SAVE THE MANATEE TRUST FUND

FISCAL YEAR ANNUAL REPORT

JULY 1, 2011— JUNE 30, 2012

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

Nick Wiley, Executive Director

Gil McRae, Director
Fish and Wildlife Research Institute

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

Eric Sutton, 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 Andrea Mosier
Review Jackie Fauls, Kipp Frohlich, Carol Knox, Leslie Ward-Geiger and Dr. Tom Reinert
Content Bonnie Abellera, Scott Calleson, Dr. Chip Deutsch, Dr. Martine deWit, Mary Duncan, Dr. Holly Edwards, Kipp Frohlich, Katie Jackson, Carol Knox, Ron Mezich, Dr. Joel Ortega-Ortiz, Tom Pitchford, Kari Rood, Kent Smith, Donna Szemer, Leslie Ward-Geiger, Hope White
Layout Andrea Mosier
Cover photo *Manatees in Fanning Spring*
Photographs Courtesy of FWC, unless otherwise noted

Research activities involving live manatees were conducted under federal permit #MA773494

SAVE THE MANATEE TRUST FUND

Annual Report

FY 2011-2012

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
and
Division of Habitat and Species Conservation

Table of Contents

Executive Summary

Mom and calf pair in the TECO Big Bend Power plant discharge canal.

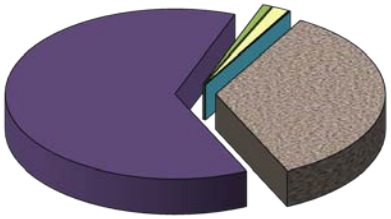
The Florida Fish and Wildlife Conservation Commission (FWC) is pleased to submit this annual report on the expenditures from the Save the Manatee Trust Fund (Trust Fund), per section 379.2431(4)(b), Florida Statutes (F.S.). The report covers the period from July 1, 2011 through June 30, 2012. As required by Florida law, the report is provided to the President of the Florida Senate and the Speaker of the Florida House of Representatives by December 1, each year. The Trust Fund is the primary source of funding for the State's manatee-related research and conservation activities. Revenues for Fiscal Year (FY) 2011-2012 totaled $3,850,597. Appropriations from the Trust Fund for the same period were $4,375,545, with $325,000 provided for manatee research activities at Mote Marine Laboratory and a service charge to General Revenue of $586,276 that most trust funds are required by law to pay. In FY 2011-2012, FWC's Division of Habitat and Species Conservation expended $1,018,043 for conservation activities and the Fish and Wildlife Research Institute expended $1,798,459 on research and monitoring. Details of revenues, appropriations, and expenditures are shown on page seven of this report.

This annual report highlights progress made on many of the tasks outlined in the Florida Manatee Management Plan (Plan) approved in December 2007. The Plan continues to serve as the FWC road map to protect and conserve manatees; however, the Plan's implementation schedule was projected on a five-year basis and that period is nearing an end. Accordingly, FWC is assessing accomplishments and challenges, and identifying priority work that will be the focus of efforts over the next five years. As part of updating the plan, FWC recently reviewed work progress and shared preliminary planning ideas with the Manatee Forum, a diverse stakeholder group. Through advancement of the integrated conservation framework of research, management, law enforcement, and working with the public, FWC will continue to work to reduce threats to manatees, ensure adequate habitat for the future, and employ necessary and appropriate protections. Through implementation of the Florida Manatee Management Plan, FWC can continue to conserve and protect manatees for the benefit of Florida's citizens and future generations.

Copies of the Florida Manatee Management Plan can be downloaded from the Commission Web site: http://www.myfwc.com/media/214332/Manatee_Mgmt_Plan.pdf

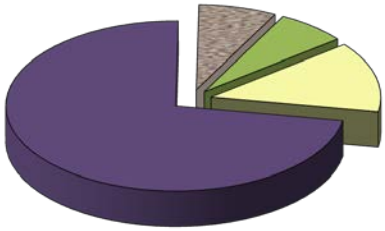
Trust Fund FY 2011–2012 Revenues and Expenditures

REVENUES
$3,850,597



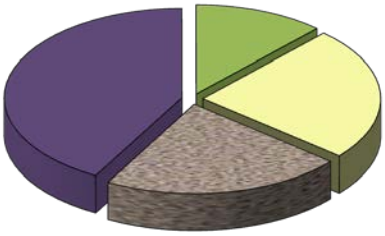
- Save the Manatee License Plate ($1,338,336)
- Vessel Registrations ($2,412,843)
- Interest ($34,269)
- Decals and Donations ($61,388)
- Sale of Surplus Property ($3,762)

APPROPRIATIONS
$4,375,545



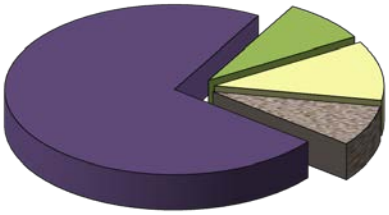
- FWC Manatee Program ($3,170,964)
- Mote Marine Laboratory ($325,000)
- Administrative Overhead ($293,305)
- Service Charge to General Revenue ($586,276)

FWC MANATEE PROGRAM CONSERVATION MANAGEMENT EXPENDITURES
$1,018,044



- Manatee Protection Zones ($223,371)
- Plan and Permit Reviews ($426,853)
- Habitat Protection ($121,297)
- Public Outreach ($246,523)

FWC MANATEE PROGRAM RESEARCH EXPENDITURES
$1,798,459



- Behavioral Ecology ($140,601)
- Mortality and Rescue ($1,306,428)
- Photo Identification (Life History) ($148,279)
- Population Assessment and Monitoring ($203,151)

Manatee Basics

COMMON NAME Florida manatee

SCIENTIFIC NAME *Trichechus manatus latirostris* (Order: Sirenia)

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 5,076 in 2010

HISTORY A native species found in Florida's 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 60 years; of manatees that reach adulthood, about half are expected to survive at least into their early 20's

UNUSUAL FACT Manatees typically eat about 10% of their body weight each day.

A CLOSER LOOK

Adult manatees average 8-10 feet (2.5-3 meters) in length and weigh around 1,000 pounds (450 kg). The largest manatees may reach 14 feet (4.2 m) in length and weigh over 3,500 pounds (1,450 kg). 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 (called "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. 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 (1-1.2 m) in length. The calves remain with their mothers for up to two years.

There are a variety of threats to manatees, both natural and human-related. 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. During periods of cold weather, manatees gather in waters warmer than 68°F (20°C). This warm water may be in south Florida or may be from an artesian spring or industrial discharge. Manatee habitat loss, including future changes in artificial warm-water refuges and reductions in natural spring flows, is also of concern.

Florida Manatee Management Plan

GOAL

"To remove the manatee from the State imperiled species list and effectively manage the population in perpetuity throughout Florida by securing habitat and minimizing threats."

Florida Manatee Management Plan

Approved at the December 2007 FWC Commission meeting, the Florida Manatee Management Plan (Plan) guides key conservation work supported through the Save the Manatee Trust Fund. The 267-page document provides an overview of the myriad programs, initiatives, and strategies implemented to protect and conserve manatees and their habitat along with a detailed listing of tasks with timelines for both research and management activities.

The primary objectives of the Plan upon which the individual tasks are based are:

- Implement improved methods to estimate manatee population and trends
- Reduce the human-caused mortality rate by reducing human-caused threats
- Develop and implement plans to address future changes in power plant operation
- Assist in the development of minimum flow rules at Florida springs
- Enhance management practices to secure seagrass and freshwater vegetation
- Use measurable biological goals to measure progress toward recovery

The Plan relies on the ongoing collection of manatee-related data to support science-informed decisions and to guide management actions. The major areas of focus are:

- Speed zone review
- Improve enforcement efforts
- Improve permit review process
- Review and development of county-level Manatee Protection Plans
- Secure warm-water resources
- Monitor and protect seagrass
- Retrofit water control structures
- Launch new outreach initiatives

This annual report serves as a way to present progress in implementing key conservation strategies described in the Plan. Copies can be downloaded from the Commission Web site:

http://www.myfwc.com/media/214332/Manatee_Mgmt_Plan.pdf

Mortality and Rescue

research activities

FWC staff rescuing manatees

A network of researchers and law enforcement agencies was established in 1974 to recover manatee carcasses and assist injured manatees. In 1985, the responsibility of the manatee carcass salvage, necropsy, and field coordination of the rescue program were transferred to the State of Florida by the U.S. Fish and Wildlife Service (USFWS) and therefore now rests largely with the FWC's Fish and Wildlife Research Institute (FWRI).

FWC staff members from five coastal field stations retrieve all reported carcasses, a key monitoring activity described in the Florida Manatee Management Plan. 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 FWC's Marine Mammal Pathobiology Laboratory (MMPL) in St. Petersburg. MMPL performs consistent, high quality, post-mortem examinations to determine cause of death. Information gained from the carcass salvage and manatee rescue program is crucial to providing wildlife managers with information about manatee health, mortality factors, life history, and general and reproductive biology as well as potential causes for Unusual Mortality Events[1] (UMEs). Through this work, FWC contributes significantly to the evaluation of threats facing Florida manatees and provides key information to resource managers and partner agencies. MMPL makes timely information available on the FWC website (http://myfwc.com/research/manatee/rescue-mortality-response/mortality-statistics/).

In addition to manatee carcass salvage, FWC receives calls from the public reporting manatees in distress. Field staff members respond to these calls and coordinate a network of personnel from various agencies and organizations to work with FWC biologists to rescue and, when necessary, transport manatees to rehabilitation facilities.

FWC is a contributing organization to multiagency efforts to release and track rehabilitated manatees that were rescued due to injury, cold stress, or other problems. The Manatee Rehabilitation Partnership consists of representatives from federal and state agencies (USFWS, USGS, FWC), academic institutions (UF), non-governmental organizations (Caribbean Stranding Network, Hubbs-Sea World Research Institute, Save the Manatee Club, Sea to Shore Alliance), and private oceanaria (Cincinnati Zoo, Columbus Zoo, Lowry Park Zoo, Miami Seaquarium, The Seas at Epcot, Sea World Orlando, South Florida Museum).

[1] Unusual Mortality Events are defined by the Marine Mammal Protection Act as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." See http://www.nmfs.noaa.gov/pr/health/mmume/ for more information.

- Statewide, there were 358 manatee carcasses documented in Florida during FY 2011-2012. All but 11 were recovered and examined. Additionally, one carcass was documented in North Carolina, two in South Carolina, and one in Georgia.
- Researchers collected tissue samples for genetic analysis from most carcasses. Other tissues were collected for toxicology, histology, aging and for requests from external researchers.
- MMPL staff members conducted several necropsy training workshops and classes.
- Eighty-two rescues were performed statewide during FY 2011-2012. As of June 2012, 50 of these rescued manatees were released back into the wild, 16 died, and the remaining 16 animals were still being rehabilitated in facilities around the State.
- Eleven of the 25 rescues within the "Natural" category were related to cold stress.

Manatee Mortality FY 2011-2012

Cause of Death	*Number of Deaths*
Human—Flood Gate or Canal Lock	4
Human— Other (entanglements, etc.)	3
Human —Watercraft Related	93
Natural—Cold Stress	18
Natural— Other (includes red tide)	60
Perinatal (total body length less than 150 cm or about 5 feet)	79
Undetermined (decomposed or other)	90
Verified, Not Recovered	11
Total Carcasses July 1, 2011–June 30, 2012	358

Manatee Rescues FY 2011-2012

Type of Rescue	*Number of Rescues*
Calf—Alone	7
Calf—With Rescued Mother	5
Mother—With Rescued Calf	2
Human—Entanglement	15
Human—Entrapment*	8
Human—Watercraft Related	18
Natural – Includes Red Tide	25
Undetermined	2
Total	82

*includes power plant intake canals, irrigation canals, weirs, culverts, manmade canals, manmade lakes, etc.

Population Monitoring and Assessment

research activities

TECO Big Bend Power Station

FWC scientists use a variety of methods to assess and monitor the current and future status of the Florida manatee population. Population assessments currently include: a) conducting manatee counts at winter aggregation sites, b) aerial surveys to determine regional distribution of manatees and to assess habitat use, and c) estimating survival, population growth, and reproductive rates through photo-identification and genetic identification. 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).

FWC traditionally uses two types of aerial surveys to monitor manatees. These surveys provide minimum counts and information about habitat use and seasonal distribution. The first type of survey (known as the 'synoptic survey') is flown statewide and provides a minimum count of manatees at known aggregation sites and other sites in winter. These surveys are conducted annually, weather permitting, pursuant to section 379.2431(4)(a), F.S., requiring an impartial scientific benchmark census of the manatee population in the State. The counts are flown after cold fronts, and under specific weather conditions, when animals aggregate at natural springs and thermal discharges from power plants. Because weather and water conditions (among other factors) change year-to-year, the ability to see and detect manatees on any given day, at any given site, may change appreciably. Therefore, statistical estimates of total population size are not possible from these surveys. Due to warmer than average weather, FWC did not conduct the annual synoptic survey in 2012.

The second type of survey is flown on a regional basis, and FWC uses these distributional surveys to determine the seasonal distribution and habitat use of manatees. These surveys usually are flown twice monthly in a specified county (or counties) for a period of two years. The location of the survey (or surveys) is determined based on management needs. During the past year, distributional surveys were conducted in Martin and St. Lucie counties twice monthly.

Currently, FWC researchers are developing new techniques for both surveys with the goal of providing precise and reliable estimates of population size and improved information on manatee distribution. These new methods and resulting data will incorporate information about how well observers detect manatees from the air and will relate environmental variables to the number of animals counted by observers.

In FY 2011-2012, FWC staff conducted an abundance survey of the east coast of Florida testing these newly developed methods. Nine areas extending from the Keys to Duval County were surveyed by 21 different observers, including partners

from six agencies. These new methods are not as dependent on cold weather as the traditional surveys. Following successful testing, the new methodology will replace the existing synoptic survey methods. Researchers are currently working on improving the analytical steps used to estimate abundance. Details are described in the Florida Manatee Management Plan (see Chapter 9, Monitoring Activities p. 86 and Chapter 10, Ongoing and Future Research p.114).

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. Manatee photo-identification is a research technique that uses the unique pattern of scars and mutilations on a manatee's body and tail to identify individual animals over time. The scars usually are the result of encounters with boats, but they can be caused by entanglement in fishing gear, cold stress lesions, and by infections. This research is conducted through a partnership between FWC, the U. S. Geological Survey (USGS), and Mote Marine Laboratory (Mote). 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). The records in MIPS 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 (time between births) and length of calf dependency.

Critical data gaps still exist in Florida manatee population assessments. Three demographic parameters are in need of refinement to better model manatee status and recovery: annual reproductive rates, annual gender-specific movement between the northwest and southwest regions, and gender-specific adult survival rates in the southwest region. These vital statistics can sometimes be difficult to estimate through photo-identification because of unfavorable photographic conditions and limited animal accessibility. Identification of individuals through the analysis of genetic markers, also known as DNA fingerprinting or genotyping, offers a complementary means to analyze life history that could greatly enhance existing manatee monitoring and population assessment studies statewide, particularly in the southwest. Genetic analysis can help in the identification of calves and other individuals with no markings, as well as carcasses in an advanced state of decomposition. Genetic markers can also be used to determine the gender of identified individuals. The Florida Manatee Management Plan identified the need to implement a genetic identification program (see Chapter 10, Ongoing and Future Research, p.115). FWC continues to conduct these critical dedicated genetic sampling surveys in southwest Florida during the winter. Additionally, FWC is collaborating with USGS to develop statistical models that integrate population data from photo-identification, genetic-identification surveys, and the carcass recovery program.

FY 2011–2012 highlights

- FWC staff conducted an abundance survey of the east coast of Florida testing newly developed methods. An evaluation of the performance of the methods is underway.

- FWC staff members and interns spent over 120 days conducting land and boat-based photo-identification research during 300+ visits to sites used by manatees in the Tampa Bay area and southwest Florida. Additionally, other FWC volunteers, outside organizations, and field lab staff statewide photo-documented manatees with unique features. More than 19,000 images documenting the unique features of individual manatees were taken and archived.

FWC staff collecting genetic samples

- Manatee photo-identification data were analyzed and will yield an updated estimate of adult survival rate for southwest Florida.

- Forty-two manatees meeting specific photo-documentation criteria were added to the southwest portion of the MIPS catalog of uniquely identifiable animals.

- Genetic sampling surveys were conducted in southwest Florida. A total of 241 samples were collected from free swimming manatees: eight samples at Port of the Islands (Collier County) during one survey day, 128 samples in the Orange River (Lee County) during two survey days, 90 during two survey days at the Big Bend Power Plant discharge canal (Hillsborough County), and 15 samples during photo-identification surveys in Hillsborough, Manatee and Pinellas counties.

Behavioral Ecology

research activities

Research on manatee use of Florida's coastal and riverine habitats is essential to understanding the resources required to recover and sustain a healthy population. By tracking the movements of individual manatees through their aquatic environment, FWC biologists obtain valuable information about manatee seasonal and daily movements, migratory behavior, site fidelity, diving behavior, and habitat requirements. To track manatees, researchers place a padded belt around a manatee's tail and attach a buoyant radio-tag containing a satellite-linked transmitter to the belt. The GPS (Global Positioning System) 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 signals in order to obtain data on behavior, group size, habitat, and movements. Processed data are mapped in a Geographic Information System (GIS) and are used in devising strategies for manatee conservation and recovery.

Warm-water habitat is of particular concern because the predicted future loss of both industrial and natural spring sources is deemed a key long-term threat to the manatee population. With the shutdown of three power plants along the east coast over the past three years, one permanently and two for repowering, the warm-water network that manatees have relied on is changing. The focus of multiagency monitoring efforts during winter FY 2011-2012 was on how manatees respond to a change in primary warm-water habitat associated with the modernization of the former Florida Power & Light (FPL) Cape Canaveral power plant in the northern Indian River Lagoon near Titusville. This winter was the second year of a three-year construction period, during which FPL provided a temporary warm-water refuge for manatees. In partnership with the USGS and primarily funded by FPL, FWC conducted a tracking study to characterize manatee movements and use of warm-water sources and foraging habitat in the region. Temperature monitoring of known and potential warm-water sites is also a crucial part of the effort. The Florida Manatee Management Plan provides further information on this issue (see Chapter 10, "Ongoing and Future Research" pp. 102).

Researcher recovers manatee tagging assembly

Watercraft collision is the single greatest human threat to manatees in Florida. In collaboration with researchers at Florida State University, Duke University, and Woods Hole Oceanographic Institution, FWC conducted a study on interactions between tagged manatees and motorized boats in southwest Florida. The goal of the project is to create a combined picture of manatee behavior, acoustics, and vessel paths to document manatee responses to

approaching boats and the acoustic cues that may elicit such responses. The research combined state-of-the-art, manatee-borne electronic tags with boat-based observations and aerial videography. During previous field seasons, 20 tagged manatees carried multisensor digital acoustic recording tags (DTAG) and GPS tags. The DTAG provided a continuous record of sound (ambient noise, vocalizations and boat noise) and recorded a suite of behavioral parameters, allowing a three-dimensional reconstruction of movements, depth, and orientation underwater. This ongoing project is a key component identified in the Florida Manatee Management Plan (see Chapter 10, "Ongoing and Future Research" p. 107).

FY 2011–2012 highlights

- Ten manatees were captured, tagged, and released in the vicinity of the former FPL Canaveral power plant to investigate winter attendance patterns and foraging movements around the interim warm-water refuge and passive thermal basins in the northern Indian River Lagoon. The manatees carried satellite-linked GPS tags and temperature loggers that provided data on fine-scale movements, habitat use, and thermal regime experienced throughout the winter.

- A team of scientists and veterinarians from FWC, USGS, and the University of Florida assessed the health and body condition of captured and released manatees to further understand the health of the wild population.

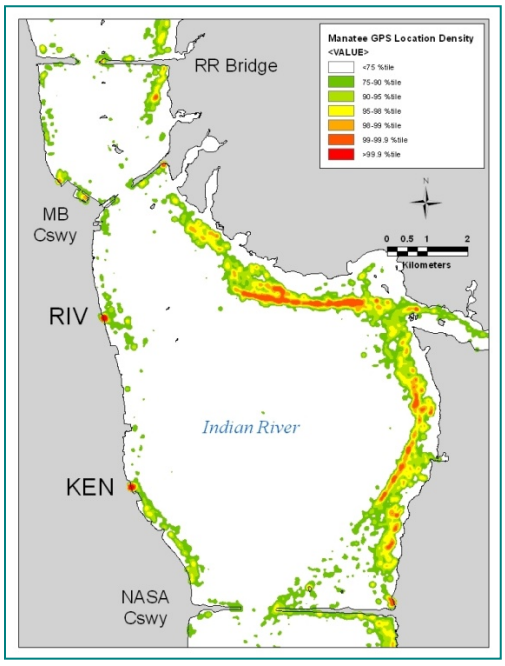
- Researchers tracked manatees in northern Brevard County through mid-March 2012, when they recovered tagging gear. Half of the tagged manatees migrated out of the county for part of the winter; their combined winter range extended along 422 mi (680 km) of coastline, from the St. Johns River to Ft. Lauderdale.

- FWC monitored water temperature during the FY 2011-2012 winter with data loggers placed at many warm-water and associated ambient sites throughout much of the manatees' winter range. Several 'passive' thermal sites (i.e., non-discharge sites such as canals) are being investigated for their potential to provide sufficient warmth to sustain manatees through cold winter periods.

- FWC and Florida State University staff processed a large amount of manatee, boat, and acoustic data collected during the field study to characterize manatee response to moving vessels. Analytical techniques were developed to objectively identify behavioral changes from the DTAG sensor data and to reconstruct manatee movement paths underwater. The various types of manatee, vessel, and habitat data were spatially integrated in a GIS. Individual manatee-boat encounters are being visualized in relation to underwater features (depth, seagrass) using a dynamic 3-D animation application that simultaneously plays the recorded sounds of passing motorboats and ambient noise. The acoustic and behavioral records are being analyzed to assess manatee response in relation to characteristics of approaching boats and sound levels experienced by the manatee.

FY 2011-2012 highlights continued

- In collaboration with the USGS, a high-resolution bathymetric (i.e., water-depth) map of the core DTAG study area in Lemon Bay was created. Adjusting for tidal state, the actual water depths used by tagged manatees were documented in relation to time of day. How manatees select habitat in relation to depth is important because it affects the risk of boat collisions.



Habitats used by tagged manatees in the northern Indian River.

Manatee with satellite-linked GPS tagging assembly.

Manatee is released back into the water after health assessment and tagging

Right Whales

research activities

A pair of juvenile right whales sighted off Fernandina Beach, FL on January 17, 2012
(FWC - NOAA Research Permit #15488)

In addition to manatee recovery efforts, FWC is involved in the recovery of other endangered marine mammals, including the North Atlantic right whale, *Eubalaena glacialis*. Most of this work is supported by grant funding provided by the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA Fisheries Service); however, portions of some staff salaries are provided by the Trust Fund (section 379.2431 (4) F.S). FWC is dedicated to assisting NOAA Fisheries Service in its efforts to protect this species as outlined in the North Atlantic Right Whale Recovery Plan (http://www.nmfs.noaa.gov/pr/pdfs/recovery/whale_right_northatlantic.pdf). With a population estimated at fewer than 500 individuals, the North Atlantic right whale is one of the most endangered large whales in the world. Vessel collisions and entanglement in fishing gear are the leading known causes of death in this species. Even one unnatural death per year could have a significant effect on the population; efforts to prevent human-caused mortality are a priority.

In 1994, NOAA Fisheries Service designated portions of Florida and Georgia coastal waters as critical habitat for the right whale, the only known calving area of the North Atlantic right whale. Federal and state efforts to protect right whales in their critical habitat have resulted in the formation of the Southeast U.S. Right Whale Recovery Plan Implementation Team, a multi-agency and citizen advisory group. FWC has been a member of the Southeast U.S. Right Whale Recovery Plan Implementation Team since its 1993 inception and FWC staff has chaired the team for the past ten years.

Since 1987, FWC has conducted aerial surveys to monitor seasonal presence of right whales, mitigate vessel-whale collisions, and assess population dynamics. An Early Warning System communication network, coordinated by NOAA Fisheries Service with assistance from FWC staff, is designed to protect right whales from vessel collisions by notifying key agencies, ports, and mariners via email, text message, or pager when and where right whales have been sighted. This near real-time information allows ships to take action if necessary to avoid whales. Photographs taken by aerial observers are used to identify individual right whales based on the callosity pattern (a natural growth of rough, cornified skin) on their heads as well as other natural marks and human-related scars. Over time, population demographics, reproductive success, mortality, and trends in health are monitored in part through this photo-identification research. FWC is one of a handful of major contributors to the North Atlantic Right Whale Identification Database—the central repository for archiving and maintaining photographs and sighting data on right whales. FWC has also worked closely with federal, state, and non-governmental organization partners to compile years of aerial survey data into a GIS program. Analysis of these spatial data help scientists and managers to evaluate right whale distribution patterns in the calving grounds in relation to environmental factors, such as sea surface temperatures and water depth, and human activities, such as vessel traffic.

FWC has developed the infrastructure and analytical tools for monitoring commercial vessel traffic in the right whale calving area using the Automatic Identification System. Commercial vessels are required by U.S. federal regulations to be equipped with an Automatic Identification System transponder and to broadcast their location and speed as determined by GPS. Ongoing analyses characterize vessel traffic patterns and estimate compliance with federal speed regulations. Data on whale distribution, habitat preferences, environmental conditions, and vessel traffic provide a framework for quantifying the risk of vessel strikes and inform and evaluate the effectiveness of proposed management plans.

FY 2011–2012 highlights

- During this year's calving season (Dec.-March), two FWC teams conducted right whale aerial surveys in the central and southern sections of the Early Warning System area. Combined, these two teams regularly surveyed from Crescent Beach, Florida, to Cumberland Island, Georgia, up to approximately 35 nautical miles offshore. FWC teams completed 120 flights totaling 40,899 nautical miles of survey. FWC identified 132 right whales during preliminary photo analysis, of which 43 (excluding calves) were unique individuals.
- In total, six cow-calf pairs were documented in the southeastern U.S. during the calving season. The relatively low number of calves observed this season may be related to environmental conditions and food availability in the foraging grounds during the last few years.
- No right whale stranding events occurred in the southeastern U.S. during the calving season.
- One entangled whale was sighted in the southeastern U.S. during the calving season. FWC participated in the documentation and disentanglement response.
- FWC documented two juvenile right whales with healing wounds on their bodies and head. The wounds observed on both whales vary in size, shape, and location; but, all are similar to vessel injuries observed on Florida manatees.
- Biopsy sampling was conducted in collaboration with NOAA Fisheries Service and the Georgia Department of Natural Resources. During the calving season, 35 right whale biopsy sampling trips were conducted, resulting in samples from five calves and several juveniles and adults, including one entangled whale. The skin samples will be used for individual identification and gender determination, as well as information on kinship, stock identity, and genetic variability within the population. The blubber portion of the samples will be used to determine contaminant levels and to gain information about feeding ecology and nutritional condition.

Research Publications and Reports

research activities

Manatee with satellite-linked GPS tag

FY 2011 - 2012

Deutsch, C.J., **S.M. Koslovsky**, and A.M. Rycyk. 2012. Manatee response to boats [role of bathymetry]. Final Report to the Disney Wildlife Conservation Fund, via the Wildlife Foundation of Florida. Grant No. WFF-08-01 (FWRI Grant No. 2684).

Deutsch, C.J. and J.E. Reynolds III. 2012. Florida Manatee status and conservation issues: a primer. Pages 23-35 *in* E. Hines, J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel, editors. Sirenian Conservation: Issues and Strategies in Developing Countries. University of Florida Press, Gainesville.

Keller, C.A., L. Garrison, **R. Baumstark**, **L.I. Ward-Geiger**, and E. Hines. 2012. Application of a habitat model to define calving habitat of the North Atlantic right whale in the southeastern United States. Endangered Species Research 18:73-87.

Martin, J., **H.H. Edwards**, M.A. Burgess, H.F. Percival, **D.E. Fagan**., B.E. Gardner, **J.G. Ortega-Ortiz**, P.G. Ifju, B.S. Evers, and T.J Rambo. 2012. Estimating Distribution of Hidden Objects with Drones: From Tennis Balls to Manatees. PLoS ONE [online serial] 7(6): e38882. DOI: 10.1371/journal.pone.0038882. http://www.plosone.org/

Martin, J., J.A. Royle, D.I. Mackenzie, **H.H. Edwards**, M. Kéry, and B. Gardner. 2011. Accounting for non-independent detection when estimating abundance of organisms with a Bayesian approach. Methods in Ecology and Evolution 2:595-601.

Reynolds III, J. E., I. Morales-Vela, I. Lawler, and **H.H. Edwards**. 2012. Utility and design of aerial surveys for sirenians. Pages 186-195 *in* E. Hines, J.E. Reynolds III, A.A. Mignucci-Giannoni, L.V. Aragones, and M. Marmontel, editors. Sirenian Conservation: Issues and Strategies in Developing Countries. University of Florida Press, Gainesville.

Wong, A.W., R. K. Bonde, J. Siegal-Willott, M. A. Stamper, J. Colee, J. A. Powell, J. P. Reid, **C. J. Deutsch**, and K. E. Harr. 2012. Monitoring oral temperature, heart rate, and respiration rate of West Indian manatees (*Trichechus manatus*) during capture and handling in the field. Aquatic Mammals 38:1-16.

FWC authors in ***bold typeface****.*

Mote Marine Laboratory Manatee Research Projects

research activities

The Legislature annually appropriates $325,000 from the Save the Manatee Trust Fund for the Manatee Research Program at Mote Marine Laboratory (Mote). The following projects were funded in FY 2011-2012:

- Photo-Identification and Genetic Sampling Studies of Manatees in Southwest 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 FWC and USGS; 2) continue field work to perpetuate the long-term photo-identification and other data collection efforts in southwest Florida; and 3) contribute to genetic sampling of wild manatees.

- Manatee Rescue and Verification—Mote is 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.

- Effects of Cold Stress on Manatees and Conservation Applications of Biomarkers—Mote initiated the use of several biomarkers for Florida manatees with the goal to develop appropriate baselines for normal assay levels in order to better understand the effects for stressed manatees. Ongoing goals include using selected biomarkers to assess effects of cold stress in manatees; assess rehabilitation time requirements for cold-stressed manatees; and to shed light on impacts of cold stress on exposed manatee populations.

- Aerial Surveys—Mote collaborated with FWC to fly aerial surveys of manatees.

- Program Oversight—The program leader is responsible for periodic reports, coordination with state scientists and managers for activities associated with manatee recovery planning, and oversight of manatee research projects conducted by Mote.

Manatee Forum

management activities

In 2004, FWC and the USFWS established the Manatee Forum, a diverse stakeholder group with the goal of reducing litigation by establishing areas of common ground, identifying problems or conflicts, developing potential solutions, and accepting differences through increased communication. During FY 2011-2012, the Manatee Forum met twice, once in October and once in April. During the October meeting, research updates were provided and the April meeting focused on state and federal agency actions, and legislative updates from the forum members. FWC believes in the importance of having a stakeholder group focused on manatee issues. The opportunity for information exchange and the discussion of ideas is very valuable to all parties.

Winter manatee aggregation

Manatee Protection Plans and Permit Reviews

management activities


Dinner Key Marina

FWC reviews proposed development projects and provides biological opinions to State regulatory agencies for Environmental Resource Permits, Sovereign Submerged Land Leases, State Clearinghouse projects, and Developments of Regional Impact. FWC is also heavily involved in the development and implementation of county-specific Manatee Protection Plans (MPPs), and provides comments concerning manatees for various types of planning documents such as county Comprehensive Plans. See Chapter 7, "Management Actions," in the Florida Manatee Management Plan for further details about these programs (p. 45 for Permit Review and p. 49 for MPPs).

FY 2011–2012 highlights

- FWC reviewed and provided opinions on 397 requests for comments regarding potential adverse impacts to manatees for the Department of Environmental Protection (DEP), the Water Management Districts (WMDs), the State Clearinghouse, the Department of Economic Opportunity, the Florida Department of Transportation, Florida ports, the Army Corps of Engineers, and the USFWS.

- Effective July 1, 2011, section 403.813(3), F.S. included a maintenance dredging exemption for ports, provided the work will not violate the protections for manatees under section 379.2431(2)(d) F.S. FWC worked with Port Canaveral, Port Everglades, the Tampa Port Authority, the Port of Palm Beach, the Port of Panama City, and the Port of Pensacola in drafting appropriate conservation measures that each port should follow to reduce the impacts to manatees.

- FWC provided opinions on how to offset expected impacts to manatees for permitted port projects, including the Port of Miami's Phase III expansion and cruise terminal J, Port Canaveral's Deepening and Widening Project and West Turning Basin Project, dredging modifications in both Port Everglades and Port of Palm Beach, Port of Panama City's Deepening Project, Tampa Port Authority's dredging of berths 151, 152, and 222, and several Jacksonville Port Authority dredging projects.

- Thirty boat facilities coordinated with FWC for manatee education materials or manatee informational signs. Manatee watch plans were reviewed and approved by FWC for six projects with in-water work in manatee habitat.

- Staff provided technical assistance to the USFWS on several marine events, including the Sailfish Regatta high speed boat race (Stuart) and the Red Bull Flugtag event (Miami).

- FWC participated in a Continuous Improvement Process with the Northeast District of DEP to improve the permit review process. Staff also provided agency-wide comments for another DEP effort to streamline its permitting process by developing a list of anticipated questions applicants could expect when applying for single-family docks.

- Work continued on several Florida Manatee Management Plan tasks, including the development of a new manatee informational brochure for marinas and guidance for developing an MPP. Blasting guidelines and conservation measures have become more standard and have been incorporated into blast and watch plans submitted by applicants. This has resulted in time savings during the permitting process.

- In July 2011, a manatee death (MSE1157) occurred during a dredging project in a Miami-Dade canal, associated with bridge construction. The necropsy report concluded that the cause of death was from injuries sustained by the backhoe dredge. This incident occurred even though observers were present and the standard manatee construction conditions were being followed. Circumstances surrounding the event, such as the narrowness of the waterway, clarity of the water, and configuration of floating work barges have been investigated by FWC and the USFWS. Additional conservation measures are being developed to reduce the possibility of a similar incident occurring in future.

- **Charlotte County:** FWC is partnering with the County to help develop and draft a MPP. County staff has drafted five sections and FWC continues to develop the manatee data analysis section of the plan. Additional boater access information is being collected. Once these efforts are complete, the boat facility siting portion of the plan can be developed.

- **Duval County:** All portions of the MPP have been revised and are in various levels of review by the County, FWC, and the USFWS. A complete draft may be ready for public comment in late 2012.

- **Lee County:** Lee County initiated a new process to help clarify and resolve MPP compliance issues. This new process was outlined in a memorandum from the County, requesting FWC support and approval. The agency concurred with this new process in October 2011.

- **Sarasota County:** The 2011 revisions to the County's MPP were approved by FWC in October 2011.

Manatee Protection Zones

management activities

Biscayne Bay

FWC establishes manatee protection rules, including boat speed zones and restricted access areas, and administers activities related to these rules. Staff evaluates data and develops proposed rules for consideration by the FWC Commissioners and also reviews and comments on local manatee protection ordinances developed by city and county governments. (See Chapter 7, "Management Actions," p. 36, Florida Manatee Management Plan)

FY 2011–2012 highlights

- **Broward County** (68C-22.010, FAC): The Florida Manatee Management Plan identifies this rule for review. Most FWC work to review this rule occurred during FY 2010-2011 but the action was completed in FY 2011-2012. A proposed rule was published in March 2011 and FWC staff conducted a public hearing in Pompano Beach in April. A Statement of Estimated Regulatory Costs was completed in July. In September 2011, the FWC Commissioners approved the rule amendments with one change, so a Notice of Change was published later in the month. The rule amendments were filed for adoption in October 2011.

- **Flagler County and St. John's County** (68C-22.028, FAC): The Florida Manatee Management Plan identifies coastal Flagler County and coastal St. Johns County for consideration of new manatee protection zones. FWC review began in late 2009 and was completed in FY 2011-2012. A rule for St. Johns County was deemed to be unnecessary at this time; however, following substantial work with Flagler County and others during FY 2010-2011 and early FY 2011-2012, a proposed rule for coastal Flagler County was considered by the FWC Commissioners in November 2011 and published in February 2012. FWC staff conducted a public hearing in Bunnell later that month. A Statement of Estimated Regulatory Costs was completed in March. In May 2012, the FWC Commissioners conducted the final public hearing and approved the rule. The rule was filed for adoption in late May 2012.

- **Collier County** (68C-22.023, FAC): The Florida Manatee Management Plan identifies this existing rule for review. FWC began reviewing new and old data and other information in late 2010. Identification and evaluation of areas that may warrant consideration for possible changes is ongoing.

- **Pinellas County** (68C-22.016, FAC): The Florida Manatee Management Plan identifies the western portion of the county for consideration of new manatee protection zones. FWC had new boat and manatee data to use in the review along with other data. Identification and evaluation of areas that may warrant further consideration for potential speed zones is ongoing.

- **Indian River County**: FWC staff assisted the County with its efforts to consider a local manatee protection ordinance in the vicinity of the Oslo boat ramp. Staff coordinated with the County and the USFWS to review data and discuss options. Comments on the ordinance were provided in December

2011, and July 2012. In addition, collection of boating data began in December 2011, and will be completed November 2012, to be used for future county-wide rule review.

- **Volusia County:** Collection of boating data for Volusia County began in December 2011 and will be completed until November 2012. The data will be used for review of the County rule in the future.

- **Regulated Areas**: FWC staff continued work to combine county-specific GIS maps of FWC manatee protection and boating safety zones and USFWS manatee protection zones to calculate acres of water and total regulated area by county. Work was completed for Broward, Flagler, Miami-Dade, Palm Beach, and coastal Volusia counties. This work may eventually allow production of maps that combine all zone types.

Variances and Waivers: The variance and waiver process is governed by section 120.542, F.S. and Chapter 28-104, FAC. FWC received one request for a variance from manatee protection rules during the fiscal year. In January 2012, FWC received a request from Speedway Group for a variance allowing higher speeds in a portion of Duval County for a high speed marine event being considered for the downtown Jacksonville area. Because the applicant withdrew the request in early February 2012, no review was done and a Notice of Receipt was not published in the Florida Administrative Weekly.

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. Most of these permits are for commercial fishing or professional fishing guide activities. There are typically 150–200 of these permits in effect at any given time. FWC worked on five requests for other types of permits during the fiscal year.

- In October 2011, Golder Associates requested a permit to access the safe haven zone at the Riviera Beach power plant in Palm Beach County in order to conduct thermal monitoring associated with the repowering of the plant. After requesting and receiving additional information, a permit was issued in November 2011.

- In January 2012, Nova Southeastern University requested a permit to access the safe haven zone at the Port Everglades power plant in Broward County in order to conduct manatee research. After requesting and receiving additional information, a permit was issued in February 2012.

- In March 2012, Mote Marine Laboratory requested a modification to its 2010 permit allowing higher speeds in portions of Manatee and Sarasota counties associated with dolphin captures pursuant to a federal permit. The modification would add several new areas in Sarasota County that were part of the 2010 amendments to the rule for that county. A modified permit was issued in May 2012.

- In May 2012, Harbor Branch Oceanographic Institute requested a permit to allow higher speeds in several east coast counties associated with dolphin captures pursuant to a federal permit. After requesting and receiving additional information, a permit was issued in June 2012.

- In June 2012, Chappell Group requested a permit to access the safe haven zone at the Port Everglades power plant in Broward County in order to conduct pre-project monitoring for a planned mangrove mitigation area associated with Port expansion. After requesting and receiving additional information, a permit was issued in July 2012.

Habitat Characterization, Assessment and Protection

management activities

Fanning Springs

The long term conservation of manatees relies on having enough healthy, suitable habitat available throughout their range in Florida. Human-related activities over time have resulted in habitat degradation, reduced water quality, and decreased spring flows. These activities have caused loss of seagrasses – the manatee's primary food. Reductions in the flow of warm spring waters, threaten significant natural warm-water refuges. Anticipated operational changes at power plants and future power plant retirements also pose threats to established artificial warm-water refuges. Understanding the manatee's habitat needs and habitat carrying capacity and assuring habitat health and stability is a primary focus of habitat protection programs. (See Chapter 7, "Management Actions," p. 55 Florida Manatee Management Plan)

FY 2011–2012 highlights

- FWC worked with Florida Power and Light (FPL) to ensure that the interim warm-water refuges that are being used during the conversions of the Cape Canaveral and Riviera Beach power plants provided the necessary refuge to manatees. This was the second winter of a three winter conversion process at the FPL Cape Canaveral Energy Center and the first of three winters at the FPL Riviera Energy Center. At each plant manatee distribution data were collected via aerial surveys and manatee movement data were collected from satellite tagged manatees for Cape Canaveral. These data will provide information regarding how manatees responded to the changes in warm water availability during the winter season. Daily health assessments at the interim warm-water refuges were conducted to monitor manatees for cold-stress symptoms. In addition to these two FPL plants, FWC staff began drafting recommendations for the Conditions of Certification for the modernization of the FPL Port Everglades plant slated to begin next year.

- At a meeting in September 2009, FWC, USFWS, DEP and The Nature Conservancy began developing a restoration plan for Fanning Springs (Levy County) that would remove eroded sediments from Fanning Springs run, increase available warm-water habitat for manatees and provide manatee access to the spring run during all river stages. In January 2012, this project was completed by removing 500 cubic yards of eroded sediments from the spring run. Post project observations of manatee use of Fanning Springs indicate that the restoration project achieved its goals of restoring the spring run and in turn, improving warm-water habitat for manatees. Less than a month after completion of the project, Fanning Springs' State Park staff recorded an all-time high count of 21 manatees in the spring run.

- FWC is working with the WMDs in the development of Minimum Flows and Levels (MFLs) for spring systems that provide warm-water habitat for manatees. MFLs for Volusia Blue Spring, Manatee Springs (Levy County), Fanning Springs, and the Weeki Wachee Spring system (Hernando County) have all been developed using criteria to protect winter warm-water manatee use. MFLs for the Homosassa River (Citrus County) and the Chassahowitzka River (Citrus County) were reviewed by FWC and are still being finalized. FWC is working with The Nature Conservancy and the USFWS to identify and complete restoration and enhancement projects for Florida springs systems that will improve manatee access to natural warm-water habitat. Salt Creek (Sarasota County) and the spring run for Lithia Spring (Hillsborough County) are currently being analyzed for potential restoration efforts.

- FWC staff participated on the Springs License Plate Funding Technical Advisory Committee, which directs Springs license tag funds toward springs conservation projects.

- FWC worked with staff from the St. John's River WMD and the University of Florida to monitor the effects of a prolonged algal bloom in the Indian River Lagoon, Mosquito Lagoon, and Banana River systems caused in part by persistent high salinity conditions. The bloom reduced the available seagrass forage for manatees in the affected systems, and manatees responded by moving to areas where the effects of the bloom were less pronounced. Monitoring of these systems for recurrent blooms and responses by manatees to these bloom conditions will continue.

- FWC continued working to address the protection of Florida's seagrass resources. These efforts have provided seagrass protection protocols and recommendations for coastal construction permits as well as initiating restoration and monitoring projects.

- FWC assisted in conducting seagrass surveys throughout the Big Bend region of Florida, specifically in St. George Sound (Franklin County), St. Andrews Bay (Bay County) and St. Joe Bay (Gulf County).

- FWC worked to control invasive, nonnative aquatic plants and encourage the establishment of native species, particularly in springs systems used by manatees. This is achieved by participation on various aquatic plant working groups. This year FWC revitalized the Blue Spring Aquatic Plant Working Group. This interagency group worked together to formalized the invasive aquatic plant management plan, addressing warm and cold season treatment activities and related protection measures for manatees.

- FWC participated in interagency coordination through the Kings Bay Working Group with efforts aimed at the continued conservation and restoration of submerged aquatic and emergent vegetation in Kings Bay (Citrus County).

- Manatees can be killed in water control structures and navigation locks. FWC works with agencies responsible for these structures to eliminate these types of deaths. Two manatees died in 2011 as a result of

interactions with a water control structure. These deaths increase the overall total of water control structure–related deaths to a total of 200 since 1974. The average annual number of structure-related deaths before retro-fitting structures with manatee protection devices was 6.2 manatees per year from 1974-2000. That number has decreased to a post-retrofitting average of 2.9 manatees per year (2001-2011). The Moore Haven Lock (Glades County) is the only remaining water control structure requiring the installation of a manatee protection device and this structure is scheduled to be retrofitted during the summer of 2012. Overall, coordinated efforts are having a significant influence on reducing structure-caused mortality at retrofitted structures.

- FWC coordinates with the Army Corps of Engineers, the South Florida WMD and the Southwest Florida WMD to address central and south Florida water control structure-related manatee mortality issues through the Interagency Task Force for Water Control Structures. The Task Force meets annually.

Manatees in Homosassa Springs courtesy DEP

Public Outreach

management activities

FY 2011-2012 highlights

Public outreach regarding manatee conservation programs is important so that the public is well informed about manatees and understands the reasons for the various manatee protection activities. Knowledge of manatee habitat requirements, behavior, and general biology can help the public and waterway users understand ways they can reduce human-related risks to manatees.

Routine updates and reprinting of materials is an ongoing task for FWC. Staff reprinted the manatee activity booklet for distribution through the county tax collector offices and other educational outlets. Staff responded to 86 questions about manatee issues from the public and filled 154 requests for printed materials for schools, eco-tour businesses and visitor centers. The "Ask FWC" service on the agency's website which provides automatic answers to commonly asked questions had 6,311 hits for manatee-related information. In keeping up with today's social networks, staff compiled manatee information for an iPhone app and contributed information to the agency's Facebook page and Twitter feeds.

FWC manatee brochures are distributed at the Miami Zoo

Appendix

Appendix A: Acronyms and Abbreviations
Appendix B: Boat Speed Definitions
Manatee License Plate and Decal Program

Appendix A:
Acronyms and Abbreviations

°C — degrees Celsius
cm — centimeters
Commission, Commissioners — members of the FWC Commission
DEP—Florida Department of Environmental Protection
DTAG — Digital Acoustic Recording Tag
°F — degrees Fahrenheit
FAC — Florida Administrative Code
FPL – Florida Power and Light Company
F.S. — Florida Statutes
FWC — Florida Fish and Wildlife Conservation Commission
FY — Fiscal Year
GIS — Geographic Information System
GPS — Global Positioning System
kg — kilogram
m – meter
MFL — Minimum Flows and Levels
MIPS — Manatee Individual PhotoIdentification System
MMPL — Marine Mammal Pathobiology Laboratory
Mote — Mote Marine Laboratory
MPP — Manatee Protection Plan
NOAA Fisheries Service — National Oceanic and Atmospheric Administration, National Marine Fisheries Service
Plan — Florida Manatee Management Plan
Trust Fund — Save the Manatee Trust Fund
USFWS — U.S. Fish and Wildlife Service
USGS — U.S. Geological Survey
WMD— Water Management District

Appendix B:
Boat Speed Definitions

All boat operators must comply with posted signs

S = Spanish - Español
F = French - Français
G = German

Lowest speed needed to maintain steerage and forward motion. (Speed ~2-3 mph/3-5 kph*)

S: La velocidad más lenta que se necesita para mantener gobierno.
F: Vitesse la plus basse nécessaire pour maintenir le steerage et le mouvement avant.
G: Die niedrigste Geschwindigkeit, um das Boot auf Kurs zu halten und vorwärts Bewegung zu machen.

Little or no wake. Vessel must be completely settled in the water. (Speed ~5-7 mph/8-11 kph*)

S: Asentado en el agua, sin surcar, estela mínima que no ponga en peligro a otras embarcaciones.
F: Peu ou pas de sillage. Le bateau doit être complètement arrangé dans l'eau.
G: Das Boot ganz im Wasser mit Kielwasser das nicht andere Fahrzeugen oder Wasser Strasse Benutzeren gefährden.

Resume normal safe speed according to current water traffic conditions.

S: Reanude velocidad normal.
F: Reprenez une vitesse sûre selon des états de transport par voie navigable.
G: Fangen Sie eine sichere geschwindigkeit an.

***Note: The specific speed may vary with the size and hull design of the vessel.**

Florida Fish and Wildlife Conservation Commission
MyFWC.com

In an emergency:
Wildlife Alert: 1-888-404-FWCC (3922)
Mobile: #FWC, *FWC VHF Radio: Channel 16

Manatee License Plate and Decal Program

Manatee License Plate

The manatee license plate was created in 1990 as per section 320.08058(1)(c), and section 379.2431(4)(d), F.S., to raise funds for manatee research and protection. The manatee license plate generated $1,338,336 in FY 2011-2012. These revenues are deposited in full into the Save the Manatee Trust Fund.

Manatee Decal

Section 328.72, F.S., 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 tax collectors participate by selling decals at their offices. Revenues from the decals support manatee protection efforts such as rescue, rehabilitation, research, and outreach. This year's decal was designed by Bekah Scoville, a high school freshman from Circle Christian High School in Winter Park. She won the FY 2011-2012 manatee decal contest. During FY 2011-2012, 5,200 manatee decals were sold and raised approximately $26,000 for manatee protection.