UF IFAS UNIVERSITY of FLORIDA

Florida LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume 66 (2014)

Total Color and Total Alkalinity Analysis

Fishermen enjoying the day on Lake Santa Fe. Lake Santa Fe in Alachua County typically has color values greater then 40 platinum cobalt units.

Recently Florida LAKEWATCH and the Florida Department of Environmental Protection (FDEP) conducted a comparability study (Hoyer et al. 2012) to determine if analyses on total phosphorus, total nitrogen and chlorophyll were similar between the two different laboratory's. Results showed that LAKEWATCH data were equivalent to FDEP's, which were collected using stringent quality assurance (QA) protocols and analyzed in a NELAC (National Environmental Laboratory Accreditation Conference) certified laboratory in compliance with the state's QA rule. (*For more information on this study go to the LAKEWATCH website* [*http://lakewatch.ifas.ufl.edu/*](http://lakewatch.ifas.ufl.edu/) *and look for LAKEWATCH newsletters, Volume 56 (2012)*). The study allowed FDEP to accept LAKEWATCH volunteer sampling methods for total nitrogen, total phosphorus and chlorophyll-a samples, and the LAKEWATCH laboratory's limited-use alternative method for the preparation of chlorophyll samples.

Unfortunately, the numeric nutrient criteria that was approved by the state of Florida and sent to the US EPA for final approval was not completed at the time the comparison study. The final numeric nutrient criteria uses true

color and alkalinity to define large groups of lakes that have different nutrient criteria values (Table 1) (FDEP 2013). The comparison study did not examine color and alkalinity.

Color in waterbodies has two components; apparent color, when the water sample has not had particulates removed and true color when the water sample has had all particulates removed. To measure true color, the color of the particulate free water sample is matched to one from a spectrum of standard colors. Each of the standard colors has been assigned a number on a scale of Platinum Cobalt Units (*Pt-Co units*). On the *Pt-Co units* scale, a higher value of true color represents water that is darker in color. The numeric nutrient criteria uses true color and defines colored lakes as having true color values > 40 *Pt-Co units* and clear lakes as having true color values ≤ 40 *Pt-Co units*.

Clear lakes are further divided into two groups of total alkalinity. Total alkalinity is a measure of the water's capacity to neutralize acids and the unit of measure for total alkalinity is milligrams per liter of total alkalinity as equivelant calcium carbonate (mg/L as $CaCo_3$). The two groups are low alkalinity (≤ 20 mg/L as $CaCO_3$) and high alkalinity (> 20 mg/L as $CaCO_3$) lakes. LAKEWATCH has sufficient water preserved by freezing after nutrient analyses to analyze samples collected by volunteers for color and alkalinity but does not routinely conduct these analyses.

To determine if color and alkalinity can be successfully analyzed on frozen water, LAKEWATCH conducted another study analyzing fresh samples from a range of lakes and freezing the same water for analysis out to five months. The manuscript of this study is currently under review by the editors from the North American Society of Lake Management's Journal "Lake and Reservoir Management". The abstract (summary) of the study and findings are as follows suggesting that frozen water can be used for analysis of color and alkalinity:

Three surface water samples from three different stations on six lakes were collected to compare true color and total alkalinity data analyzed using fresh samples with those preserved by freezing for two and five months. Nested variance component analysis showed lake-to-lake differences account for 99.3% of the variance in total alkalinity and 98.7% of the variance in color, while station within lake and preservation method within station and lake both accounted for less than 1.5% of the variance for either analyte. For total alkalinity, analysis of covariance between fresh data and that measured from samples frozen for five months showed that both slopes and intercepts were not significantly different and paired t-Test also showed no significant difference. For color, analysis of covariance between fresh data and data from samples frozen for five months showed that intercepts were different, but that the slopes were not different and paired t-

Long Term Geometric Mean Lake Color and Alkalinity	Annual Geometric Mean Chlorophyll *a*	Minimum calculated numeric interpretation		Maximum calculated numeric interpretation	
		Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen	Annual Geometric Mean Total Phosphorus	Annual Geometric Mean Total Nitrogen
> 40 Platinum Cobalt Units	**20 µg/L**	**0.05 mg/L**	**1.27 mg/L**	**0.16 mg/L[1]**	**2.23 mg/L**
≤ 40 Platinum Cobalt Units and > 20 mg/L $CaCO_3$	**20 µg/L**	**0.03 mg/L**	**1.05 mg/L**	**0.09 mg/L**	**1.91 mg/L**
≤ 40 Platinum Cobalt Units and ≤ 20 mg/L $CaCO_3$	**6 µg/L**	**0.01 mg/L**	**0.51 mg/L**	**0.03 mg/L**	**0.93 mg/L**

Table 1. Nutrient criteria values for chlorophyll a and minimum and maximum calculated numeric interpretation for total phosphorus and total nitrogen based on color and total alkalinity.

Test showed a significant mean difference of only -7 Pt-Co units for color. This study supports the use of freezing as a preservation method for analysis of total alkalinity. Considering the variability of color within and among lakes along with the scale of individual analyses freezing as a preservation method for analysis of color can be used to classify lakes as colored or clear. (Tables 2 and 3)

What this essentially means in laymen's terms is that almost all of the differences noticed in total alkalinity and color occurred when comparing values between the six lakes. When comparing the values between the three stations of a lake or when comparing the values between the three holding times of a lake, very little differences were noticed.

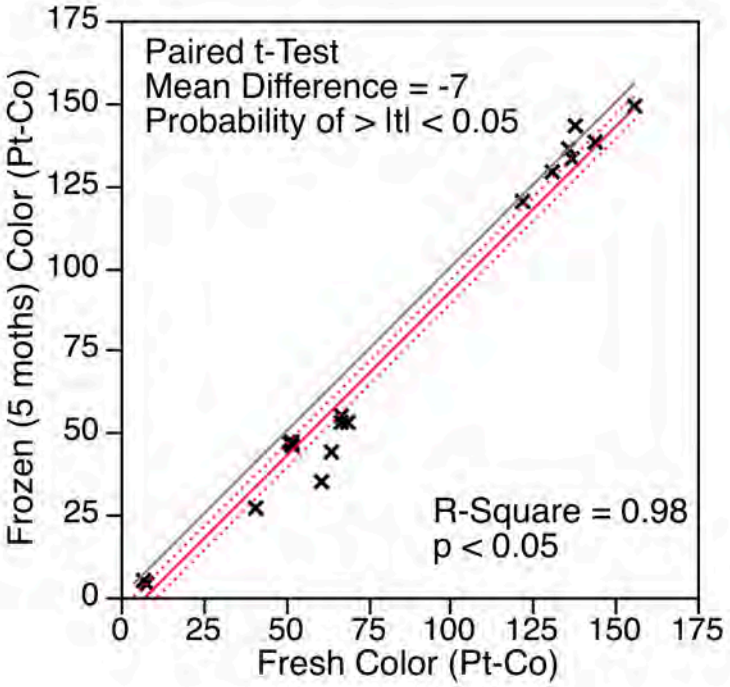


Table 3. True color analyzed from frozen (5-months) water samples versus fresh (not frozen and analyzed within 24 hours) water samples.

What does this mean to LAKEWATCH volunteers?

Depending on future funding for the LAKEWATCH program volunteers may soon be getting data on color and alkalinity along with phosphorus, nitrogen, chlorophyll and Secchi depth data.

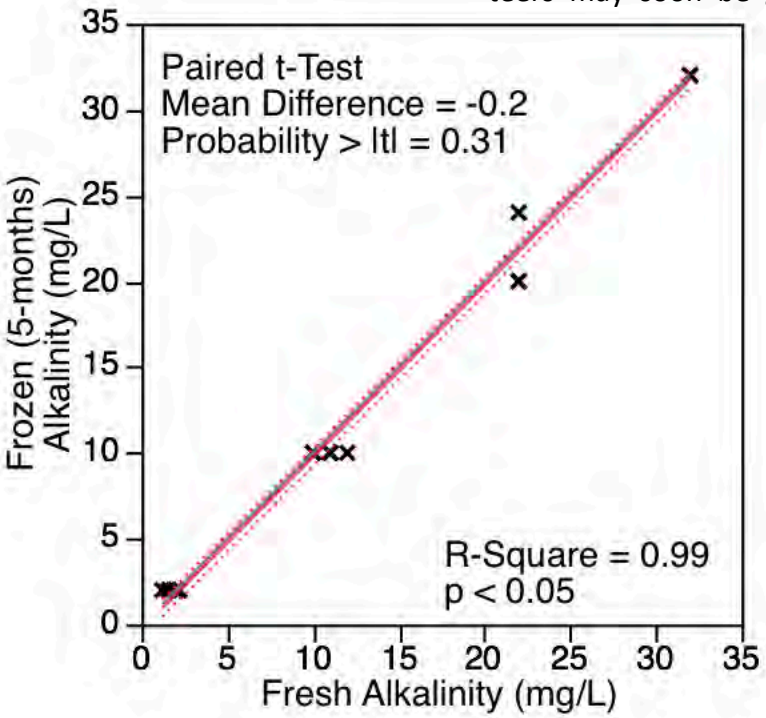


Table 2. Total alkalinity analyzed from frozen (5-months) water samples versus fresh (not frozen and analyzed within 24 hours) water samples.

Hoyer, M. V., N. Wellendorf, R. Frydenborg, D. Bartlett, and D. E. Canfield, Jr. 2012. A comparison between professionally (Florida Department of Environmental Protection) and volunteer (Florida LAKEWATCH) collected trophic state chemistry data in Florida. Lake Reservoir Management. 28: 277-281.

Florida Department of Environmental Protection. (2013). Implementation of Florida's Numeric Nutrient Standards. Florida Department of Environmental Protection. Tallahassee, FL.

Innovations in citizen monitoring of aquatic plants: passive mapping with sonar and automated processing

Introduction by Mark Hoyer, LAKEWATCH Director

For years, LAKEWATCH staff was able to monitor aquatic vegetation in many of the lakes that have been a part of the program. Over the last few years, due to decreasing budgets, that option is no longer available even though aquatic plants continue to be an integral part of all aquatic systems. The following is an article written by Ray Valley an Aquatic Biologist working for Navico describing equipment and methods of mapping lake contours and monitoring submersed vegetation. LAKEWATCH has worked with this technology for some time using it to help monitor aquatic vegetation in long-term fish monitoring lakes for the Florida Fish and Wildlife Conservation Commission.

If you are willing to purchase your own equipment and annual BioBase charges, then you will be able to map your lake and continually monitor your submersed aquatic vegetation. LAKEWATCH, by partnering with Navico staff will also have access to the data allowing us to help you understand the impact of aquatic plants on the ecology of your lake. If enough volunteers attempt this mapping program then the data will also give LAKEWATCH a continual statewide picture of impacts of aquatic plants in Florida. If you are interested in this LAKEWATCH Pilot Project please let us know so we can make sure your data fall under the LAKEWATCH umbrella.

LAKEWATCH biologist Jason Bennett conducting a vegetation survey on Lake Ola in Orange County.

Potential for LAKEWATCH volunteers to actively monitor aquatic vegetation.

By Ray Valley, Navico Inc.

Natural Resource Managers and Climatologists have long recognized the critical importance of observer networks and volunteer citizen monitoring. With citizen monitoring networks, Managers and Scientists acquire useful data for making more informed predictions and management decisions, while involved citizens gain an ownership stake in building the knowledgebase about the condition of ecosystems and the climate.

Citizen protocols for water quality (e.g., Secchi clarity) and meteorology (e.g., rainfall) data collection are largely objective and are becoming increasingly standardized throughout the nation. As a result, comprehensive datasets are being merged at large geographic scales to assess the current status and trajectory of water resource and climate conditions. Aquatic plant abundance is strongly linked to lake water quality with positive feedbacks (i.e., aquatic plants affect water quality and water quality affects aquatic plants). The lack of robust monitoring of the aquatic plant part of this equation limits the effectiveness of lake habitat protection and restoration.

Navico, Inc. offers low-cost hardware (Lowrance Depth Sounders and Chartplotters) and software

cBIOBASE

VEGETATION ANALYSIS REPORT

Lake Ola, Orange County Florida

Generated: 6/24/2014 11:27:42 PM (UTC)

Waterbody Size: 177.61 ha *(438.90 acres)*

report link

Data Collector
Mark Hoyer

Data Collection Date
8/30/2011 4:14:50 PM (UTC)

Average Water Temperature
12.73° C (54.91° F)

Location

Start:	28.75169373, -81.62637329
End:	28.75090408, -81.64216614

Survey Size

Area:	23.30 ha (57.57 acres)
Percent:	13.12% of waterbody
Volume:	608,281.40 cu. m (493.14 acre ft)

Settings

Track Buffer:	25 m
Grid Cell Size:	5 m
Min. BV Detect:	5%
Min. Veg Depth Detect:	0.73152 m

Survey Summary

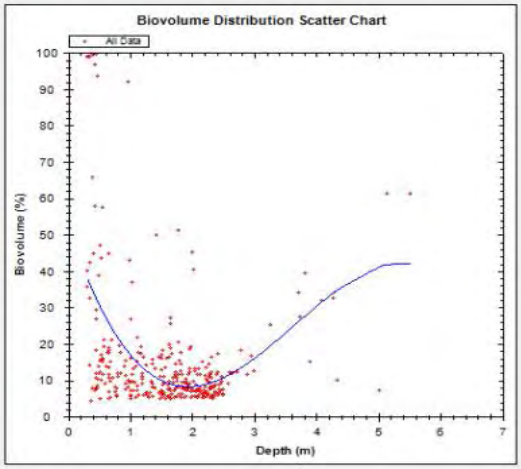
	Type ?	PAC ?	Avg BVp ?	SD BVp ?	Avg BVw ?	SD BVw ?	Depth Range	Avg Depth	Distance	No. Points
Full Survey	Point	12.3%	15.7%	±18%	1.9%	±8.1%	0.3-5.62 m	2.33 m	6.68 km	2,636
	Grid	6.9%	14.3%	±14.3%	1%	±5.2%	0.01-5.57 m	2.44 m	-	8,120

Area of Interest Summary

AOI ?	Type ?	PAC ?	Avg BVp ?	SD BVp ?	Avg BVw ?	SD BVw ?	Depth Range	Avg Depth	Distance	No. Points
1	Point	10.2%	11.7%	±10.7%	1.2%	±4.9%	0.32-3.56 m	2.1 m	1.6 km	881
	Grid	3.7%	9.8%	±4.9%	0.4%	±2.1%	0.04-3.51 m	2.13 m	-	2,815
2	Point	17.6%	14.5%	±11.3%	2.6%	±7.3%	0.34-3.6 m	2.11 m	1.92 km	465
	Grid	11.6%	11.3%	±5.2%	1.3%	±4%	0.01-3.36 m	2.22 m	-	1,563
3	Point	9.1%	17%	±13.7%	1.5%	±6.4%	0.91-5.62 m	3.46 m	1.11 km	560
	Grid	7%	12.2%	±9.2%	0.9%	±4%	0.01-5.57 m	3.48 m	-	1,669
4	Point	14.4%	12.4%	±14.3%	1.8%	±6.9%	0.31-5.54 m	1.8 m	937.74 m	285
	Grid	4.7%	7.7%	±2.1%	0.4%	±1.7%	0.01-5.35 m	1.82 m	-	845
5	Point	13.7%	24.2%	±31.3%	3.3%	±14.2%	0.3-5.5 m	1.95 m	1.11 km	445
	Grid	8.1%	26.7%	±24.3%	2.2%	±10%	0.02-5.46 m	2.43 m	-	1,512

Vegetation Biovolume Heat Map

Biovolume Distribution Scatter Chart



A vegetation analysis report of a 2011 vegetation survey of Lake Ola in Orange County.

(BioBase Automated Mapping System) technology that enables citizens to passively generate and share valuable lake habitat datasets. Recommended off-the-shelf Lowrance sounders/ chart-plotter combination units range in cost from $250 - $1,300 with costs depending on customer needs of various sonar and chart-plotter options. Costs for unlimited citizen mapping per lake with BioBase ranges from $375 - $925 depending on lake size. The hardware can be made portable and is easy to set up. Provided a good transducer signal, mapping is as easy as inserting a blank SD card into your properly configured unit, hitting record on your sonar and driving back and forth across the lake. After returning citizens insert the card into their PC and upload the logged sonar files to Navico's internet-based servers. After trips are done processing, they are stored in central account where partners can view, analyze, and share their data.

Several blogs published at www.cibiobase.blogspot.com may be helpful resources for those who wish to learn more. We specifically recommend those interested to review the following posts:

Minnesota LGU Taking Citizen Aquatic Plant Monitoring to New Level!

http://cibiobase.blogspot.com/2014/07/minnesota-lgu-taking-citizen-aquatic.html

Crowd Sourcing Lake Mapping

http://cibiobase.blogspot.com/2012/06/wisdom-of-crowd.html

BioBase Helps Manage Honeoye Lake Macrophyte Harvesting Program

http://cibiobase.blogspot.com/2014/07/biobase-helps-citizens-manage-honeoye.html

The lack of robust monitoring of the aquatic vegetation limits the effectiveness of lake habitat protection and restoration.

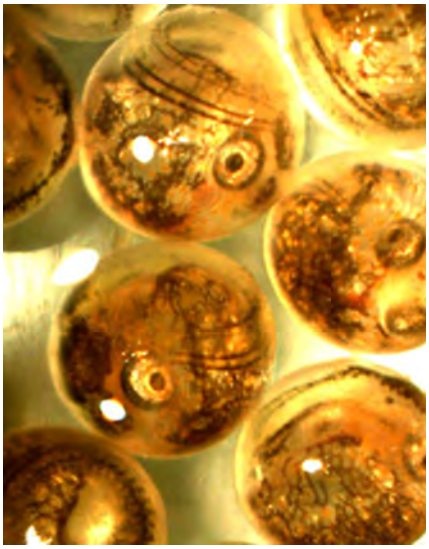
LAKEWATCH Welcomes New UF Faculty in Restoration Aquaculture

Greetings from Joshua Patterson, New UF Faculty in Restoration Aquaculture.

Paul Auberry (Kentucky State University)

Above, Josh is holding a paddlefish at a research facility at Kentucky State University.

Let me begin by thanking Florida LAKEWATCH and director Mark Hoyer for the invitation to introduce myself to the large community of LAKEWATCHers across the state. The continuing commitment of the citizen scientists who have sustained the LAKEWATCH program for going on 30 years is truly fantastic. It is wonderful to see that so many Floridians have a very high level of dedication to the wellbeing of their aquatic natural resources. This dedication is tremendously exciting to me as I begin a career in the state I now call home. Before discussing what I would like to accomplish moving forward, I hope that a summary of my professional background will help you to know where I'm coming from.



Charles Brown

The Gulf Killifish is an esturine minnow common in many areas of Florida. Above is a picture of Gulf killifish eggs.

I am from Virginia and a graduate of George Mason University in Fairfax, but my research career really got started in Frankfort, Kentucky. At Kentucky State University I studied paddlefish, an ancient and fascinating sturgeon relative native to the Mississippi drainage basin. These fish were stocked at low density in water supply reservoirs as part of an aquaculture technique known as reservoir ranching. Paddlefish filter-feed on zooplankton, so we dedicated considerable effort to monitoring stocked waters and recording any potential impacts on nutrient and food web dynamics in each reservoir. It would have been very helpful to have some LAKEWATCH volunteers up there! After finishing my Master's in Kentucky, I moved on to pursue my doctorate at Louisiana State University[#].

At LSU I worked with Gulf killifish, an estuarine minnow also common in many areas of Florida. We conducted research and consulted with bait shop owners and others interested in growing this species for the marine live bait market. I also studied alligator gar, another interesting and

ancient species. This fish is relatively abundant in Louisiana, but no longer exists in many northern areas of its historic range because of habitat modifications. Alligator gar can be found west of the Apalachicola River and are protected in Florida. The Florida Fish and Wildlife Conservation Commission conducts ongoing population monitoring projects, but there is still much to learn about the status of alligator gar in the state. With the background covered, let's move on to current events.

Restoration aquaculture is an emerging field, and the University of Florida would like to be a leader by developing a strong program. I am based in the Tampa Bay region at The Florida Aquarium's Center for Conservation in Apollo Beach. However, my research will occur state wide. My focus is on growing aquatic organisms – fishes, plants, and invertebrates – for restoration of ecosystems or specific populations. This work will also involve implementation and monitoring of restoration projects. Volunteer and citizen scientist participation will continue to be vital for assessment and restoration of aquatic habitats and species. This is why I am so excited to introduce myself to the LAKEWATCH community. By working together with volunteers, I believe we will have a positive impact on Florida's distinctive and vital aquatic natural resources.

Many early projects will be estuary or marine based, with plans to expand into freshwater as well. The coastal systems we seek to restore also serve as buffers which help freshwater areas maintain their integrity. On the salty side of things, I plan to explore aquaculture of seagrasses, bay scallops, oysters, mangroves, corals, and coral reef herbivores such as sea urchins. In freshwater I would eventually like to investigate mussels, alligator gar, and some of the less common centrarchids, bullheads, and shiners which provide ecosystem function and contribute to the biodiversity of Florida's lakes, rivers, and streams. I am also very interested in the ongoing restoration of the Everglades and the role that cultured native plants may have in those efforts. Partnership with the volunteers and citizen scientists of Florida will be critical to the common goal of allowing our natural resources to be enjoyed for generations to come. Thank you, LAKEWATCHers, for your years of dedication. I hope to work with and get to know some of you in the future. Should you wish to contact me, my e-mail address is joshpatterson@ufl.edu.

[#]with much deliberation, I have decided to pull for the Gators when we play LSU.

Louisiana Sea Grant

The alligator gar no longer exists in many northern areas of its historic range because of habitat modifications.

Volunteer Bulletin Board

FWC, partners see ultimate coral reef-building success

Researchers at the Florida Fish and Wildlife Conservation Commission (FWC) observed transplanted nursery-raised staghorn coral (*Acropora cervicornis*) spawning for the first time this month at Tropical Rocks, just over 4 miles offshore of Marathon. These corals were supplied by the Coral Restoration Foundation and Mote Marine Lab nurseries and outplanted by the FWC. The project was made possible by the American Recovery and Reinvestment Act via The Nature Conservancy.

The FWC, in collaboration with the Conservancy and other American Recovery and Reinvestment Act partners, began construction on the Middle Keys coral nursery in late 2009 but suffered setbacks due to a coldwater kill and, later, a warm-water bleaching event. The goal of the American Recovery and Reinvestment Act project was to expand the current nurseries, develop new nurseries and outplant high numbers of nurserygrown corals throughout the Florida reef tract and the U.S. Virgin Islands.

"This is the first time that we have seen staghorn coral spawning at the reef tract that included corals grown as part of our nursery program," said Caitlin Lustic, coral recovery coordinator for the Conservancy in Florida. "This spawning event shows that outplanted corals have the ability to reproduce just like a natural colony and furthers our goal of creating breeding colonies of coral that can repopulate reefs on their own."

The FWC and the Conservancy are reseeding coral reefs in efforts to aid recovery of wild staghorn populations. Staghorn coral contributes significantly to reef growth, island formation and coastal protection while providing essential habitat for a number of important reef fish.

"With this project, we developed excellent working relationships with the Conservancy and the rest of our partners," said Kerry Maxwell, coral researcher with the FWC. "Together we boosted threatened staghorn populations and realized the ultimate goal of the project: spawning. Even though the project backed by the American Recovery and Reinvestment Act is complete, I anticipate we will all continue to collaborate toward the common goal of coral reef restoration."

Notice to all Florida LAKEWATCH active samplers

Keep those samples flowing! Please be sure to deliver all frozen water and chlorophyll samples to your collection center as soon as possible. This will allow us to collect and process them in a timely manner.
Thanks for you help!

Remember to check-off on your new data sheet!

LAKEWATCH has a new data sheet with a small check list for you to check off after you have completed your task. Please be sure to check off that you have collected the water sample for total nitrogen and total phosphorus (the small bottle), that you have collected the water sample and filtered it for chlorophyll and that you have taken a Secchi disk reading.

Thank you,
The LAKEWATCH Crew

Florida LAKEWATCH Freshwater Data Sheet

Lake Name:: Little Weston County: : Polk

Sampler: Joe Smith

Phone:(800) 525-3928 Date: 9/7/13 Time: 9:30 AM

Yes √ No___: Surface Water Collected for Total Phosphorus and Total Nitrogen.
Yes √ No___: Surface Water Collected for Chlorophyll and Filtered Within 48 Hours.
Yes √ No___: Secchi Depth Reading Taken

Nonnative fish provide exotic fishing alternatives; most have no bag limits!

By Bob Wattendorf, with Vance Crain and Kelly Gestring, Florida Fish and Wildlife Conservation Commission

getsomebass.com

Only butterfly peacock bass were stocked intentionally by the Florida Fish and Wildlife Conservation Commission's (FWC) predecessor, during the early 1980s.

Florida freshwater anglers target at least 25 species of native fishes. Most are within a 45-minute drive of anyone wanting to wet a line. In addition to those, the free Florida Big Catch angler recognition program (BigCatchFlorida.com) features six species of exotic fishes from other countries and several fish species that expanded their ranges from farther north.

Of those nonnative fishes, only butterfly peacock bass were stocked intentionally by the Florida Fish and Wildlife Conservation Commission's (FWC) predecessor, during the early 1980s. At the time, expansion of numerous nonnative fish species in south Florida was causing concern. Walking catfish and several types of tilapia were well established. Species, such as piranha, electric eels and freshwater stingray had the potential to be imported by the aquarium industry and posed a threat to native species and a concern to people. Accidental introductions were largely attributed to the aquaculture industry or to individual aquarists. To safeguard native resources, restrictions on introduction of nonnative species into the state had been passed.

Two lists exist for species that require permits for possession. Conditional species require strict adherence to detailed rules intended to prevent escape, primarily from commercial facilities. Prohibited species permits are available only under very stringent conditions for research or public display at secure facilities.

There are 41 nonnative freshwater fish species that have been observed or are known to reproduce in Florida. Another 14 species have naturally died out or been eliminated by the agency. To see the list, go to MyFWC.com/WildlifeHabitats, select "Nonnative Species" then "Freshwater Fish."

Prior to introducing peacock bass in 1984, discussions were held with leading experts from around the country. The purpose was to convert a large biomass of established nonnative fishes, which were too small to attract anglers, into a valuable recreational fishery. Researchers documented the lower lethal temperature of peacock bass and determined they would be able to overwinter consistently only in a limited area of south Florida. The originally imported fish were not stocked, to prevent introducing foreign parasites or diseases. Instead, they were spawned and their eggs grown to fingerling size prior to stocking the offspring. Chris Collins, associate editor of "Florida Sportsman" magazine, just wrote a story about recovery of this multimillion-dollar recreational fishery following the ultra-cold winter of 2010.

Butch Moser, a local fishing guide on and around the Lake Osborne-Ida chain of lakes in Palm Beach County, targets nonnative fish. He agrees peacock bass are back. Sight-fishing for peacocks using small goldcolored Rapalas or topwater chug baits can be extremely productive. If the water is opaque, try a live minnow. Peacock bass are the only nonnative fish designated by the FWC as a gamefish. The bag limit is two, only one of which may be 17 inches or longer in total length. Any peacock bigger than 18 inches or 4 pounds qualifies for Big Catch recognition.

Not only peacocks were slammed by

the cold and are now recovering, said Moser. In late August, he said he had "never seen the fishing as good as the past few weeks." Several locks along the canal are open, and running water is attracting sunshine bass, peacock bass, clown knifefish -- the whole gamut.

One of his favorites, the unique clown knifefish, are running from 3 to 10 pounds. They are often full of shad but aggressively take any 3- to 4-inch minnow. According to Moser, when hooked they back up, then make a quick run and jump like a tarpon. They are tough to net since they back away and jump, so Moser's tip is to get the net under them when they jump.

He recommends watching for a round boil and bubbles on the surface. Cast directly to the disturbance or fish a float with a live bait 3- to 4- elsewhere.

Moser also enjoys catching Mayan cichlids on poppers or minnows. You'll find them in shallow water. They provide a great fight and meal. As with all nonnative fish, other than peacock bass and triploid grass carp, there is no size or bag limit; take all you catch. Those longer than 11

Bassmasterguideservice.com

A young angler with a Mayan cichlid from a South Florida canal.

feet deep and kept down with light weights. In the heat of the day, shade around bridges or pilings is productive. Since clown knifefish are a relatively new (1994) introduction, with a limited range in the Osborne-Ida chain, they are not included in the Big Catch program. Catches should not be transported alive inches or heavier than 1 pound are eligible for a Big Catch certificate.

Vance Crain, an FWC fisheries biologist in the South Region, has observed increased catch rates for oscars. You can catch oscars throughout the L67A, as well as Alligator Alley, Miami Canal, Tamiami and WCA II. Cane pole anglers do well with crickets and worms, but beetle spins, small Rapalas or topwater poppers all work.

Oscars have been in Florida waters since at least 1969 and are recognized in the Big Catch program. To qualify, submit a photo of one 11 inches long or longer, or 1.25 pounds or heavier.

Brightly colored Midas cichlids shine in Miami-Homestead canals; look for clear water and sight-fish for them with little jigheads and a worm, using ultralight gear. Crain describes them as "bluegill on steroids."

Although these species have not

dsmfishgal.typepad.com

waterwolves.com

Anglers catching the clown knifefish (pictured to the left) and the Midas cichlid pictured to the right) in south Florida waterbodies.

School of Forest Resources and Conservation
Florida LAKEWATCH
7922 NW 71st Street
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This newsletter is generated by the Florida LAKEWATCH program, within UF/IFAS. Support for the LAKEWATCH program is provided by the Florida Legislature, grants and donations. For more information about LAKEWATCH, to inquire about volunteer training sessions, or to submit materials for inclusion in this publication, write to:

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Website: http://lakewatch.ifas.ufl.edu/

All unsolicited articles, photographs, artwork or other written material must include contributor's name, address and phone number. Opinions expressed are solely those of the individual contributor and do not necessarily reflect the opinion or policy of the Florida LAKEWATCH program.

carp-fishing-tactics.com

You should not release these exotic species back into the waterbody except peacock bass and triploid grass carp (pictured above).

caused major disruptions in native ecosystems or reduced harvest of native sport fishes, you should not release them (except peacock bass and triploid grass carp). Releasing fish from aquariums or moving them between water systems could produce detrimental effects and is illegal.

Check current fisheries forecasts, because conditions can vary drastically. Go to MyFWC.com/Fishing, select "Freshwater Fishing" then "Sites and Forecasts."