

Management of Florida's Freshwater Fisheries



Staff Report
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Florida Fish and Wildlife Conservation Commission

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This is a brief overview of the management of Florida's freshwater fisheries and Division of Freshwater Fisheries Management (DFFM) approach to managing through internal collaboration and public engagement.

Objectives:

- Brief overview of freshwater resources
- Describe how we assess freshwater fisheries
- Current status of statewide fisheries
- Successes and challenges
- Resource specific management plans



Florida's Diverse and Abundant Freshwater Resources



- Lakes/Reservoirs (3 million acres)
- 8,000 named lakes
- Rivers (12,000 miles)
- Canals and marshes
- Urban park lakes/ponds
- Residential ponds
- Mined pits and reclaimed lakes
- Provide benefits to multiple user groups and species



Florida offers a diversity of freshwater experiences – our lakes, rivers and springs provide unique opportunities for fishing, boating, hunting, and wildlife viewing. Freshwater resources have tremendous ecological significance and regardless of the type of waterbody, the public holds value of that resource (social, cultural, and economic).

Sustaining Fisheries Values

- Ecological
 - Lakes and rivers that benefit all fish, wildlife, and people
- Economic
 - 1.2 million freshwater anglers
 - 25.7 million days fishing
 - \$1.7 billion = 14,000 jobs
- Social
 - Providing positive alternatives for communities, families, and youth that adds to the quality of life for all of us



Our bass fisheries provide significant value to our state. Management for quality bass fisheries serves as an umbrella that provides benefits for a wide variety of things.

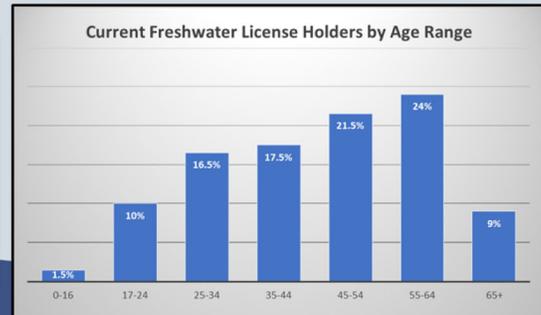
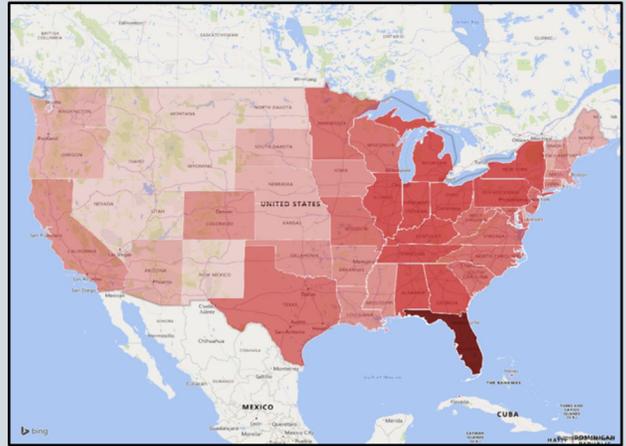
Ecological benefits: Ensuring healthy lakes and rivers benefits many species of fish and wildlife as well as trophy fisheries. Providing necessary habitat and harvest protection to produce high quality bass fisheries benefits lake, river, wetland, and watershed conservation.

Economic benefits: Documenting and increasing the economic impacts derived from fishing strengthens local economies, funds fisheries and lake management programs, and drives tourism and angling-related businesses. National professional bass fishing tournaments have huge economic impacts. Enhancing Florida's reputation will draw these events to our smaller towns and cities. These events garner worldwide attention attracting non-resident anglers to Florida throughout the year. Healthy lakes with vibrant fisheries also enhance property values and development potential, while justifying the need for sustainable development practices to protect aquatic resources into the future.

Social benefits: Communities benefit from a higher quality of life resulting from family and youth involvement in fishing. Programs such as Hooked on Fishing Not on Drugs[®] have successfully reduced the potential for youth attraction to dangerous lifestyles (www.futurefisherman.org/programs/hofnod/index.html). Encouraging youth and families to get outside and enjoy fishing improves health by reducing the potential for obesity and other threats to public health.

Freshwater Anglers

- Florida attracts anglers from every state in the U.S.
- Within Florida, our resident anglers encompass all 67 counties
- There are 990,000 licensed freshwater anglers

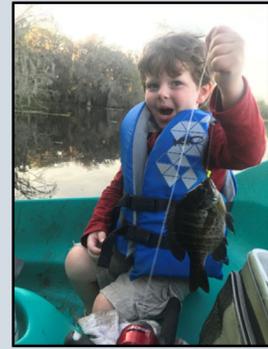


Florida attracts anglers from every state in the nation, reinforcing its title as the Fishing Capital of the World.

- 85% of our freshwater license holders are Florida residents, with 15% non-residents.
- 78% of licensed freshwater anglers identify as male with 22% identifying as female.

We have approximately 990,000 current Freshwater License Holders and approximately 1.2 million people that participate in freshwater fishing.

White males are the predominant demographic, especially those in their mid-forties to mid-sixties. As this graph shows, we do have a grouping of younger generations that are involved in freshwater fishing and as an agency, we are continuing to recruit new anglers through a variety of programs.



Florida is the bass fishing capital of the world but anglers are also fishing for other species, such as shoal bass, black crappie, multiple bream species, several catfish species, striped bass, white bass, sunshine bass, and also exotic species.



DFFM Mission:
To manage, enhance and conserve Florida's freshwater aquatic life for public benefit.

Support thriving fisheries and provide healthy habitats

- Fisheries evaluations
- Implement management projects
 - Habitat enhancement
 - Public access
 - Stocking
- Develop regulations
- Form partnerships
- Communications, outreach, and assistance

DFFM works to ensure that Florida's lakes, rivers and streams continue to support thriving fisheries and provide healthy habitats for the many species found throughout freshwater systems. This is accomplished by enhancing habitats, maintaining 80 fish management areas, and stocking desirable sport fish. DFFM coordinates with stakeholders and federal, state and local entities to protect and conserve freshwater resources so they continue to support multiple species. Fisheries management information and strong aquatic stewardship, ethics and ecology messages are communicated through publications, electronic media, youth fishing camps, seminars and events.

DFFM has developed a private-public partnership through the TrophyCatch conservation and marketing program, which uses citizen science to provide valuable information that contributes to the management of Florida's trophy bass fisheries. Special projects such as the high school fishing program and fishing and boating camps encourage responsible fishing practices and help bolster future generations' understanding of and personal investment in the conservation of fish and wildlife resources.

Total Fish Hatchery Production: FY 2017-2018

Florida Largemouth Bass	1,642,403
Striped Bass Hybrid	1,067,442
Bluegill	731,560
Channel Catfish	231,366
Gulf Striped Bass	219,000
Atlantic Striped Bass	127,804
Redear Sunfish	68,668
White Bass	49,000
Black Crappie	49,000
Silversides	40,094
Triploid Grass Carp	1,145
Total:	4,227,482



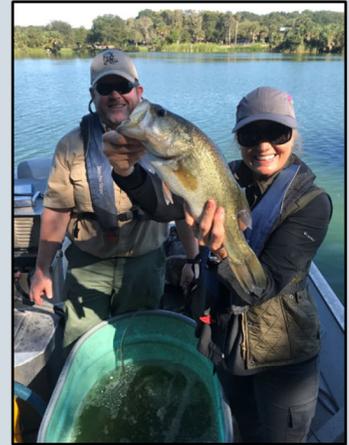
Locations Stocked: 2013-2018



The state also has two freshwater hatcheries: the Florida Bass Conservation Center at Richloam Hatchery and the Blackwater Fisheries Research and Development Center. They produce 3-5 million freshwater fish annually, which are stocked in more than 100 Florida lakes, rivers and community-managed waters. The hatcheries are also involved in research studies related to hatchery techniques, genetics, and in conservation of protected aquatic species.

Data Collection

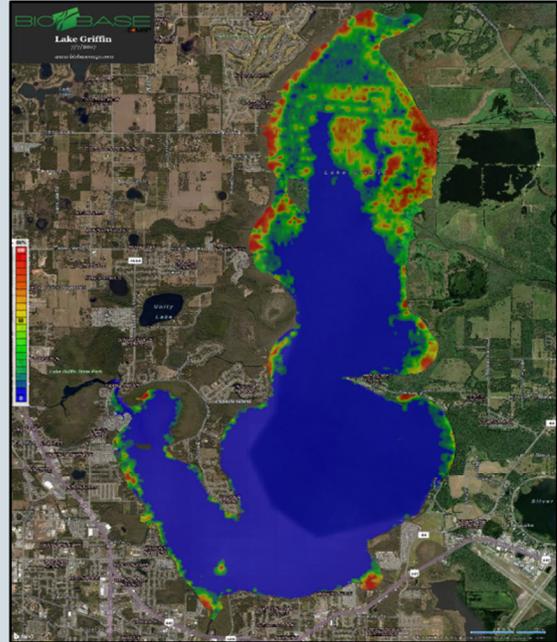
- Fish
 - Blocknets
 - Rotenone
 - Primacord
 - Otter trawls
 - Seines
 - Gillnets
 - Electrofishing



We use a combination of fish sampling methods to help us mitigate the biases of any one method, but by far most of our sampling is electrofishing. It is a good method to determine the relative abundance of most species. Last year we electrofished over 120 separate waterbodies.

Data Collection

- Habitat
 - Vegetation transects
 - Satellite imagery
- Water Quality
 - LAKEWATCH



Aquatic vegetation surveys, done by either transects or satellite imagery help us determine potential habitat management needs. FWRI's Freshwater Fisheries Research Section has been working with a company called BioBase to use satellite imagery to map submersed and emergent vegetation in our Long-Term Monitoring lakes. **This is exciting technology, and we are still working on determining the accuracy of this method in being able to differentiate plant species.** We don't do a lot of water quality investigations, but we work with local environmental resource agencies and WMDs on water quality issues. We also collect water samples on our LTM lakes for the University of Florida's LAKEWATCH program.

Data Collection

- People
 - Creel surveys
 - Bass tournaments
 - Social science
 - Stakeholder engagement

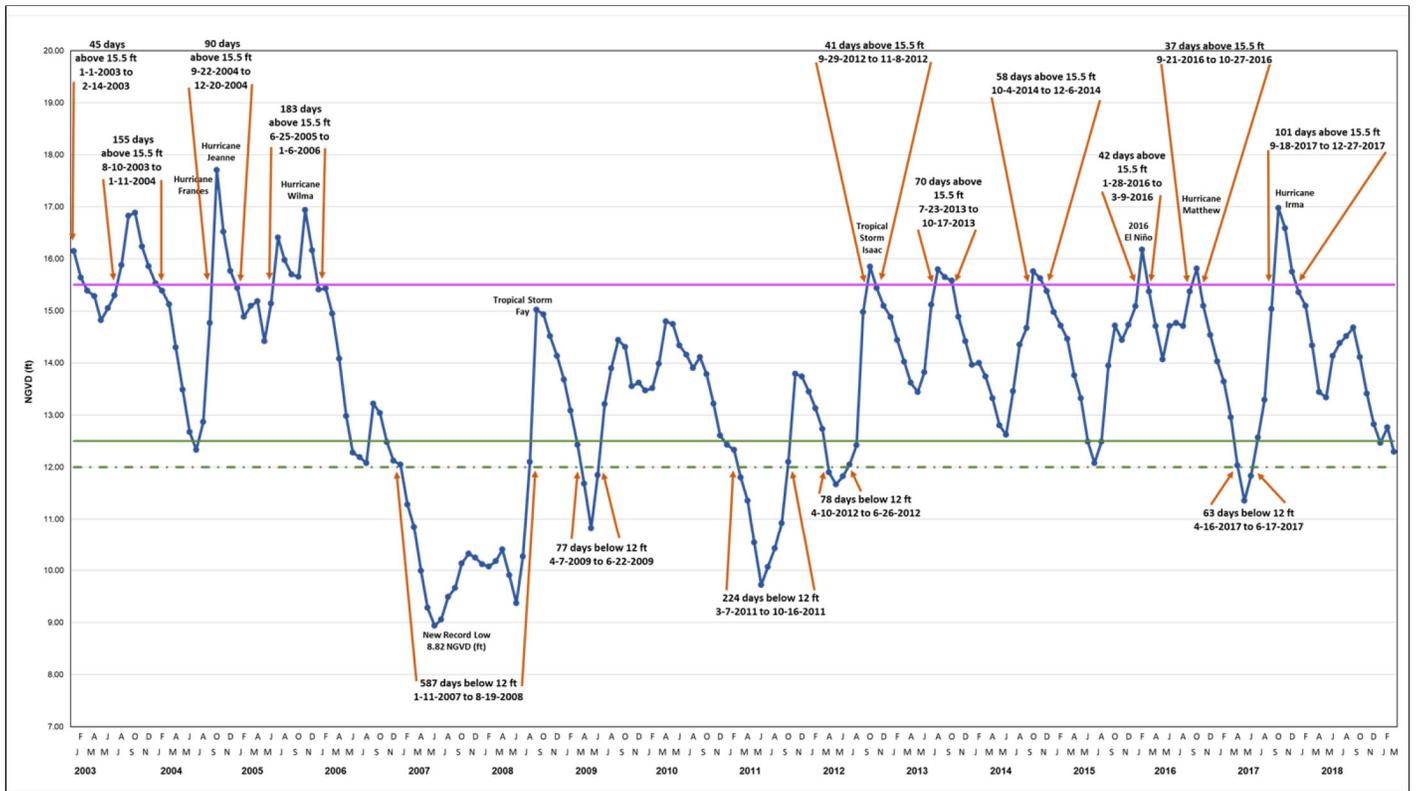


Creel surveys allow us to assess a fishery by giving us estimates of how much effort was spent fishing for each species, numbers of fish caught and harvested, and angler success rates. Largemouth bass is our most sought-after freshwater fish and bass tournaments are not only economically important to Florida, but they provide us additional information about that lake or river's bass fishery. We have become much better at using social science to understand what people want, not just from their fishery, but from their aquatic resources and how they value those resources.

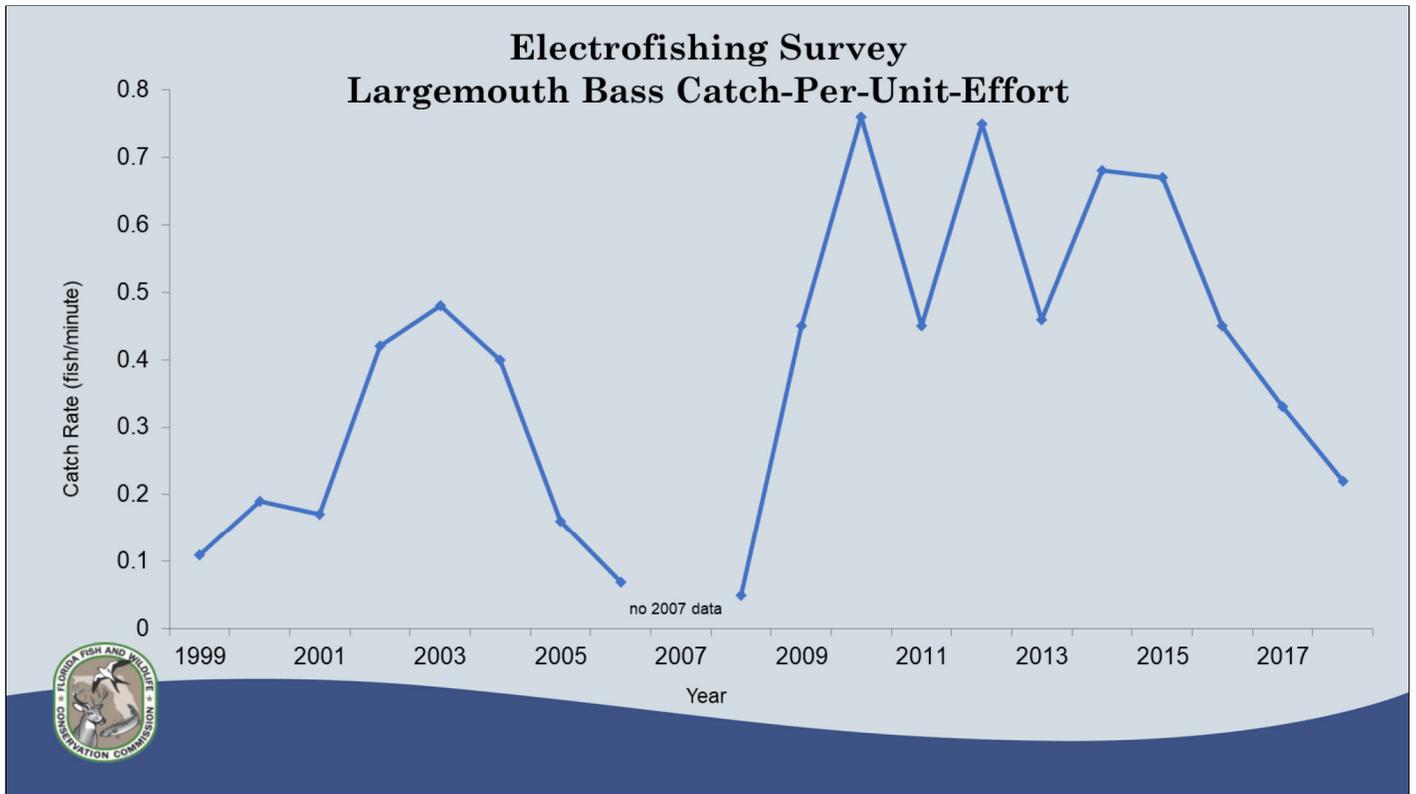
Lake Okeechobee



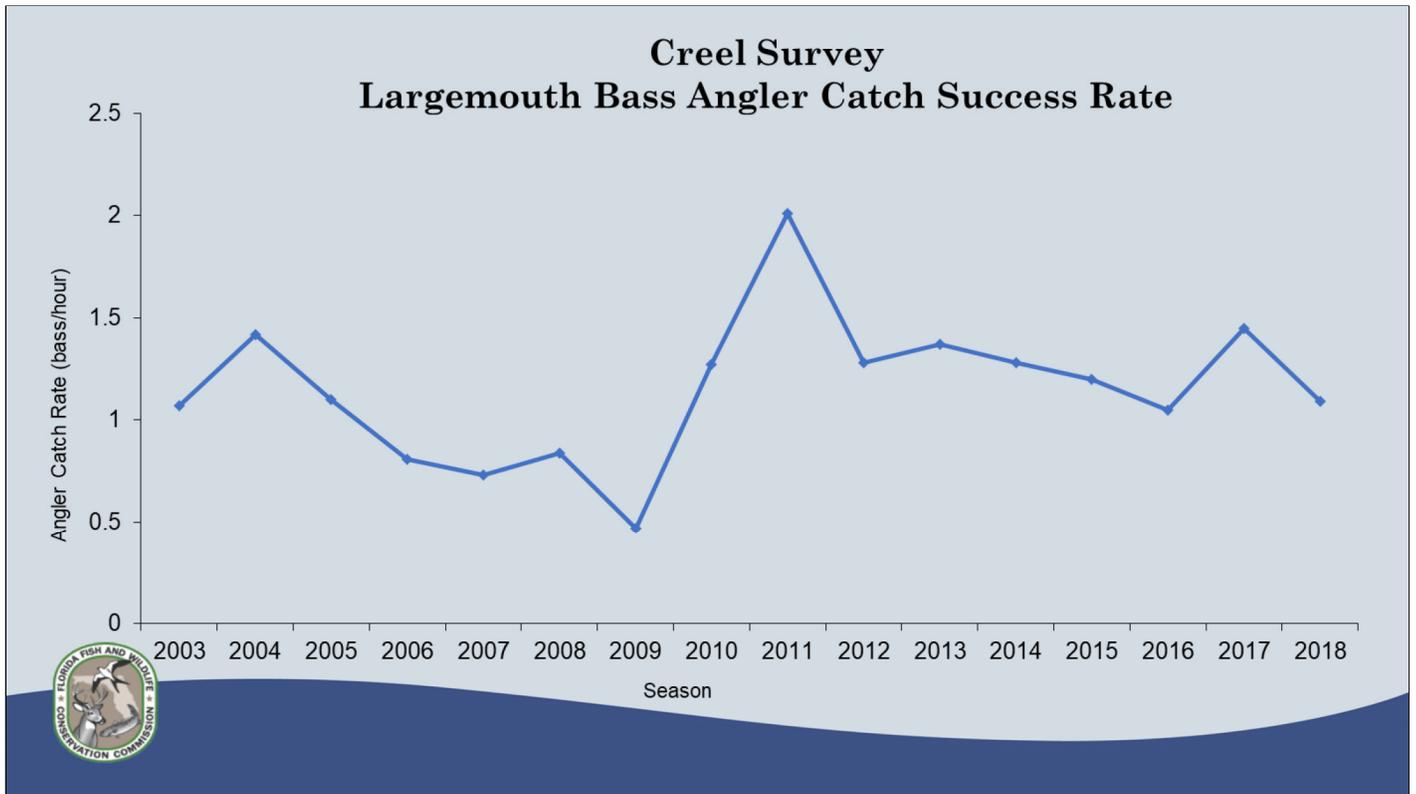
Lake Okeechobee is known worldwide for its largemouth bass and black crappie fisheries.



The current schedule for Lake Okeechobee is 12.5 – 15.5 feet. When the lake gets above 15.5 feet, the water gets too deep for the marsh vegetation and the habitat begins to degrade. Impacts to the fishery are usually seen 2-3 years later. Since September of 2012 the lake has experienced high water events almost every year, and Hurricane Irma caused a pretty significant jump in both depth and duration.



Catch rates from electrofishing samples of LMB show a drop following Hurricanes Francis, Jeanne, and Wilma, and then improvement following the drought in 2007-2008. Now we are seeing the same trend following hurricanes Matthew and Irma.



Angler catch rates for LMB shows a similar trend. While this has been trending in the wrong direction since 2011, the overall catch rates are good.

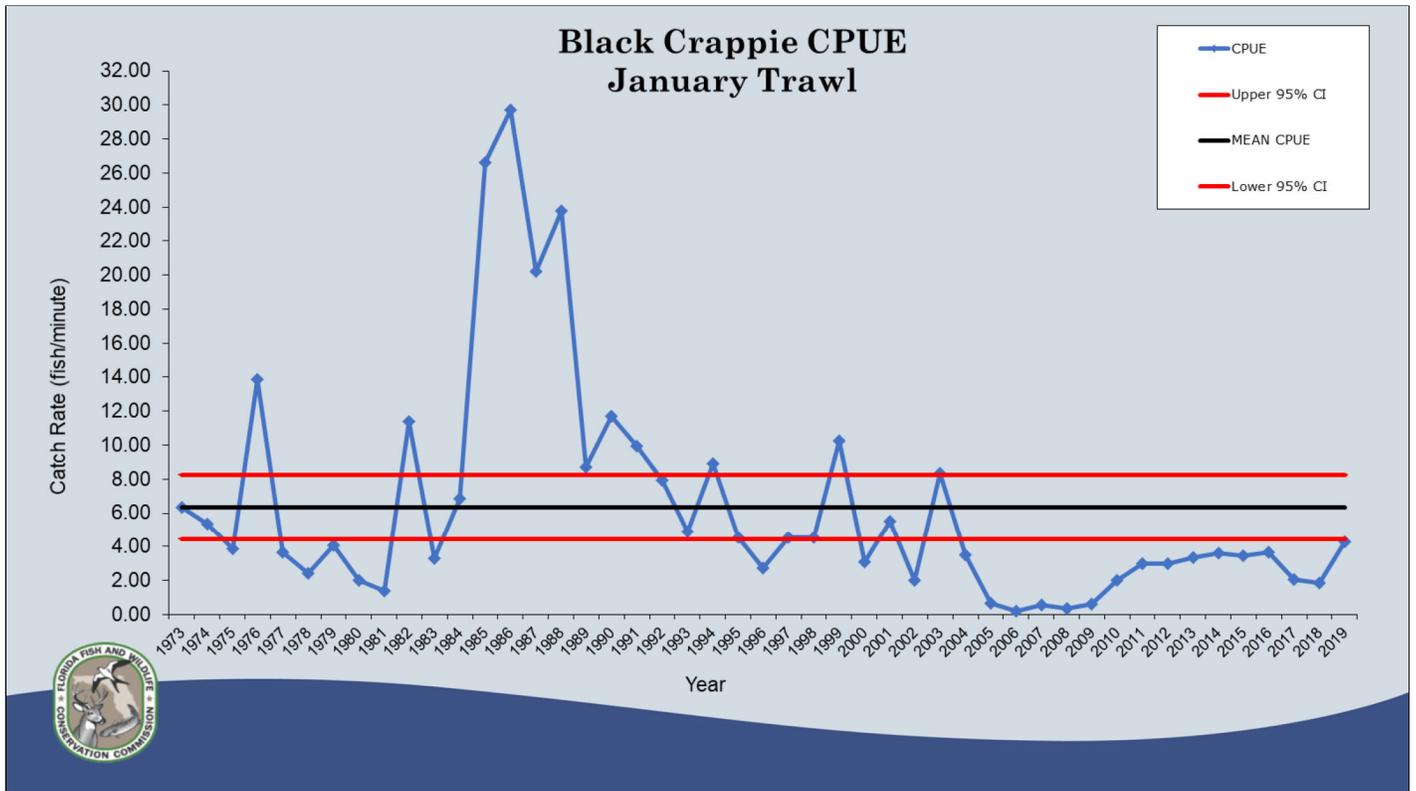
Lake Okeechobee Tournaments

FY 07/08 to FY 18/19

Season	Tournaments	Anglers	Big Bass Range	Winning Wt.
2007/08	225	8,049	1.98 - 11.30	15.79
2008/09	315	10,138	1.75 - 10.30	13.76
2009/10	406	14,572	1.20 - 10.30	16.24
2010/11	423	15,245	2.03 - 12.04	18.16
2011/12	450	16,752	2.06 - 10.82	19.26
2012/13	521	17,649	2.10 - 11.15	17.14
2013/14	494	16,785	1.71 - 11.64	18.11
2014/15	522	17,343	2.32 - 10.60	18.2
2015/16	506	18,713	2.20 - 12.10	17.27
2016/17	461	17,733	2.26 - 10.80	17.51
2017/18	440	17,296	2.30 - 10.90	17.75
2018/19*	227	8,852	2.02 - 11.12	17.2
Totals	4,990	179,127	-	-

* Current to 3/7/2019





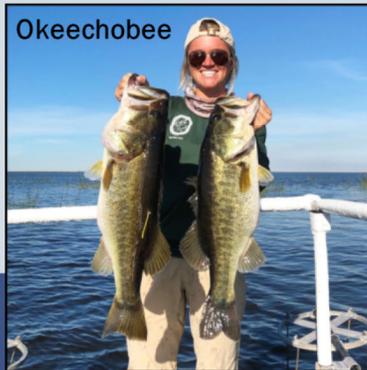
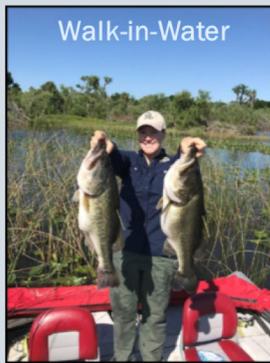
Black Crappie are known for their highly variable recruitment, meaning they have a “boom or bust” type of spawning success. A 10-inch minimum size limit was enacted in 2008. Anglers are catching a lot of big crappie this year but we’re not seeing many smaller crappie coming up in the creel, and as you can see from this graph we’ve been below average in our trawl catches for a number of years.

Florida's Top Ten LMB Catch Rates

Location	Mean	Max	Min	Notes
L-67A Canal	1.73	4.09	0.45	10-year mean
Okeechobee	1.25	2.01	0.47	10-year mean
Stickmarsh	1.24	2.01	0.47	10-year mean
Toho	0.81	0.96	0.68	9-year mean
Rodman	0.74	1.30	0.43	9-year mean
Orange	0.66	1.22	0.14	5-year mean
Griffin	0.62	0.81	0.30	9-year mean
Istokpoga	0.61	0.82	0.51	10-year mean
Lake Kissimmee	0.60	0.69	0.53	10-year mean
Talquin	0.49	0.58	0.37	4-year mean



These are the top 10 locations for angler catch rates of largemouth bass. A catch rate of 0.5, or 1 bass for every two hours of fishing is a respectable catch rate.



Overall, bass fishing is good this year. Of course, it's not great everywhere but we have been sampling a lot of trophy bass this year on several of our important resources.

Largemouth Bass Tournaments

4 DAYS

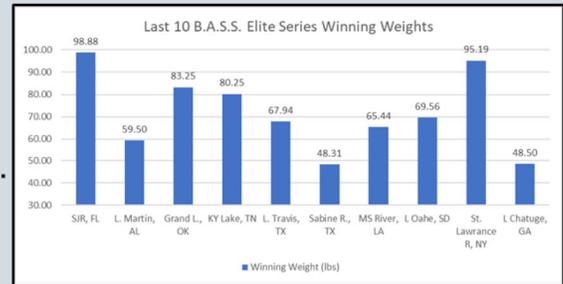
- B.A.S.S. Elite Series - St. Johns River = 98+ lbs.
- FLW – Kissimmee Chain of Lakes = 85+ lbs.

2 DAYS

- Bass Pro Shops – Harris Chain of Lakes = 57+ lbs.

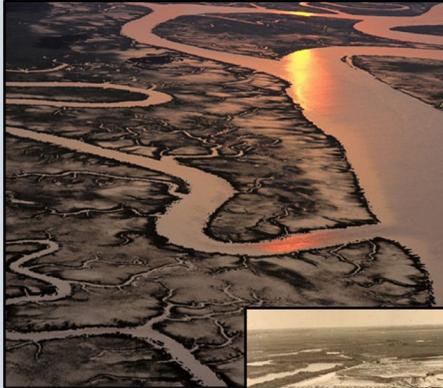
1 DAY

- Baker County Bassmasters – Orange Lake = 45+ lbs.
- King of the Glades – L-67A Canal = 28+ lbs.



And bass tournaments have done very well this year. All of these are since January. These first three are professional anglers, and these last two are local tournaments. The B.A.S.S. tournament on the St. Johns River had the highest overall weights in their last 10 Elite Series tournaments.

Management Challenges



- Modifications to freshwater systems
- Urbanization
- Excess nutrients
- Differing stakeholder interests/needs
- Managing for multiple species



Managing these resources is challenging. They are dynamic systems that have been impacted over time and continue to be impacted as Florida's growth continues.

Managing Florida's freshwater resources requires an ecosystem approach that is adaptive and collaborative among the many partners and stakeholders that have a vested interest in their long term sustainability.

Lake Trafford Restoration

PARTNERSHIPS

- Local community and businesses
- Friends of Lake Trafford
- Immokalee Chamber of Commerce
- Collier County
- FWC
- SFWMD
- DEP
- USCOE
- Conservancy of Southwest Florida
- Audubon Society



Habitat Enhancement

- 81,000 Bulrush *Schoenoplectus californicus* (2009, 2011, 2015)
- 63,500 Egyptian paspalidium *Paspalidium geminatum* (2012 - 2015)

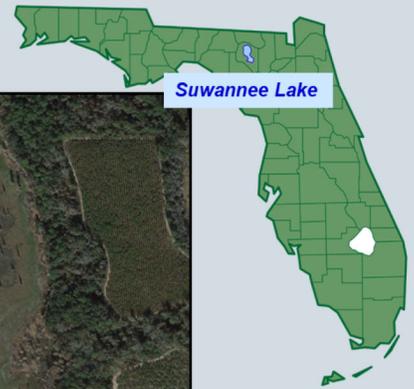


We transplanted bulrush and Egyptian paspalidium. Eel grass has made a strong comeback from plantings and seed bank germination.



We also restocked approximately 450,000 largemouth bass during 2010 and 2011. The bass population has rebounded, and we've actually had 15 largemouth bass over 8-pounds entered into our TrophyCatch program.

Suwannee Lake FMA



Suwannee Lake FMA is a 63-acre lake near Live Oak that was created by the old GFC in 1967. We dewatered this lake as much as we could, then went in and renovated what was left of the existing fish population.

Muck Removal

- Removed 60,000 yd³ of muck
- Deepened south end of the lake



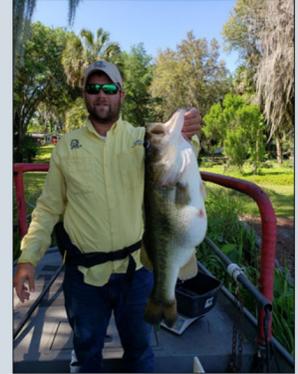
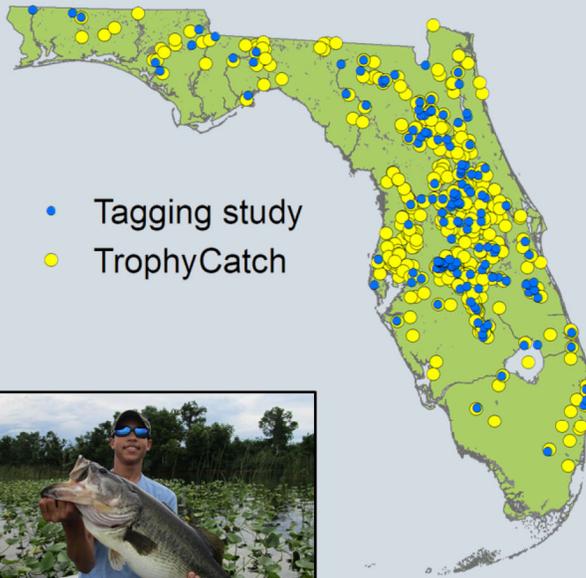
During summer and fall of 2014, 60,000 cubic yards of muck were removed from the lake.

- Transplanted vegetation
- Stocked fish
- Replaced fishing pier



As the lake was refilled, beneficial native vegetation was planted, forage fish and sport fish were restocked in 2014 and 2015, and an old wooden fishing pier was replaced. The photo on the right is of a LMB sampled and tagged as part of our (DFFM & FWRI) trophy bass tagging study.

Trophy Bass Research



This map depicts where largemouth bass over 8 lbs. have been tagged as part of a FWRI research study to help us learn more about trophy bass numbers and distribution, and also shows locations where bass in the TrophyCatch program were caught.

Orange Lake Stakeholder Engagement



I want to switch to the people side of fisheries management. An example of this is the stakeholder engagement process we used to develop the Orange Lake Habitat Management Plan. We brought stakeholders in at the beginning of the process to ask them what they wanted from the lake and how they wanted their lake managed. This was not easy and there were many competing desires and wants from the stakeholders, but we ended up with a much better habitat management plan that stakeholders can support.

Multi-Faceted Approach to Management

- Increased public engagement and stakeholder involvement
- Applying socio-economics to decision making
- Increased internal collaboration
- Developing adaptive management plans
- Promotion of Florida's freshwater fisheries



We take a multi-faceted approach to managing freshwater fisheries. We've always been good at the biology and habitat circles. This was the focus of most of our training. We're getting better at the people component, and we still have a ways to go. However, FWC is a leader in how conservation agencies utilize social science and stakeholder input.

