-dimension research can lead to approaches that allow agencies and citizens to be more effective and work cooperatively on manatee protection issues.

2006–2007

Highlights

- With funding from FWC's Division of Law Enforcement (LE) and in cooperation with the University of Tennessee's Institute for Environmental Modeling, work continued on Phase II of a computer model that simulates boat traffic. The goal of this work is to be able to estimate how boating patterns might be altered with changes in land use, such as new boating facilities. The resulting boat traffic patterns are planned for analyses on environmental impacts, crowding, etc. Phase I involved designing the model template. Phase II includes making the first draft of the model operational. Future phases include model refinement, user interface design, and application.

- FWRI staff initiated a preliminary risk assessment analysis of collisions between manatees and boats, using Brevard County as the test area. At this stage, the emphasis is in mapping the extent that manatees and boats occupy the same areas. The primary data being used in this assessment are manatee aerial surveys and aerial surveys of boats. The data are being collected by Mote Marine Laboratory and analyzed by FWRI.

- FWRI staff, in cooperation with LE and Imperiled Species Management Section staff, completed a boat speed analysis with the goal of identifying a single speed that provides a reasonable balance among vessel performance, boating safety, and manatee protection. The study concluded that there was no single speed that could adequately balance all three, but that most vessels should not be negatively affected by speed zones of 25 MPH.

- FWRI staff completed initial analyses of boat traffic data on the Manatee River. The goal of this study was to monitor changes in boat traffic resulting from permitted residential developments. This portion of the study represents the baseline measurements. Subsequent boat traffic monitoring data will be collected for several years, after much of the development is completed and populated.

research activities

Mote Marine Laboratory Manatee Research Projects

The Legislature appropriates $325,000 annually from the Trust Fund for the Manatee Research Program at Mote Marine Laboratory. The following projects/positions were funded in FY 2006-2007:

- Photo-Identification Studies of Manatees in Southwestern Florida—The objectives of this project were to: 1) ensure that Mote's photographic catalog and data are thoroughly checked for quality and completeness and are shared with partner organizations (FWRI and USGS-Sirenia); and 2) continue field work to perpetuate the long-term photo-identification and other data collection efforts in southwestern Florida.
- Development of Methods for Field Sampling and Variable Genetic Markers in the Florida Manatee: Molecular Biologist Postdoctoral Position—Mote Marine Laboratory has initiated genetic studies in conjunction with ongoing photo-identification and aerial surveys in an effort to develop a more comprehensive understanding of manatees in southwest Florida. FWC and Mote collaborated to develop 18 new, variable, microsatellite DNA markers that can be used to identify individual genotypes of any sampled animal. The information that can be garnered from a collection of manatee DNA samples, analysis of microsatellite DNA markers, photo-identification records, and aerial surveys will greatly increase the potential for the development of effective management strategies for Florida manatees.
- Manatee Rescue and Verification—Mote Marine Laboratory acts as a federally-registered partner in the manatee carcass salvage and rescue program. Mote researchers are permitted to verify carcasses and assist in rescues of injured or trapped manatees, primarily in Manatee and Sarasota counties.
- Manatee Health Studies: Contaminants and Biomarkers of Effects—This study has two components: 1) analysis of manatee tissues for contaminant levels; and 2) developing and utilizing biomarker assays to clarify exposure to and effects of contaminants. Mote coordinates with researchers at FWC's MMPL and USGS-Sirenia to obtain tissue samples for analysis of organic contaminants and for development of diagnostic assays for manatees.
- Recreational Boat Traffic Surveys of Brevard County, Florida—The goal of this study is to conduct the first comprehensive aerial surveys of boat traffic in Brevard County, partially in response to recent requests to establish additional high speed corridors within existing slow speed zones. This study will provide new information on boat traffic patterns in Brevard County and will develop and refine established methods for assessing speed zone effectiveness and risk assessment.

research activities

Right Whales

In addition to manatee recovery efforts, 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. Most of this work is supported through grant funding provided by National Oceanic and Atmospheric Administration's (NOAA)-Fisheries; however, portions of some salaries are provided by the Trust Fund. Efforts to prevent human-caused mortality in this species have been heightened. Even one death per year has a significant effect on the population, which is estimated to number less than 400 individuals. In 1994, NOAA-Fisheries designated portions of Florida and Georgia coastal waters as critical habitat for the right whale. This region is the only known calving ground of the North Atlantic right whale. FWC is dedicated to assisting NOAA-Fisheries in its efforts to protect the North Atlantic right whale as outlined in the 2004 revision of the North Atlantic Right Whale Recovery Plan.

Federal efforts to protect right whales in the Florida-Georgia critical habitat area have resulted in the formation of the Southeast U.S. Right Whale Recovery Plan Implementation Team (SEIT), a multi-agency and citizen advisory group. The team develops management and research recommendations and assists in implementing the recovery plan. FWC has been a member of the SEIT since its 1993 inception and FWRI staffers have chaired the team for the past five years.

Since 1987, FWRI has conducted numerous aerial surveys to monitor seasonal presence of right whales, determine the number of calves born, and mitigate ship-whale collisions. Over the past several years, FWRI has worked closely with federal, state, and NGO partners to compile years of calving ground aerial-survey data into GIS format. Analyses of these spatial data will help scientists better define right whale distribution patterns in the southeast calving grounds in relation to environmental factors and human activities.

In an attempt to prevent ship strikes, which can kill or injure right whales, NOAA and the U.S. Coast Guard (USCG) implemented the Mandatory Ship Reporting Systems (MSRS) in July 1999. During the November 15 to April 16 calving season, at point of entry to the region, ships' captains are required to report vessel position, speed, and destination. Once the MSRS server receives a report, a message providing information about recent right whale locations and advisories is relayed to the ship. Additionally, FWRI aerial survey observers report whale sightings into the MSRS as well as to the U.S. Navy for subsequent broadcast to mariners as part of an Early Warning System (EWS) aimed at protecting right whales from vessel collisions. As part of the EWS, FWRI coordinates a pager-alert network that notifies key agencies, ports, and mariners when and where right whales have been sighted. This timely information allows ships to take evasive action to avoid whales.

Ship traffic data generated from MSRS also are integrated into GIS to help characterize ship traffic patterns in right whale critical habitats. Together, data on whale distributions, habitat variables, and vessel traffic provide a framework for quantifying the risk of vessel collisions and the effectiveness of proposed management plans.

2006–2007

Highlights

- **Aerial Surveys** – FWRI staff conducted 75 aerial surveys that resulted in 82 right whale sightings consisting of 208 whales (not unique individuals) during the 2006-2007 calving season. In addition, the FWRI survey team documented eight humpback whales, 147 leatherback turtles, and one whale shark. In total, 19 cow/calf pairs were documented in the southeastern U.S. this season.

- **Entanglements** – FWRI staff participated in two disentanglement responses during the 2006-2007 calving season. An entangled right whale was reported on January 15, 2007, off Brunswick, Georgia. Georgia Department of Natural Resources (GADNR) first responders were able to remove some trailing line from the whale and attach a telemetry buoy. Subsequent attempts to cut the gear free were unsuccessful. Further documentation was obtained on January 24, 2007, in Onslow Bay, North Carolina, when additional trailing gear and the telemetry buoy were removed and the status of this entanglement was changed to "monitor". On April 26, 2007, this whale was sighted near the Great South Channel (off Cape Cod) and appeared to be gear free.

"Kingfisher"

- Since his birth in 2003, "Kingfisher" has been sighted each winter in the southeastern U.S. calving ground. As a yearling, Kingfisher was the target of a large scale disentanglement effort during the 2003-2004 calving season and since then has been observed with a small portion of remaining gear wrapped around his right flipper. The FWRI aerial survey team was first to document Kingfisher in the critical habitat area on January 4, 2007, and sighted him six more times throughout the 2006-2007 calving season. On February 27, 2007, FWRI staff responded by vessel to further document Kingfisher's health status and entanglement. Analysis of the photographs revealed Kingfisher to be in good health and his entanglement status continues to be classified as "monitor."

- **Strandings** – FWRI staff participated in the retrieval and subsequent necropsy of two dead right whales during the 2006-2007 calving season. The first whale, a juvenile male, was determined to have been killed from a vessel collision. The second whale died from complications at birth.

- **Biopsy Sample Collection** – FWRI staff in collaboration with GADNR staff conducted 27 right whale biopsy sampling trips which resulted in 20 biopsy samples collected. Of the 20 biopsy samples collected, fifteen were from calves, two were from cows, and three were from juvenile whales. The skin samples will be used to generate information on kinship, individual identification and gender, stock identity, and genetic variability within the population. The blubber portion of the samples will be used to determine contaminate levels and to gain information about feeding ecology and nutritional condition.

research activities

Research Publications and Reports

2006

Haubold, E. M., D. P. Jennings, J. Packard, J. Provancha, M. Runge, C. Deutsch, and C. Fonnesbeck. 2006. Final biological status review of the Florida manatee (*Trichechus manatus latirostris*). Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL.

McDonald, S. L. and R. O. Flamm. 2006. A regional assessment of Florida manatees (*Trichechus manatus latirostris*) and the Caloosahatchee River, Florida. Florida Fish and Wildlife Conservation Commission, FWRI Technical Report TR-10, St. Petersburg, FL. 52 pp.

Reinert, T. R. 2006. 2005 USFWS-FWC Manatee Carcass Salvage and Rescue Program Partnership. Final Report to U.S. Fish and Wildlife Service, Jacksonville Field Office, Jacksonville, FL. 43 pp.

2007

Flamm, R. O. and J. Viera-Atwell. 2007. Changes in vessel patterns in response to posting of a slow-speed zone with embedded 25-MPH corridors in Anna Maria Sound: Aerial surveys, Phase 1 - Boating patterns prior to posted regulations. Internal technical report produced for the Office of Boating and Waterways. 36 pp.

Flamm, R. O. and J. Viera-Atwell. 2007. Changes in vessel patterns in response to posting of a slow-speed zone with embedded 25-MPH corridors in Anna Maria Sound: Ground-based traffic surveys, Phase 1 - Boating patterns prior to posted regulations. Internal technical report produced for the Office of Boating and Waterways. 25 pp.

Gross, L. J., E. A. Carr., E. J. Comiskey, and R. O. Flamm. 2007. Development of SimBoat, a boat pattern simulator - Phase II: Refining the model to generate more realistic boat traffic patterns. Final Report to the Florida Fish and Wildlife Conservation Commission.

Harvey, J. W., K. E. Harr, D. Murphy, M. T. Walsh, E. J. Chittick, R. K. Bonde, M. G. Pate, C. J. Deutsch, H. H. Edwards and E. M. Haubold. 2007. Clinical biochemistry in healthy manatees (*Trichechus manatus latirostris*). Journal of Zoo and Wildlife Medicine 38:269-279.

Reinert, T. R. (ed.). 2007. Enhanced Manatee Protection Study (SB540). Report submitted to the Governor and Legislature of the State of Florida. 96 pp.

Rommel, S. A., A. M. Costidis, T. D. Pitchford, J. D. Lightsey, R. H. Snyder, and E. M. Haubold. 2007. Forensic methods for characterizing watercraft from watercraft-induced wounds on the Florida manatee (*Trichechus manatus latirostris*). Marine Mammal Science 23:110-132.

Runge M. C., C. A. Sanders-Reed, and C. J. Fonnesbeck. 2007. A core stochastic population projection model for Florida manatees (*Trichechus manatus latirostris*). Final report. U.S. Geological Survey, Patuxent Wildlife Research Center, Laurel, MD.

Runge, M. C., C. A. Sanders-Reed, C. A. Langtimm, and C. J. Fonnesbeck. 2007. A quantitative threats analysis for the Florida manatee (*Trichechus manatus latirostris*). USGS Open-File report 2007-1086. 34 pp.

Siegal-Willott, J., A. Estrada, R. K. Bonde, A. Wong, D. J. Estrada, and K. E. Harr. 2007. Electrocardiography in two subspecies of manatee (*Trichechus manatus latirostris* and *T. m. manatus*). Journal of Zoo and Wildlife Medicine 37:447–453.

Sorice, M. G., R. O. Flamm, S. L. McDonald. 2007. Factors influencing behavior in a boating speed zone. Coastal Management 35:357-374.

Viera-Atwell, J. and R. O. Flamm. 2007. An overview of minimum and optimum vessel performance speeds as they relate to numeric speed zones. Internal technical report produced for the Office of Boating and Waterways. 23 pp.

Conservation Management Activities

Stakeholder Consensus Building
Manatee Management Plan Development
Federal Recovery Team Working Groups
Plan and Permit Review
Rule Administration
Habitat Characterization, Assessment and Protection
Outreach and Information
Data Distribution and Technical Support

comservation management activities

Stakeholder Consensus Building

The Manatee Forum (Forum) continues to be a useful focus group that helps FWC and the U.S. Fish and Wildlife Service (USFWS) stay informed about stakeholder concerns. The Forum consists of 22 stakeholder organizations with equal representation from boating and environmental groups. The goal of the Forum is to provide a process to improve communication and understanding among key stakeholder groups and participating agencies. The goals of this process are to establish areas of common ground, identify problems or conflicts, and develop potential solutions. Both the Executive Director of FWC and the Southeast Regional Director (Region 4) of the USFWS continue to stay involved in the Manatee Forum.

From July 2006 through June 2007, the Forum met three times for a total of six meeting days. The meetings this year focused almost entirely on providing input to FWC staff on the development of the Manatee Management Plan. The USFWS also presented their Five Year Review of the manatee at the April 2007 Forum. The Manatee Forum has improved communication and overall civility among the Forum members. The agencies use the Forum as a sounding board for current and future ideas and approaches to manatee recovery.

conservation management activities

Manatee Management Plan Development

Staff from the Division of Habitat and Species Conservation, Office of General Counsel, Division of Law Enforcement (LE), and Fish and Wildlife Research Institute (FWRI) participated as members of the Manatee Management Plan Team charged with drafting Florida's first Manatee Management Plan. Seven team members co-authored the plan, however many other staff in the agency provided assistance when their area of expertise was needed. Drafts of the plan were revised based on extensive public comment received during two open public comment periods. The Commission approved the draft plan on June 14, 2007, and directed staff to bring the plan back for the final public hearing later in 2007.

conservation management activities

Federal Recovery Team Working Groups

Several staff participated as members of the Federal Manatee Recovery Team. They participated as chairs, co-chairs, and members of the following groups and task forces: Steering Committee, the Regulatory Working Group, the Manatee Protection Working Group, the Manatee Education Working Group, the Habitat Working Group, the Warm Water Task Force, Interagency Task Force for Water Control Structures, and the Manatee Entanglement Working Group.

conservation management activities

Plan and Permit Review

FWC-Imperiled Species Management Section (ISM) staff conducts reviews of Manatee Protection Plans, environmental resource permits, and other types of planning documents such as comprehensive plans.

Manatee Protection Plans (MPPs) are one tool that can assist in the long-term protection of manatees and their habitat. MPPs include Boat Facility Siting Plans and address habitat protection, education, and waterway-use regulations. Indirectly, MPPs may also increase boating safety, facilitate recreational planning, and protect aquatic habitat critical to many other species. Plans may take several years to develop because of the complexity of issues a county must address and the range of information that must be collected. Under §370.12(2) Florida Statutes, 13 specific counties are required to develop county-wide manatee protection plans. These counties are: Brevard, Broward, Citrus, Collier, Duval, Indian River, Lee, Martin, Miami-Dade, Palm Beach, Sarasota, St. Lucie, and Volusia counties. As of July 1, 2007, all but Broward and Palm Beach counties have state-approved MPPs. In addition, Clay County voluntarily completed a comprehensive MPP which received state approval last year.

The Department of Environmental Protection and the State's water management districts are responsible for issuing state permits for activities that may impact Florida's wetland resources. These agencies request assistance in reviewing such activities to determine potential impacts to manatees and their habitat. FWC staff provides recommendations to reduce or eliminate potentially adverse effects of proposed projects. Since approved MPPs are coordinated closely with USFWS, federal reviews of projects also reflect the provisions of approved MPPs resulting in more predictable and efficient reviews of permits in counties with approved plans.

2006–2007

Highlights

Manatee Protection Plan

- ISM staff continued to provide extensive technical assistance to Broward and Palm Beach counties as they further developed their MPPs. This involved coordination with USFWS during reviews of early drafts of portions of the plans to ensure consistency between FWC and USFWS. Between January and June 2007, staff working with local stakeholders revised the Palm Beach County proposed MPP and sent the revisions to the county in late June for review and approval. Staff continued to provide comments and worked with stakeholders for the Broward County draft Boat Siting Facility Plan. A final version of this portion of the MPP was approved by the Broward County Board of County Commissioners in June. FWC expects to receive the required components of the final MPP in late 2007.

- In September 2006, ISM staff organized and held an Interagency Group meeting of the 13 counties required to develop MPPs to discuss issues relevant to these counties, share strategies, and provide feedback to FWC on local efforts to implement the plans. This meeting was held for the second year in a row and was hosted by Sarasota County staff.

- In November 2006, FWC approved minor revisions to the Duval MPP designed to improve implementation of the MPP in the environmental permit review process. At the same time, FWC notified the City of Jacksonville that the countywide watercraft-related manatee mortality trigger had been surpassed (five or more watercraft-related deaths in a 12-month period, as set in the MPP). Duval County had eight watercraft-related deaths in 2006. In January 2007, FWC staff attended meetings with City of Jacksonville staff and many other local, state, and federal representatives to discuss the high watercraft-related mortality levels in Duval County. Similar meetings have also occurred following high mortality levels in 2002 and 2004.

- In May 2007, ISM staff attended a public workshop in Flagler County to assist staff with the development of a comprehensive MPP. The plan will include manatee protection initiatives and future boat facility siting guidance to address increasing watercraft-related mortality in the county.

- ISM staff provided technical assistance to Town of Ponce Inlet and Daytona Beach Shores staff as they worked to finalize ordinances to incorporate provisions of the Volusia County MPP.

Permit Review

- Staff attended a meeting and made two site visits for a proposed redevelopment of marinas in Yankeetown, Florida.

- Staff continues to participate in development of an agency-wide environmental commenting process.

- In August 2006, ISM staff coordinated with USFWS to conduct site visits throughout Boca Ciega Bay in Pinellas County to begin mapping boat facilities in the area.

Projects Reviewed During FY 2006–2007

Requests for Additional Information **264**

Standard Comments (including miscellaneous correspondence) **353**

Critical Comments (projects that could significantly affect manatees).....**55**

conservation management activities

Rule Administration

FWC-ISM staff oversees the process of promulgating manatee protection boat speed and access rules and administers activities related to these zones, including permit and variance reviews. Staff evaluates data and develops proposed rules for consideration by the Commission.

2006–2007

Highlights

Brevard County (68C-22.006, FAC)
Staff continued to collect boating data and develop new tools to use in a re-evaluation of a 2005 informal petition submitted by a local boating group requesting changes to zones in Brevard County. Staff is using the petition as a way to test new evaluation tools with the hope that the new tools will be able to be used in future evaluations of other areas around the State. Aerial surveys of boating activity, which began in April 2006, will be completed in September 2007. Results from a Florida Sea Grant survey-based study of boating patterns are expected to be available in the same timeframe. Information collection efforts also will include a web-based survey of current and historical water sports activities in the county. FWC staff anticipates completing its re-evaluation of the petition by the end of 2007.

Charlotte County (68C-22.015, FAC)
Final amendments allowing a forked 25 MPH access channel in Placida Harbor to provide greater access to residents living on southern Little Gasparilla Island were filed for adoption with the Department of State in July 2006. Charlotte County had requested this rule change. The Local Rule Review Committee process and the other elements of rule making were completed in fiscal year 2005-06.

Duval County (68C-22.027, FAC)
A Notice of Proposed Rulemaking was published in August 2006 to amend FWC boating speed zones in the downtown Jacksonville area to provide consistency with existing federal zones established by USFWS. The city of Jacksonville requested this action. FWC staff conducted an initial public hearing in Jacksonville in September 2006. The final public hearing was conducted during the December 2006 Commission meeting, where the amendments were approved as advertised. The amendments were filed for adoption with the Department of State in January 2007. The Local Rule Review Committee process and the other elements of rule making were completed in fiscal year 2005-06.

In June 2007, the city of Jacksonville adopted an ordinance to conform its local manatee protection zones to FWC zones as amended in January 2007. The Commission formally approved the ordinance in June 2007.

Lee County (68C-22.005, FAC)
A boater was issued a citation in October 2006 for violating one of the zones and he contested

the citation in county court. A hearing was held in April 2007 and later in the month the court issued a written order denying the boater's motion to dismiss the citation. No appeal has been filed.

Manatee County (68C-22.014, FAC)
A boater was issued two citations in April 2006 for violating one of the zones and he contested the citation in county court. A hearing was held in October 2006. The court denied the boater's motion to dismiss the citation and scheduled a trial for March 2007. The case was resolved when the boater reached a plea agreement prior to trial.

Variances and Waivers
FWC staff worked on one request for a variance from manatee protection rules during the fiscal year. The variance and waiver process is governed by §120.542, Florida Statutes, and Chapter 28-104, FAC.

- In January 2007, FWC received a petition from the George Snow Scholarship Fund for an emergency variance from a portion of the Palm Beach County rule to allow a water ski exhibition during a fund raising event scheduled for eight days later. A Notice of Receipt was posted on the FWC website; however, there was not enough time before the proposed exhibition to complete the public comment period required by the Uniform Rules of Procedure. There also were unresolved issues related to the actions the applicant proposed to take to meet the requirements for a variance. FWC informed the applicant of these issues prior to the event. An order denying the request was issued in February 2007.

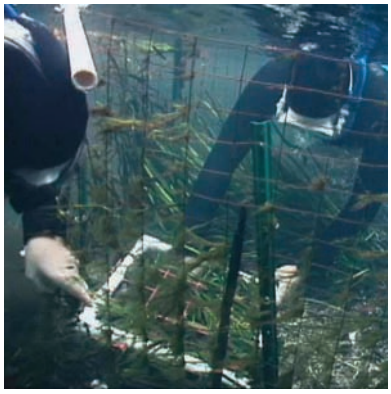
Permits
Rule 68C-22.003, FAC, allows FWC to issue a number of different types of permits for activities that would otherwise be prohibited by manatee protection rules. The most numerous of these permits are those that are handled by LE for commercial fishing or professional fishing guide activities. There are typically 150 – 200 of these permits in effect at any given time. Besides these permits, staff worked on two requests for other types of permits during the fiscal year.

- In September 2006, FWC received a request from BRP-US Inc.'s Stuart Test Facility to extend the temporary permit issued in 2005 for a vessel testing permit in Martin County. After requesting and receiving additional information, FWC issued a 5-year permit in October 2006.

- In March 2007, FWC received a request from Mote Marine Laboratory for a permit to allow higher speeds than allowed by the Manatee County and Sarasota County rules to set nets to capture dolphins, as authorized by a federal permit. FWC staff requested and received additional information in April and June 2007. A final permit was issued in July 2007.

conservation management activities

Habitat Characterization, Assessment and Protection



The recovery of the manatee population in Florida cannot occur without suitable habitat. The growing human population in Florida, and associated extensive coastal development, is a long-term threat to manatee habitat. Historically, coastal development has resulted in degradation of water quality and destruction of seagrasses – the primary food of manatees. Ways to minimize negative effects of coastal development are being explored. Reductions in the flow of warm spring waters, due to increasing consumptive human uses, threaten significant natural warmwater refuges in the northern half of the State. An uncertain future for the power industry, with looming operational changes and existing power plant obsolescence, also poses threats to established artificial warmwater refuges. Understanding manatee habitat needs and assessing habitat health and stability is a primary focus of habitat protection programs.

2006–2007

Highlights

FWC manatee habitat staff coordinated with intergovernmental agencies in working groups and task forces to effectively manage human activities in natural systems used by manatees. Several examples of our efforts are provided below:

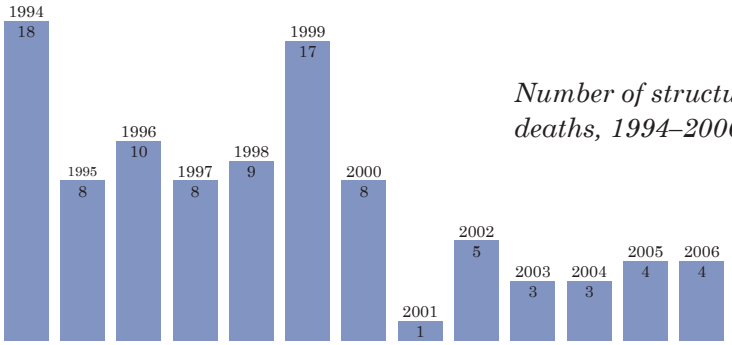
- FWC staff coordinated with the U.S. Army Corps of Engineers (USACOE), the South Florida Water Management District (SFWMD) and the Southwest Florida Water Management District (SWFWMD) to address central and south Florida structure-related manatee mortality through the Interagency Task Force for Water Control Structures. Structure-related manatee mortality has long been identified as the second leading cause of human-related manatee mortality. Within the Central and South Florida canal system, 157 manatees have died (84% of all structure-related deaths) as a result of interactions with only 23 of the hundreds of water control structures in this region, an average rate of 4.9 manatees/year (1974-2006). Ongoing efforts since 1991 through the Task Force have led USACOE and SFWMD to retrofit water control structures, and revise operational protocols. These efforts are having a significant influence on reducing structure-caused mortality at retrofitted structures. Provided the continued availability of funding, the remaining water control structures requiring manatee protection should be retrofitted with proven technology over the course of the next three years.
- Addressing the long-term future of warmwater habitat is a major focus of the Manatee Management Plan, as this type of habitat is viewed as limiting the manatee population in Florida waters. Many tasks related to this issue are identified in the plan, and FWC has already initiated several of

the plan's tasks including: 1) meeting with the power companies that have warmwater discharges associated with their plants, which are used by manatees as warmwater habitat (FWC plans to partner with the industry and others to work on solutions to the potential loss of these warmwater sites); 2) FWC is working with the water management districts to develop Minimum Flows and Levels for spring systems that provide warmwater habitat for manatees (minimum flows for Volusia Blue Spring, Manatee Springs, and Fanning Springs have all been developed using criteria to protect winter warmwater manatee use); 3) FWC has begun updating existing contingency plans to address the unplanned loss of recognized warmwater refuges during the winter months. FWC continued to co-chair the Warm Water Task Force with USFWS.

- FWC staff from the manatee and the marine habitat conservation and restoration programs continued working together to protect Florida's seagrass resources. The efforts of these two groups provided seagrass protection protocols and recommendations for coastal construction permits and for proactive habitat restoration and monitoring projects in St. George Sound (Franklin County), St. Andrews Bay (Bay County), and the Indian River Lagoon (St. Lucie County). FWC also continued working with the Kings Bay Advisory Group to restore submerged aquatic vegetation in the Kings Bay in Crystal River. Staff began planning for seasonal protection of manatee foraging resources with an emphasis on expanding such resources during peak growing periods. FWC is also working toward a complete ecological restoration of Kings Bay through regional citizen and interagency coordination as part of the SWFWMD Surface Water Improvement and Management (SWIM) Program.

- FWC continued to co-chair the Habitat Working Group and participate in a broad range of manatee habitat issues with the federal Manatee Recovery Team. These issues included defining warmwater and foraging habitat carrying capacity, and identifying effects of reduced spring flow and loss of thermal refuges and changes in foraging areas. Focused efforts of the Group included applying a habitat checklist for identified natural and artificial warmwater refuges throughout the State, and estimating habitat carrying capacity based on winter warmwater refuge sites and foraging habitat available to regional manatee populations.

- FWC worked with federal and SFWMD partners to complete the "Guidelines for Manatee Conservation during Comprehensive Everglades Restoration Plan (CERP) Implementation". This document addresses activities such as culvert and water control structure installation, potential aquifer storage and recovery thermal effects, potential manatee entrapment in canal networks, and in-water construction effects. The use of this document by the water management districts, USACOE, and other permitting agencies should allow for an efficient process to address manatee concerns during CERP construction activities.



Number of structure-caused manatee deaths, 1994–2006

conservation management activities

Outreach and Information

Public support of government conservation programs is vital. In order to engender support, the public must be well informed so that they have accurate information about manatees, as well as how they can be involved in protecting manatees and their habitat. In addition, it is important to target specific user groups that typically come into contact with manatees. Knowledge of manatee habitat requirements, behavior, and general biology can help the public understand how to share manatee habitat, and how to behave when in proximity to manatees. ISM-Outreach and Information staff distributes a wide array of information to a variety of audiences with the goal of providing factual, timely information appropriate to the target user groups.

Manatee harassment

2006–2007

Highlights

Visitor Centers

The contract for participating with the State of Florida Nature and Heritage Tourism Center continued this year. FWC provides free manatee-related materials to the center in exchange for distribution of the materials to tourists. The center is located in White Springs, a short distance away off I-75 near the Georgia-Florida border.

Information Requests

A total of 234 phone or mailed requests for information were received and completed. Of these, 87 were requests for bulk orders of materials to be distributed through the requestor's organization.

The FWC Knowledge Base (AskFWC) public service system is now used to handle most routine manatee and other imperiled species questions that come into the agency. This service provides the individual with an automatic response to their question and a link to FWC manatee webpages for more information. Outreach staff is responsible for updating or adding new questions to the system for all of the State's imperiled species. Questions and answers are reviewed on a regular basis so the information stays current. The overall request for manatee information has dropped off considerably since the launch of the website and other avenues of information dissemination have evolved. A small amount of information requests come in that require staff response and these are handled as soon as they are received.

Coloring activity booklets, manatee brochures, and the "Commonly Asked Questions" booklet continue to be popular reprinting/distribution items that environmental education facilities request.

E-Field trips

The manatee electronic on-line field trip provides a self-guided tour into the life of the manatee. It gives elementary to high school students, nationally and internationally, a tool to learn about manatees without traveling. The on-line field trip provides students with much of the same information as our current FWC manatee brochures, educational materials, and the Treasure Boxes (see below), but is more efficient in connecting with a broader range of students. A student journal and a question/answer session go along with the on-line field trip. A total of 575 schools (approximately 11,562 students) registered to use the field trip during the 2006-2007 school year. Florida

students continue to be the highest number of participants who have visited this site over the three years it has been available (238 schools registered and 6,606 student participants). The highest viewing months in 2006-2007 were October, April and May. As of June 2007, students from all 50 states had viewed the field trip, which is the first year that we have had registrants from every state in the nation. To view the manatee electronic field trip, go to www.efieldtrips.org.

A right whale e-field trip was developed this year as well. The right whale educational components were created by FWC staff for a contracted vendor to implement as an e-field trip. Once launched, for some users, it experienced access issues that were never entirely resolved. The e-field trip likely will not be continued, but the materials will be used to improve the right whale information on FWC's website. Some of the materials developed for the e-field trip were used in the Florida Wildlife magazine when right whales were featured in the November/December 2006 edition.

"Way of the Manatee" Treasure Box Program

This program includes a variety of educational materials (e.g., videos, manatee artifacts, craft projects, activity books) in a "Treasure Box" that is available to teachers and education centers around the State and can be adapted to a variety of age groups. The main focus of the program this year was the distribution of boxes to new groups around the State who wanted to use the "Way of the Manatee" Treasure Box program. A list of supplies and resources were provided for this service. The manatee books that were donated last year have helped considerably with the creation of the boxes. Three new sites received materials and several existing manatee resource areas received more items and books for their boxes.

Monofilament Recycling

ISM staff continues to monitor the recycling bins in Wakulla County marinas. Fishing line that is gathered is used for educational purposes in the Treasure Boxes that are created to loan out to teachers. The line is cleaned of debris and hooks and then packaged with an entanglement brochure. Staff provides information about monofilament recycling and entanglement at all events (see below). For more information about the state-wide recycling program, see the following website: www.fishinglinerecycling.org.

Site Visits

Manatee Outreach staff visited a few sites during 2006-2007: a Citrus County festival and Homosassa Springs State Wildlife Park in January, Florida State University Coastal and Marine Laboratory Open House in April, and the St. Marks HuManatee Festival in May. In addition to providing information at these events/sites, staff participated in a Senior Days program and visited several senior citizen groups to give presentations. Attendance at the FSU Marine Lab Open House resulted in contact with someone who had found bones along the coast that they could not identify. The individual realized the bones were manatee bones when he visited the manatee outreach display. As a result, staff collected a nearly complete skeleton (54 bones) of a very large manatee not previously reported. The death was entered into the 2007 mortality database.

Manatee Education Working Group

The manatee education assessment survey of the State's manatee education providers was completed this year. Outreach staff has read the survey results and will implement suggestions that can be handled appropriately in-house.

Manatee Decal Program

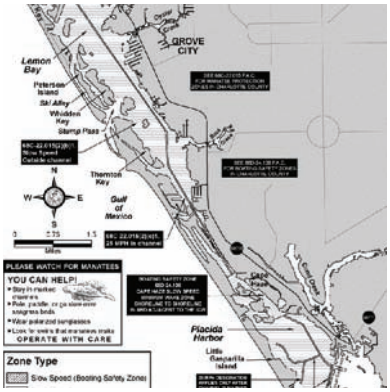
In April, a press event was held to honor the 2007-2008 Manatee Decal Art Contest winner, Natasha Thornton, a 9th grade student at Coral Reef Senior High School (Miami). FWC staff from south Florida and FWC Commission Chairman Rodney Baretto participated in this event.

The 2006-2007 decals, with artwork designed by Berry Donovan Foster, a 7th grade student from Citrus Springs Middle School (Citrus County), were available for sale from July 1, 2006 to June 30, 2007, raising $53,160 for the Save the Manatee Trust Fund.

conservation management activities

Data Distribution and Technical Support

The Geographic Information System (GIS) technical team provides quality data, analysis, and map products to the rules, MPP, permitting, and habitat managers. With FWRI's online mapping capabilities and the level of ease that ESRI's ArcMap program provides, the general public and consultants are now able to conduct their own analyses quickly and produce their own maps with data provided electronically. The technical team continued to provide manatee mortality data via the website this year and fulfilled numerous data requests to many consultants, several county agencies, and USFWS for finalized shapefiles of manatee protection zones and aerial survey data.



2006–2007

Highlights

- GIS staff provided extensive mapping, spatial analyst, and data analysis services for completing the Broward and Palm Beach counties' Boat Facility Siting Plans and MPPs.
- Rule updates were required for maps of Charlotte County's Lemon Bay and Duval County and LE citation maps.
- A joint FWC/USFWS marine facility mapping project was initiated for existing county facility inventories.
- Mapping was required to assist the Planning and Permit Review team with evaluating the high manatee mortality criteria in Duval and Martin counties MPPs. Staff also provided maps of Flagler County mortality, aerial surveys, marine facilities, and recent developments for permitting issues.
- Staff provided graphics and report preparation for the Manatee Management Plan.
- Staff assisted with the conversion of the permitting documentation process to the FWC Sharepoint intranet.
- Staff helped create ISM shapefile filters for internal and external permitting agencies.
- GPS translation/mapping of seagrasses in northwest Florida and mapping of thermal plumes in Tampa Bay was coordinated with the manatee habitat staff.
- The Habitat Working Group was provided with data and mapping for manatee habitat checklists for Crystal River and Miami-Dade County.
- Staff produced educational graphics for printed materials, the FWC website, school materials, the manatee decal contest, speed zone maps and brochures, educational sign information, observer educational videos, and Manatee Forum and miscellaneous staff presentations.

Law Enforcement Activities

Enforcement Activities

law enforcement activities

Enforcement Activities

In FY 2006-2007, the Legislature appropriated $191,342 from the Trust Fund for FWC Law Enforcement (LE). Of this, $146,197 was spent and the remainder returned because of budgetary short falls in the Trust Fund. The funds covered partial salaries and benefits of ten full-time employee positions. The duties of these officers included enhanced enforcement of existing manatee protection speed zones.

LE's manatee protection efforts are based on the premise that education and enforcement are inseparable. The strong educational component is designed to enhance community awareness of manatee issues. The goal is to gain an acceptable level of compliance with manatee protection speed zones, which is expected to result in a reduction in watercraft-related manatee mortalities.

Enforcement efforts begin with educational/informational vessel stops and verbal warnings as each new protection zone is posted. The enforcement contact escalates to the issuance of written warnings and Uniform Boating Citations (UBCs) after a specific zone has been posted for a reasonable amount of time or for repeat offenders. Officer discretion is the guideline for the type of enforcement action taken in each contact.

Enforcement efforts have focused on areas of high watercraft-related manatee mortalities, areas of high vessel traffic in manatee protection zones, newly established protection zones, and during the times of the year when high manatee activity is expected (primarily winter months).

LE continues to provide enhanced enforcement in counties such as: Brevard, Broward, Charlotte, Citrus, Collier, Dade, Duval, Hillsborough, Indian River, Lee, Manatee, Martin, Palm Beach, Pinellas, St. Johns, St. Lucie, Sarasota, and Volusia, all of which are of critical interest regarding manatee protection.

Funding

In order to provide greater manatee protection, LE will spend approximately $4,000,000 per year on manatee initiatives which include enforcement and signage. All of this funding is derived from State General Revenue or the Marine Resources Conservation Trust Fund (Vessel Fuel Tax). LE is not dependent on the Save the Manatee Trust Fund to continue its mission of protecting manatees but is, as any other government program, dependent on the legislative budget process to continue this dedicated funding. LE has also received funding assistance from the U.S. Fish and Wildlife Service (USFWS) in the amount of $384,182 and has received $200,000 from the Florida Inland Navigation District for manatee speed zone signage.

2006–2007

Highlights

- In response to increased watercraft-related manatee mortalities, reports of boater noncompliance with speed zones, and reports of aggregations of manatees, officers throughout the State conducted over 50,119 patrol hours.
- LE participated in over 35 outreach efforts throughout the State. These programs promoted awareness of manatee-related issues and compliance with manatee protection speed zones.
- LE made 44,231 educational contacts regarding manatee protection. FWC LE contacts included, but were not limited to: The Naples Boat Show, Southern Kingfish Association Tournament at Cedar Bay Marina, Dive Into Oceans, Backcountry Fly Fishers, Red Steir Fishing Show, FWC Fishing Clinic, Naples Pier, Enchanting Shores Fishing Club, Naples Yacht and Harbor Club, Imperial Wilderness Fishing Club, Everglades Sportsman Club, Dive Into Oceans at Rookery Bay, Collier County Parks and Recreation Department, and the Naples Daily News "Capture" article.
- The Southwest Region (Tampa office) continued to assign an officer three days a week to the new manatee protection zone in Safety Harbor located within Old Tampa Bay (established in FY 2004-2005), providing education to boaters and increasing compliance with the new zone.
- FWC adopted manatee protection zones within Tampa Bay, encompassing Hillsborough, Manatee and Pinellas counties. Manatee protection signage has been fully installed within these three areas as of June 2007.
- FWC Office of Boating and Waterways completed manatee speed zone signage installation and maintenance in Volusia County to remove, repair, clean and install markers damaged by 2004 and 2005 hurricanes and to enhance marking of protection zones within the St. Johns River from Lake George to Lake Monroe. While the contractor was working in the St. Johns River, tornado damage occurred, resulting in additional needed repairs. This project will be finished in August 2007.
- FWC Office of Boating and Waterways completed work within all waterways of Brevard County to remove, repair, clean and install markers damaged by 2004 and 2005 hurricanes and to enhance marking of the protection zones. This project will be finished in August 2007.
- LE coordinated with a Mote Marine Laboratory aerial researcher to determine manatee location and congregation locations during winter months so as to enhance targeted enforcement efforts within Lee County.
- In January, FWC completed the first draft of the document, "Approved Uniform Waterway Marker Standards for Posting Manatee Protection Zones in Florida's Waterways." This document provides an approved uniform waterway marker standard for posting federal and state manatee protection zones in Florida's waterways. The document currently is under public review as an appendix to FWC's Manatee Management Plan and is expected to be finalized within 2007.
- FWC also is coordinating development of the broader, "Guidelines for Posting Uniform Waterway Markers in Florida's Waterways (Draft June 2007)". This document provides standard guidelines for developing and posting all types of regulatory zones

in Florida's waterways. The guidelines were developed for use by all levels of governments with the authority to regulate waterways in their jurisdiction. Statewide conformance with the standard by all levels of governments will aid in the efficiency and effectiveness of uniform waterway marker manufacturing, installation, enforcement, maintenance, and administration and will insure compatibility with regulations. The standards will provide boaters with the ability to easily recognize and understand posted regulations. Currently, the document is under public review and is expected to be finalized within 2007.

- FWC operates the new On-Call Response Program developed in 2007, which allows the general public to report damaged and missing waterway signs via a toll-free phone number (1-866-405-BUOY) or on the internet (http://www.myfwc.com/boating/waterways/DamagedWaterwaySigns.htm). The program has responded to approximately 85 reported incidents. As a result, numerous damaged or missing waterway signs that post regulatory zones were rapidly repaired.

- LE has converted most of the State manatee protection regulatory zone information from legal and rule descriptions into GIS digital maps for public and private use, available in PDF format at the webpage: http://myfwc.com/manatee/data/mapref.htm.

Interagency Law Enforcement Cooperation

- In October 2006, FWC coordinated the first annual manatee protection workshop to promote new ideas, develop networks, and discuss consistent and effective enforcement between local, state, and federal law enforcement agencies. This first workshop was attended by 144 participants, with the second annual workshop scheduled for September 2007.

- In November 2006, LE coordinated and participated in a USFWS Manatee Special Enforcement Detail within Lee County.

- In January 2007, LE personnel conducted a manatee/endangered species workshop at the Rookery Bay National Estuarine Research Reserve Headquarters. This workshop provided an opportunity to share information and training with multiple law enforcement agencies and biologists in response to manatee and marine mammal strandings and injury/recovery efforts within southwest Florida.

- In January 2007, Operation Mermaid was conducted as the first simultaneous statewide enforcement effort directed toward enforcement of manatee protection zones. This effort was coordinated by FWC Officer Scott Prasse (South Region) with 43 different local, county, state, and federal agencies participating, covering 11 counties. During this operation, 1,752 vessels were stopped, resulting in 757 written warnings, 389 citations, and 20 physical arrests.

- In February 2007, state and local marine law enforcement agencies met at the Regatta Pointe Marina to discuss enforcement and signage in Manatee County. Participants provided FWC and Manatee County staff with guidance on manatee protection speed zone signage to improve enforcement efforts. The following law enforcement agencies participated: FWC LE, Manatee County SO, Holmes Beach PD, Longboat Key PD, Port Manatee, Manatee County State Attorneys Office, and the Manatee County Environmental Office.

- LE participated with the Charlotte County Sheriff's Office, the Punta Gorda Police

Department, and the Marine Advisory Committee members to coordinate enforcement efforts and appearances at local boats shows with displays of regulatory zones. FWC also coordinated with Florida Sea Grant to consider development of a manatee educational program.

- FWC coordinates Marine Law Enforcement Task Forces in several areas of the State to provide effective and efficient law enforcement on the water. Although each task force addresses all marine law enforcement issues, protecting manatees is a primary focus. A summary of each task force and their respective highlights is as follows:
  - Lee County Marine Law Enforcement Task Force, created in 2003, was the first of its kind in the State and has become the premier example after which other groups around the State have been modeled. The Task Force has received national and international recognition for its work in boating safety, code enforcement, and manatee protection. The Task Force consists of law enforcement agencies such as FWC LE, Lee County SO, Cape Coral PD, Fort Myers PD, Sanibel PD, Department of Environmental Protection (DEP), USFWS, U.S. Customs, and U.S. Coast Guard (USCG) Station- Ft. Myers Beach. Non-law enforcement participants include Lee County Division of Natural Resources, Lee County Division of Parks and Recreation, Florida Sea Grant, Southwest Florida Marine Industries Association, Safe Water Instruction Messengers of Lee County, and Tow Boat US. The Task Force also has regular communications with the Fire-Rescue Task Force in Lee County – the Marine Emergency Response Team. The Task Force meets on a monthly basis to discuss any and all marine-related enforcement issues. Topics range from boating safety to homeland security.
- The Lee County Task Force provided staff and a display at local boat shows to promote awareness of all manatee zones and explain proper conditions of operational compliance to boaters. It coordinated with Sea Grant to consider development of a manatee educational program in Lee County.
  - The Southwest Florida Marine & Uplands Alliance was established to target marine and upland law enforcement issues in Collier County. The Alliance is comprised of other agencies and non-governmental agencies/organizations which share common interests in boating safety, resource protection and law enforcement on the waterways and in upland areas. The Alliance meets on a monthly basis and is sponsored jointly by the Collier County Sheriff's Office and FWC LE. Topics of discussion and action include all issues related to the above, including manatee zone enforcement and injured/dead manatee recovery. Alliance members include code enforcement officials from Collier County, City of Naples, City of Marco Island, Naples PD, USFWS, National Park Service, Marco Island PD, Sea Tow Inc., Collier Marine Industries Association, Sea Grant, Team Ocean, DEP, Rookery Bay National

Highlights (continued)

Research Reserve, West Marine Inc., and Cedar Bay Marina. In February 2007, participants provided FWC guidance on manatee protection speed zone signage to improve enforcement. This marker work has been contracted and is expected to be completed within FY 2007-2008.

- The Northeast Regional Law Enforcement Maritime Alliance was founded in 2006 and consists of the following agencies: FWC LE, USCG, NOAA, USFWS, Ponce Inlet PD, Volusia County SO, DEP, Ormond Beach PD, Port Orange PD, New Smyrna Beach PD, Edgewater PD, Beach Patrol, Lake County SO, Flagler County SO, and Brevard County SO. This recently formed alliance has enhanced joint law enforcement communication, training, and operational planning. USFWS provided federal manatee zone enforcement training to the Alliance. Twenty manatee protection enforcement details were coordinated by LE with nine being joint details with Alliance members to increase compliance and address uniformity of enforcement throughout all waterways within Brevard and Volusia counties (coastal areas as well as the St. Johns River). The following law enforcement agencies participated in the joint details: FWC LE, Brevard County SO, Daytona Beach PD, USCG, Volusia County SO, and USFWS.

- LE participated in numerous public meetings and conducted presentations on manatee protection, boating safety and waterway regulatory signs within Hillsborough, Manatee and Sarasota counties. Contacts included but were not limited to: The Mangrove Coast Fly Fishing Club, Sarasota County Environmental Services, Sarasota Power Squadron, three-day Manatee County Fishing College held at the Manatee Civic Center, Florida State Fair and regular attendance at the Manatee Awareness Coalition Meetings. Several manatee speed zone enforcement details occurred within Roberts Bay and Little Sarasota Bay in Northern Sarasota County, Terra Ceia Bay and Sarasota Bay at Sisters Key in Manatee County. LE coordinated with USFWS and Charlotte County marine enforcement on manatee protection joint details in Lemon Bay (Sarasota and Charlotte counties), and assisted Hillsborough County officers in a three-month manatee zone detail in southern Tampa Bay.

Technology

- In January 2007, USFWS and FWC LE signed a Radio Services Agreement which provided authority for LE to provide dispatch services for USFWS agents in Florida. This allows for the direct communication between USFWS agents and FWC dispatch as well as all FWC officers. Dispatch functions now accessible to USFWS agents include immediate checks for prior violations and/or wanted persons, stolen vessels or other property, and other sensitive law enforcement information. This increases law enforcement efficiency in manatee protection as well as homeland security.

- The FWC Office of Information Technology continued working with LE to develop a more efficient method of collecting enforcement activity data. The system, which came on-line in January 2004, improved timeliness of data collection and reduced paperwork requirements by providing an internet-based application for data entry at each regional office. These data are now posted on-line and available for public view at: http://myfwc.com/law/manateepatrol/.

Appendix

Acronyms and Abbreviations
Definitions
Manatee License Plate and Decal Program

appendix a

Acronyms and Abbreviations

CERP—Comprehensive Everglades Restoration Plan
Commission, Commissioners—refers to the Governor-appointed body and/or members of the FWC Commission
DEP—Florida's Department of Environmental Protection
dTag—digital acoustic recording tag
EWS—Early Warning System
FAC—Florida Administrative Code
Forum—the Manatee Forum, a group of 22 stakeholder organizations organized by FWC and USFWS to address manatee issues
FSU—Florida State University
FWC—Florida Fish and Wildlife Conservation Commission
FWRI—FWC's Fish and Wildlife Research Institute
FY—Fiscal Year
GADNR—Georgia Department of Natural Resources
GIS—Geographic Information System
GPS—Global Positioning System
ISM—FWC's Imperiled Species Management Section
LE—FWC's Division of Law Enforcement
MIPS—Manatee Individual Photo-Identification System
MMPL—Marine Mammal Pathobiology Laboratory
Mote—Mote Marine Laboratory
MPP—Manatee Protection Plan
MSRS—Mandatory Ship Reporting Systems
NGO—Non-Governmental Organization
NMFS—National Marine Fisheries Service
NOAA—National Oceanic and Atmospheric Administration
PIT—Passive Integrated Transponder
PD—Police Department
Recovery Team—the USFWS-led Florida Manatee Recovery and Implementation Team, consisting of over 100 individuals representing about 50 different federal, state, local, academic, NGO, and private organizations
SEIT—Southeast U.S. Right Whale Recovery Plan Implementation Team
SFWMD—South Florida Water Management District
SO—Sherriff's Office
STMTF—Save the Manatee Trust Fund
SWFWMD—Southwest Florida Water Management District
UBC—Uniform Boating Citation
UME—Unusual Mortality Event
USACOE—U.S. Army Corps of Engineers
USCG—U.S. Coast Guard
USFWS—U.S. Fish and Wildlife Service
USGS—U.S. Geological Survey
WHOI—Woods Hole Oceanographic Institution

appendix b

Definitions

Boating Speeds

Idle Speed

Minimum speed necessary to make headway and be able to maintain control of the vessel. See 68C-22.002(1), F.A.C., for the complete definition.

No Entry Zone

An area where all activities are prohibited unless specific authorization is given (except for fishing from an adjacent shoreline with a cane pole). See 68C-22.002(11), F.A.C., for the complete definition.

Slow Speed

That speed where a vessel is fully off plane and completely settled in the water, and not creating an excessive wake or other hazardous condition. See 68C-22.002(4), F.A.C., for the complete definition.

Species Imperilment

In April 2005, FWC approved a new process for listing imperiled species based on the World Conservation Union (IUCN) red-list criteria combined with Florida's traditional listing category names. The IUCN criteria are used in more than 30 countries, have undergone rigorous scientific scrutiny, and have been applied to more than 20,000 species. Below are the categories of imperilment as defined by the State of Florida (68A-1.004 F.A.C.):

Endangered

A species, subspecies, or isolated population of a species or subspecies which is so few or depleted in number or so restricted in range or habitat due to any man-made or natural factors that it is in imminent danger of extinction, or extirpation from Florida.

Threatened

A species, subspecies, or isolated population of a species or subspecies which is facing a very high risk of extinction, or extirpation from Florida, in the future.

Species of Special Concern

A species, subspecies, or isolated population of a species or subspecies which is facing a moderate risk of extinction, or extirpation from Florida, in the future.

appendix c

Manatee License Plate and Decal Program

MANATEE LICENSE PLATE

Current manatee license plate design

The manatee license plate was enacted on March 16, 1990, and was created to raise funds for manatee research and protection. To date, over 559,000 manatee license plates have been issued and nearly $34,000,000 collected to fund manatee research and protection in Florida. However, revenues into the Save the Manatee Trust Fund are not keeping pace with inflation. Based on current estimates of costs associated with manatee research and management, the Trust Fund balance will be fully depleted by fiscal year 2009-2010. This projected funding deficit will impact our ability to conserve and protect the manatee. FWC has developed a business plan to address this and other funding problems and is taking steps to increase revenues from sales of the manatee license plate.

The manatee license plate, once the most popular, is now the sixth most popular. Two explanations for the drop in sales of the manatee license plate are that it has not been marketed as effectively as many of the new plates, and it has not been redesigned since its inception. Statutory changes to allow a portion of the license plate funds to be used for marketing have been proposed. In addition, the manatee license plate has been redesigned to enhance market potential and to increase revenue.

Florida artist Nancy Blauers designed the new tag. The artwork is now in the final stages of preparation and the process of developing the new plates will begin soon. A letter of intent was sent to the Department of Motor Vehicles indicating FWC's plan to redesign the plate. Once production has begun on the new design, the new plate will be ready for distribution in approximately seven months. Old plates will be purchased as surplus to facilitate the roll-out of the new design.

The manatee license plate generated $1,494,520 in revenue in 2005, with the sale of nearly 75,000 plates. FWC projects a 20% increase in revenue following improved marketing and release of the redesigned plate, which could add several thousand dollars of additional revenue.

MANATEE DECAL

Chapter 328, Florida Statutes, provides that a sticker or decal can be given to citizens who donate $5 or more to the Save the Manatee Trust Fund. Each year, FWC holds an art contest for students to submit designs for the annual manatee decal. FWC invites all middle and high school age students who attend public, private, or home schools in Florida to enter the Manatee Decal Art Contest. This art project encourages older students to support protection efforts by learning about manatees and their role in Florida's environment. Sixty students sent entries to the manatee decal art contest this year. In April, a press event was held to present an award to the 2007-2008 Manatee Decal Art Contest winner, Natasha Thornton, a 9th grade student at Coral Reef Senior High School. FWC staff from south Florida and FWC Commission Chairman Rodney Baretto participated in the event.

2006–2007 Decal: Protect Florida's Native Species

A Citrus Springs student captured top honors in the Florida Fish and Wildlife Conservation Commission's (FWC's) 2006-2007 Manatee Decal Art Contest. Berry Donovan Foster, a seventh grader at Citrus Springs Middle School, created his artwork, titled "Manatees at Sunrise," with a combination of Prisma pencil and watercolor. The back of the decal provides information about the Florida historic record of manatees.

Each year tax collectors participate by selling decals at their offices statewide. Citrus County was the winning county in the 2006-2007 Voluntary Contribution Campaign held in July each year. Money from the decals supports manatee protection efforts such as rescue, rehabilitation, research, and public education. The 2006-2007 decals, with artwork designed by Berry Donovan Foster, were available for sale from July 1, 2006, to June 30, 2007. Approximately 10,000 decals were sold with Foster's design. In 2006-2007, 10,632 decals were sold, raising $53,160 for the Save the Manatee Trust Fund.