



FWC Fish and Wildlife Research Institute  
Overview of Programs  
June 18, 2014  
Florida Fish and Wildlife Conservation Commission



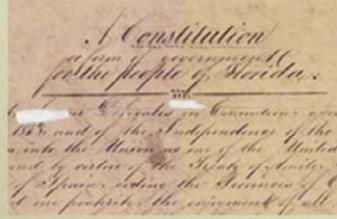
This is an overview of the FWC Fish and Wildlife Research Institute programs.

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Report Date: June 18, 2014

## Fundamental Elements of FWC

- 1998 Constitutional Amendment establishes FWC
- Three fundamental elements identified



*The Commission shall not be a unit of any other state agency and shall have its own staff, which includes management, research, and enforcement.*



The amendment that created FWC specifies three fundamental elements for the agency: management, research and enforcement, often referred to as the “three legs of the stool”.

## FWRI Mission Defined in Statute

- Serve as the primary source of research and technical information and expertise on the status of marine life, freshwater aquatic life, and wild animal life resources in this state;
- Monitor the status and health of marine life, freshwater aquatic life, and wild animal life species and their habitat;
- Develop restoration and management techniques for habitat and enhancement of plant and animal populations;



Florida Statutes Chapter 20.331 in part reads:

- (7) ASSIGNMENT OF DUTIES AND RESPONSIBILITIES.—The commission, and the Legislature as provided in s. 9, Art. IV of the State Constitution, shall assign to the: (a) **Fish and Wildlife Research Institute** such powers, duties, responsibilities, and functions as are necessary to accomplish its mission, which is to:
1. Serve as the primary source of research and technical information and expertise on the status of marine life, freshwater aquatic life, and wild animal life resources in this state;
  2. Monitor the status and health of marine life, freshwater aquatic life, and wild animal life species and their habitat;
  3. Develop restoration and management techniques for habitat and enhancement of plant and animal populations;
  4. Respond to and provide critical technical support for catastrophes including oil spills, ship groundings, major species die-offs, hazardous spills, and natural disasters;
  5. Identify and monitor harmful algal blooms including red tides, evaluate their impacts, and provide technical support concerning state and local public health concerns; and
  6. Provide state and local governments with technical information and research results concerning fish and wild animal life.

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## FWRI Strategic Plan

**FWRI Mission:** *Through effective research and technical knowledge, we provide timely information and guidance to protect, conserve, and manage Florida's fish and wildlife resources.*

**Our Vision:** *Be the leader in providing the scientific foundation for wise management of Florida's fish and wildlife resources.*

### Goals

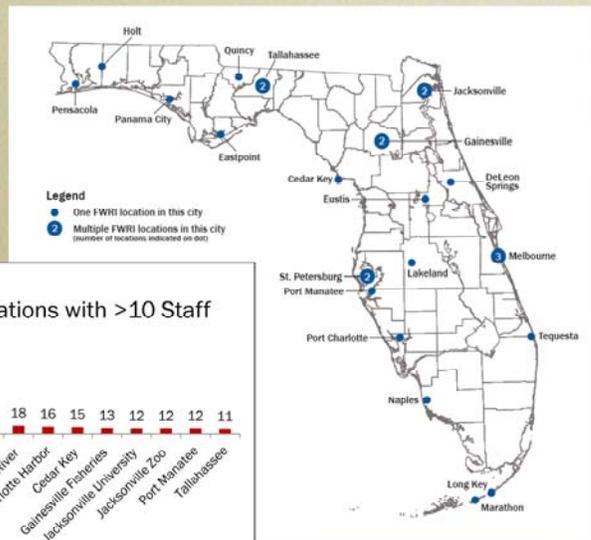
- Align our research priorities with management needs
- Ensure our research is rigorous, efficient and that it produces useful results
- Provide targeted products and services on a timely basis
- Sustain an infrastructure that supports our mission
- Promote excellence at the individual, project and program level



The FWRI strategic plan outlines our mission, vision and goals in support of science-based natural resource management.

## FWRI Locations

- ~670 Staff
- 28+ Locations
- 450+ Active Projects



FWRI consists of approximately 670 staff based at more than 28 locations statewide. Locations with more than 10 full time staff are listed in the inset graphic. FWRI headquarters is located in St. Petersburg.

14% of staff are associated with business or operational functions (budget, grants, purchasing, clerical, facilities and lab maintenance, safety, etc.)

86% of staff are associated with scientific and technical functions (biologists, chemists, ecologists, GIS Specialists, computer programmers, statisticians, etc.)

## FWRI Projects Range Significantly in Size and Scope

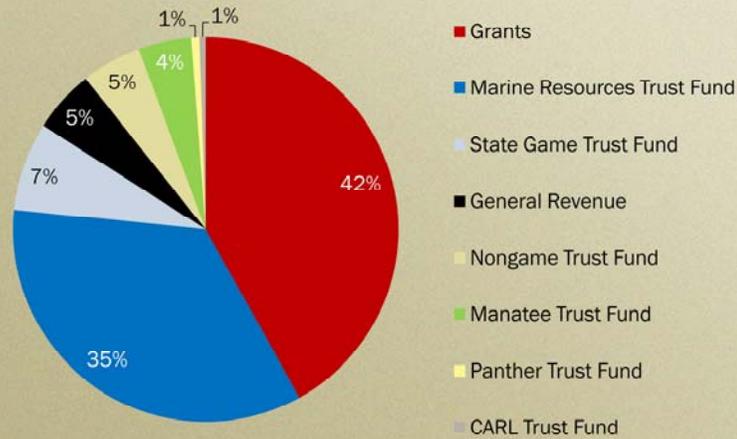
- Marine Fisheries Independent Monitoring consists of over 50 staff located at 9 locations statewide with an annual budget of \$7.1 million
- Endangered grasshopper sparrow projects conducted by 3.6 staff with an annual budget of \$43,000. Focused on Three Lakes Wildlife Management Area in Osceola County



FWRI projects vary significantly in size and scope. For example, the Marine Fisheries Independent Monitoring consists of over 50 staff located at 9 locations statewide with an annual budget of \$7.1 million, while grasshopper sparrow projects consist of 3.6 staff (60% of an FTE and 3 seasonal field technicians) and an annual budget of approximately \$43,000.

Regardless of project size, FWRI projects are almost always collaborative in nature and involve multiple partnerships. For example, the grasshopper sparrow is collaborative among FWC, the Florida Department of Environmental Protection; U.S. Fish and Wildlife Service; Avon Park Air Force Range; University of Florida; University of Central Florida; Archbold Biological Station and Tall Timbers Research Station.

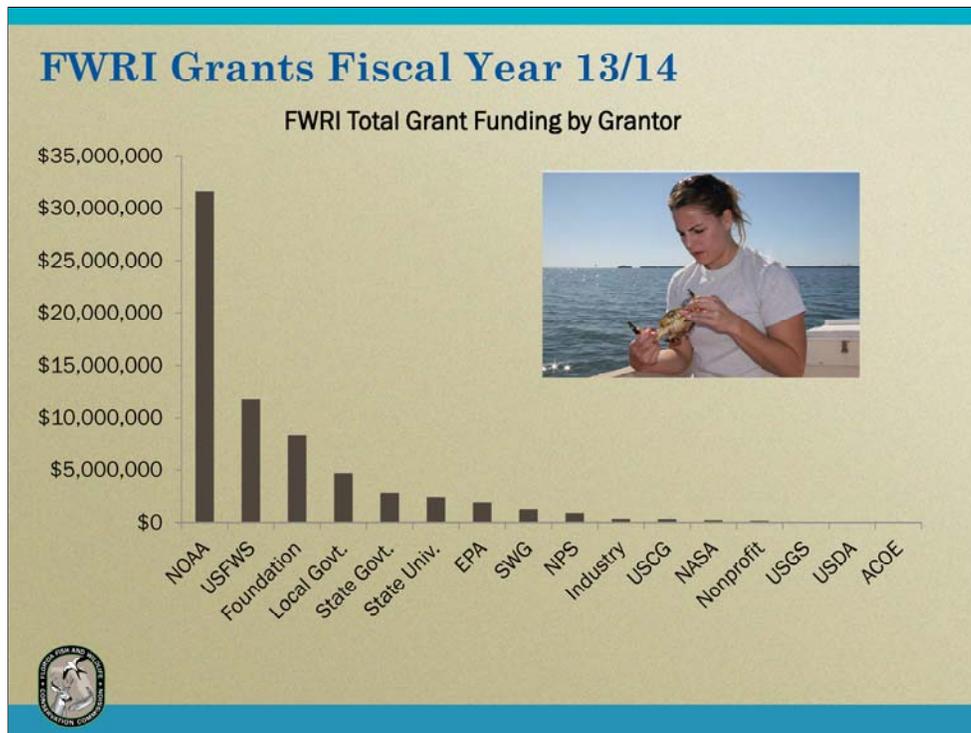
## FWRI Budget Fiscal Year 13/14



•Total Budget \$50,122,000



FWRI's funding is diverse, coming from six different trust funds with revenue derived from hunting and fishing licenses, specialty license plates, user fees, and other sources. Research and monitoring activity is heavily funded by grants which make up more than 40% of the annual budget.



FWRI currently has more than 200 grants on its books for the current fiscal year, many of them multi-year in duration. The graphic lists the total amount of grant funding by granting entity. Total grants on the books currently total >\$66.5 million.

Revenue grants awarded to FWRI contribute over \$2.2 million annually to the administrative functions of FWC through overhead assessments.

- NOAA**            **National Oceanic and Atmospheric Administration**
- USFWS**        **US Fish and Wildlife Service**
- Foundation**    **Various Foundations (National Fish and Wildlife Foundation, Wildlife Foundation of Florida, etc.)**
- Local Govt.**    **County or City in Florida**
- State Govt.**    **State Agency other than FWC**
- State Univ.**    **State University**
- EPA**            **US Environmental Protection Agency**
- SWG**            **State Wildlife Grants (via Habitat and Species Conservation)**
- NPS**            **National Park Service**
- Industry**        **Private Partners**
- USCG**          **US Coast Guard**
- NASA**          **National Aeronautics and Space Administration**
- Nonprofit**      **Various Nonprofit Entities**
- USGS**          **US Geological Survey**
- USDA**          **US Department of Agriculture**
- ACOE**          **US Army Corps of Engineers**

## Prioritizing Research within FWC

- Includes both those collecting and interpreting the data/information and those who benefit from the information
- Objectives of the science are tied to specific questions framed by managers and deemed “answerable” by the researchers
- ID and prioritize needs that can best be addressed thru enhanced partnerships, volunteer programs or external funding



Research prioritization within FWC occurs through a number of mechanisms (teams, management plans, granting strategies, etc.) that all focus on a collaborative partnership between researchers generating information and managers applying that information to specific issues or needs. Special emphasis is placed on leveraging partnerships and volunteer participation.

FWRI has a rigorous research approval process, requiring section leader and director level approval, for all grant proposals and major state-funded activities that ensures the work proposed or conducted is high quality, relevant to management needs and objective.

## FWRI Programs



Freshwater Fisheries Research



Marine Fisheries Research



Wildlife Research



Ecosystem Assessment and  
Restoration



Information Science and  
Management



Research Operations



FWRI consists of five major science programs that operate statewide: Freshwater Fisheries Research, Marine Fisheries Research, Wildlife Research (Terrestrial Mammals, Marine Mammals, Sea Turtles, Reptiles and Amphibians, Birds) Ecosystem Assessment and Restoration (includes Fish and Wildlife Health, Harmful Algal Blooms, and Habitat Research), Information Science and Management (includes statistical and modeling support, analytical mapping support, data management and oil spill response). Research Operations houses the administrative, business and facilities functions of the Institute.

The remainder of the presentation will present a sample of case studies that demonstrate strong integration between science and management within FWC.

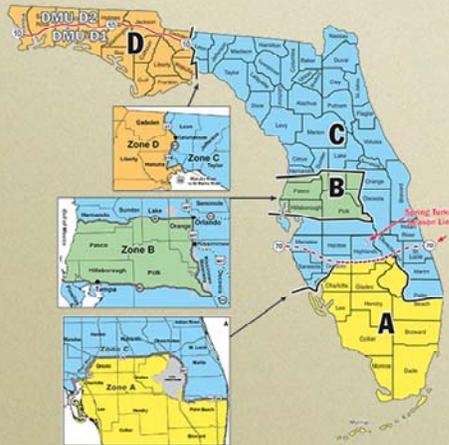
## Case Studies

- Fine-scale refining of harvest regulations
- Volunteer Support Networks
- Wildlife/Public Health Interactions
- Long Term Status and Trends Monitoring



## White-Tailed Deer Breeding Chronology

- Timing of breeding activity varies significantly across the state
- Management goals needed to maximize hunter success while minimizing mortality of females with dependent young
- Samples collected from >500 deer between 2009-2013



In recent years, hunters voiced concerns about seasons in some areas not lining up properly with breeding activity (aka timing of the rut). It is well known that timing of the rut varies in Florida by as much as seven months. Managers needed more accurate data on the timing of the rut statewide to maximize hunters success rate and minimize the harvest of females with dependent young.

To help managers find answers, FWRI researchers studied white-tailed deer breeding from 2009 to 2013 in areas where little was known about breeding activity and areas where hunters voiced concerns. The primary study area encompassed Northwest Florida from the Alabama-Florida border to Madison and Taylor counties. Researchers also sampled sites in southern and central Florida, including sites in Pasco and Lake counties. They conducted necropsies (animal autopsies) of more than 500 female deer, including those that were harvested by hunters. Researchers recorded their age, estimated breeding date for those that were pregnant and assessed the deer's general physical condition.

Data collected from this study informed regulatory changes associated with deer seasons and hunting zones (aka Deer Management Units) to consistent with management objectives.

## Sea Turtle Nesting Survey: Volunteer Action

- FWC coordinates nest counts on 207 beaches (810 miles)
- Documents abundance, distribution and trends of 5 species of sea turtles; loggerhead population *globally* significant
- 2013 nesting survey results:
  - 77,975 loggerhead
  - 36,195 green turtle
  - 896 leatherback
  - 4 Kemp's ridley
  - 1 hawksbill



<http://myfwc.com/research/wildlife/sea-turtles/nesting/nesting-atlas/>

Florida beaches are among the most important nesting areas for sea turtles in the world. FWC sea turtle research staff, who number about a dozen, cannot possibly survey 207 beaches covering more than 800 miles. For many years, FWC has coordinated a massive network of volunteers (currently over 2100) to survey nesting beaches. This nesting data is a critical data need for sea turtle management throughout the range of wide-roaming species.

In 2013, FWC volunteers documented over 100,000 nests associated with five different sea turtle species.

## Pufferfish Poisoning: Indian River Lagoon

- In 2002, 19 cases of pufferfish poisoning reported from fish caught in the Northern Indian River Lagoon
- Chemical analyses of fillets in NJ case and urine from 5 patients confirmed Saxitoxin, a toxin produced by algae
- FWRI determined pufferfish species responsible, algal species producing the toxin
- Worked closely with health departments to minimize human risk and eventually ban harvest of pufferfish from certain counties



*Pyrodinium bahamense*



In 2002, FWC received a number of reports through county health departments that persons were becoming ill after consuming pufferfish. Symptoms included nausea and vomiting, tingling and numbness of the mouth, lips and tongue, paralysis of the extremities and difficulty speaking. All individuals eventually recovered, although one elderly woman had to be placed on a ventilator. Samples of uneaten pufferfish were only available in one case and those fillets were determined to contain saxitoxin (a natural toxin produced by algae) at over 70 times the FDA regulatory limit. Also 5 patients who became ill tested positive for saxitoxin in their urine. There had been no record of pufferfish poisoning in Florida since 1974. Between 1951 and 1974, seven cases of pufferfish poisoning were reported but no information on the species of fish involved or the type of toxicity was recorded.

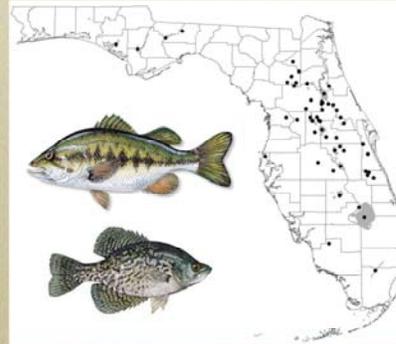
FWC acted quickly in conjunction with health officials to determine which of the several pufferfish species present in Florida was involved. Ultimately it was determined that southern puffers were involved in these 19 cases.

FWC scientists collected water samples and isolated and purified algal cultures from these samples. All of these algal cultures tested positive for saxitoxin. Subsequent genetic analyses of the algae identified it as *Pyrodinium bahamense bahamense* (no common name), a species that occurs naturally in both Atlantic and Pacific waters, but up to this point, only the Pacific form was known to produce saxitoxin.

These findings ultimately led to an FWC rule that banned the harvest of pufferfish in Volusia, Brevard, Indian River, St. Lucie, and Martin Counties to protect public health.

## Freshwater Fish Long Term Monitoring Program

- Program initiated in 2006
  - 52 lakes
  - Currently 30 lakes annually (budget reductions)
- Monitoring progress to date:
  - 12,576 sites
  - 1.7M fish records
  - ~180 fish species
  - 159 water bodies



Several FWC FWRI programs conduct long term monitoring programs on key resources. Long term data is critical for science-based management since they allow you to build up enough information to distinguish natural cycles tied to seasonality, wet vs. dry periods, variations in freshwater flow, etc. from changes due to human activity or rare events.

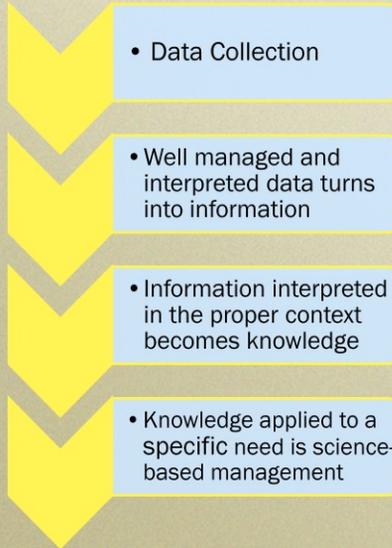
The Freshwater Fisheries long term monitoring program has the following objectives: Determine long-term trends in fish populations of priority water bodies, Identify factors that are influencing long-term trends in fish populations (e.g., water quality/quantity, habitat, biological components). The program consists of scientific surveys (fisheries independent monitoring), creel surveys (fisheries dependent monitoring), habitat Monitoring and water quality monitoring. These data are providing a comprehensive assessment of Florida's freshwater fish communities statewide for the first time.

The monitoring program is designed to be adaptable over time and to provide information that informs management actions (seasons, bag limits, slot limits, etc.) both at the regional and individual lake level.

The program was begun in 2006 on 52 lakes, due to budget constraints we are currently monitoring 30 lakes.

## Implementing Science Based Management

- Requires close partnership between researchers and managers throughout planning and implementation
- Infrastructure needs to be built to handle field collection, data management, analysis and reporting up front
- Ultimate goal is to turn data into knowledge



## For Further Information:



<http://research.myfwc.com>



<https://www.facebook.com/FWCResearch>



<https://www.flickr.com/photos/myfwc/sets/>



Additional information can be found in the Annual FWC Programs Document, available at <http://research.myfwc.com> and on our facebook and flickr photo sharing sites.