



# LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume XXXI 2005

With so much to know about lakes and so many different stakeholders involved in managing lakes it's a good idea to have a list of the contact information for some of the major groups that can be involved.

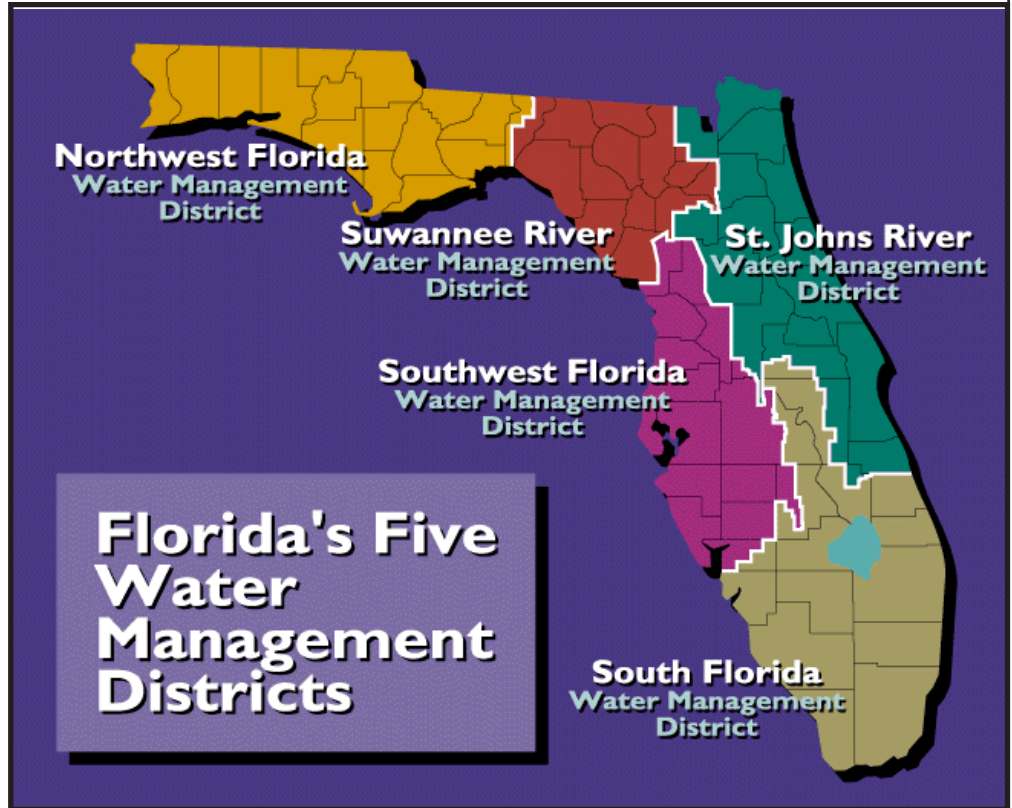
In a past newsletter (Volume 9 Spring 1997) LAKEWATCH put together a list of many of the groups involved in aquatic plant management in Florida. Since our initial list in 1997 area codes and contact people have changed and in some instances even the agencies' names have changed. Not only did we want to update this list we also wanted to expand the list to include different groups involved in water management.

LAKEWATCH staff serve as a sounding board for folks that don't know where to start in their efforts to manage their water. But ultimately you, as a concerned citizen, will generally be referred to one of the agencies or groups listed on the following pages.

## Water Management Districts

The State of Florida is split up between five water management districts (WMD) as set forth in Section 373 F. S. Each WMD has taxing authority. See the map for general district boundaries. They are basically set up according to major drainage basins for the larger rivers.

There are some differences between the five water management districts. But generally, the mission of each WMD is to manage the water and water-related resources within its boundaries. Central to the mission is maintaining the balance between the water needs of current and future users while protecting and maintaining the natural systems that provide the



Map of Florida's Five Water Management Districts boundaries.

District with its existing and future water supply. These programs include, but are not limited to, flood control, regulatory programs, water conservation, education, and supportive data collection and analysis efforts.

### Florida's WMD:

*(counties indicated in italics)*

#### South Florida (SFWMD)

*Broward, Collier, Dade, Glades, Hendry, Lee, Martin, Monroe, Palm Beach, St. Lucie and portions of Charlotte, Highlands, Okeechobee, Orange, Osceola, Polk*  
3301 Gun Club Road  
PO Box 24680  
West Palm Beach, FL 33416-4680  
(516) 686-8800 or 1-800 432-2045  
Contact: Anita Bain  
<http://www.sfwmd.gov/>

#### Southwest Florida (SWFWMD)

*Citrus, DeSoto, Hardee, Hernando, Hillsborough, Manatee, Pasco, Pinellas, Sarasota, Sumter, and portions of Charlotte, Highlands, Lake, Levy, Marion, Polk*  
2379 Broad Street  
Brooksville, FL 34609-6899  
(352) 796-7211 or 1-800-423-1476  
Contact: Brian Nelson  
<http://www.swfwmd.state.fl.us>

#### St. Johns River (SJRWMD)

*Brevard, Clay, Duval, Flagler, Indian River, Nassau, Seminole, St. Johns, Volusia, portions of Alachua, Baker, Bradford, Lake, Marion, Okeechobee, Orange, Osceola, Putnam*  
4049 Reid Street  
PO Box 1429  
Palatka, FL 32178-1429  
(386) 329-4500  
Contact: Wayne Corbin  
<http://sjr.state.fl.us>

# AQUATIC

## **Suwannee River (SRWMD)**

*Columbia, Dixie, Gilchrist, Hamilton, Lafayette, Madison, Suwannee, Taylor, Union, portions of Alachua, Baker, Bradford, Jefferson, Levy*  
9225 CR 49  
Live Oak, FL 32060  
386-362-1001 or 1-800-226-1066  
district@srwmd.state.fl.us  
Contact: Robert Mattson  
http://srwmd.state.fl.us

## **Northwest Florida (NFWFMD)**

*Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, a portion of Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington*  
81 Water Management Drive  
Havana, FL  
850-539-5999  
http://www.state.fl.us/nwfwmd/

## **Florida Department of Environmental Protection**

The Florida Department of Environmental Protection (FDEP) was created by the Florida Legislature when the Florida Department of Environmental Regulation and the Florida Department of Natural Resources were merged in 1993. The Florida Department of Environmental Protection is the lead agency in state government for environmental management and stewardship. The department administers regulatory programs and issues permits for air, water and waste management. It oversees the State's land and water conservation program, Florida Forever, and manages the nationally award-winning Florida Park Service.

### *Bureau of Invasive Plant Management*

The FDEP's Bureau of Invasive Plant Management is the lead agency in Florida for aquatic plant management. Regional biologists can make site visits to: identify plants, spot current or potential problems, recommend methods for removal or control, as well as provide lists of certified professional aquatic plant control specialists. They also issue permits to control aquatic plants (on both private & public waters).

## **FDEP's Bureau of Invasive Plant Management's Regional Offices:** *(counties indicated in italics)*

### **Northwest Florida**

*Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington*  
3900 Commonwealth Blvd., MS 705  
Tallahassee, FL 32399  
(850) 245-2809  
Contact: Jess Van Dyke  
jess.vandyke@dep.state.fl.us

### **Southwest Florida**

*Citrus, Hernando, Lake, Levy, Marion, Sumter*  
6355 South Florida Avenue  
Floral City, FL 34436  
(352) 726-8622  
Contact: Jim Kelley  
kelleyj@mail.state.fl.us  
Robbie Lovestrand  
lovestra@mail.state.fl.us  
Terry Sullivan  
sulliva1@mail.state.fl.us

### **St. Johns River**

*Brevard, Flagler, Orange, Osceola, Seminole, St. Johns, Volusia*  
5882 S. Semoran Blvd.  
Orlando, FL 32822  
(407) 275-4004  
Contact: Ed Harris  
Ed.harris@dep.state.fl.us  
Nathalie Visscher  
Nathalie.visscher@dep.state.fl.us  
Shannon Brittain  
Shannon.brittain@dep.state.fl.us

### **South Central**

*Highlands, Polk*  
2001 Homeland-Garfield Road  
Bartow, FL 33830  
(863) 534-7074  
Contact: David Demmi  
david.demmi@dep.state.fl.us  
Matt Phillips  
matt.v.phillips@dep.state.fl.us

### **South Gulf**

*Charlotte, Desoto, Hardee, Hillsborough, Lee, Manatee, Pasco, Pinellas, Sarasota*  
8302 Laurel Fair Circle, #140  
Tampa, FL 33610  
(813) 744-6163  
Contact: John Rodgers  
john.rodgers@state.fl.us

## **Suwannee River**

*Alachua, Baker, Bradford, Clay, Columbia, Dixie, Duval, Gilchrist, Hamilton, Lafayette, Madison, Nassau, Putnam, Suwannee, Taylor, Union*  
341 SE Charmont Lane  
Lake City, FL 32025  
(386) 758-0464  
Contact: Joe Hinkle  
joe.hinkle@dep.state.fl.us

## **South Florida**

*Broward, Collier, Glades, Hendry, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Palm Beach, St. Lucie*  
3111-B13 Fortune Way  
Wellington, FL 33414  
(561) 722-2479  
Contact: Jacqueline Smith  
jackie.c.smith@dep.state.fl.us

## **Florida Fish and Wildlife Conservation Commission**

Formally known as the Florida Game and Fresh Water Fish Commission (GFC), this group has undergone the most dramatic changes since we last compiled this list. The FWCC came into existence on July 1, 1999 when several groups (including the GFC) merged together. The Division of Freshwater Fisheries Management (DFFM) within FWCC provides expertise on freshwater fish populations, angler use, and other aspects of freshwater fisheries. DFFM are the first line of support for inquiries by the public for information on freshwater fisheries management, fishing opportunities, fish pond management, fish kills and other general fisheries-related issues.

### **FWCC Regional Offices:** *(counties indicated in italics)*

#### **Northeast Region**

*Brevard, Flagler, Indian River, Lake, Marion, Orange, Osceola, Putnam, Seminole, St. Johns, Sumter, Volusia*  
Contact: Sam McKinney  
1239 SW 10th Street  
Ocala, FL 34474-2797  
(352) 732-1225  
sam.mckinney@fwc.state.fl.us  
24-Hour Law Enforcement:  
352-732-1228

# RESOURCES

## North Central Region

*Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Gilchrist, Hamilton, Lafayette, Levy, Madison, Nassau, Suwannee, Taylor, Union*

Contact: Jerry Krummrich  
3377 East US Highway 90  
Lake City, FL 32055  
(386)-758-0525  
jerry.krummrich@fwc.state.fl.us  
24-Hour Law Enforcement:  
386-758-0529

## Northwest Region

*Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington*

Contact: Fred Cross  
3911 Highway 2321  
Panama City, FL 32409-1658  
(850) 265-3676 or (850) 488-9542  
fred.cross@fwc.state.fl.us  
24-Hour Law Enforcement:  
850-245-7710

## Southwest Region

*Charlotte, DeSoto, Hardee, Hernando, Highlands, Hillsborough, Lee, Manatee, Pasco, Pinellas, Polk, Sarasota*

Contact: Tom Champeau  
3900 Drane Field Road  
Lakeland, FL 33811-1207  
(863) 648-3202  
tom.champeau@fwc.state.fl.us  
24-Hour Law Enforcement:  
(863)-648-3200

## South Region

*Broward, Collier, Dade, Glades, Hendry, Martin, Monroe, Okeechobee, Palm Beach, St. Lucie*

Contact: Jon Fury  
8335 Northlake Blvd.  
W Palm Beach, FL 33412  
(561) 625-5122  
jon.fury@fwc.state.fl.us  
24-Hour Law Enforcement:  
(561)-625-5122  
(Monroe and Collier County):  
(305)-289-2320

**Grass Carp Information**—to help evaluate whether grass carp are appropriate and how to properly acquire and stock this fish call an aquatic plant management biologist at:

Tallahassee.....(850) 488-4066  
Eustis.....(352) 742-6438  
Lakeland.....(941) 648-3202

**Fish Kill Hotline** - you can report a fish kill, diseased fish or fish with other abnormalities directly to the Aquatic Health Group at FWC's Fish and Wildlife Research Institute.....1-800-636-0511

**Fish Tags** - report catches of tagged fish.....1-800-367-4461

**Horseshoe Crab Survey** - if you observed horseshoe crab's nesting.....1-866-252-932

**Manatee or Sea Turtle Hotline** - if you find a dead or injured manatee or sea turtle.....1-888-404-FWCC

**Center for Aquatic and Invasive Plants** (University of Florida/Institute of Food and Agricultural Science)—is a research/education center dedicated primarily to studying aquatic weeds and techniques used to control them in water bodies.  
Contact: Dr. Ken Langeland  
7922 NW 71st Street  
Gainesville, FL 32653  
(352) 392-9613  
kal@ifas.ufl.edu

**Aquatic Plant Information Retrieval System (APIRS)** has an electronic database of more than 44,000 references (as well as a hard copy collection) on the subject of aquatic and wetland plants. The database can be searched, at no charge, to produce bibliographies on any aquatic plant subject or keyword.  
Contact: Karen Brown  
Phone (352)-392-1799 (helpdesk)  
Kpb@mail.ifas.ufl.edu  
http://Aquat1.ifas.ufl.edu

## Florida Lake Management Society

Julie McCrystal  
PO Box 950701  
Lake Mary, FL 32795  
(407) 324-3141  
flmshome@aol.com  
http://flms.net/index.html

Many of the local county/city groups that we work with cooperatively are also listed. These groups are usually a good first contact when trying to learn more about a water body.

## Highlands County Lakes Manager

Clell Ford  
Phone (863)-402-6545  
Fax (863)-385-7028  
cford@bbc.co.highlands.fl.us  
http://www.highlandsswcd.org

## Hillsborough County Stormwater

Phone (813)-272-5912 ext. 3616  
Fax (813)-272-7021

## Lake County Water Authority

Phone (352)-343-3777  
Fax (352)-343-4259  
Info@lcwa.org

## Seminole County Stormwater

Gloria Eby  
(407)-665-5765  
GEby@co.seminole.fl.us

## Lakes Regions Lakes Management District Polk County

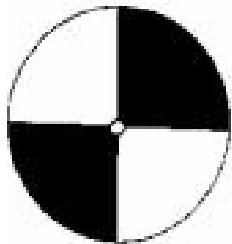
Roger Griffith  
(863)-293-1441

## Choctawhatchee Basin Alliance

Bay Coordinator: Joy Brown  
bayrally@owc.edu  
Lake Coordinator: Phillip Ellis  
cdlakes@owc.edu  
100 College Blvd.  
Niceville, FL 32578  
Phone (850)-650-9330  
Fax (850)-650-7366

## Water Atlas

*(Seminole, Polk, Hillsborough, Lake, Sarasota, SWFWMD)*  
FCCDR/USF  
Shawn Landry  
3650 Spectrum Blvd., Suite 185  
Tampa, FL  
(813)-974-4042  
http://WaterAtlas.org



## The Great North American Secchi Dip-In for 2005

In the past, all active LAKEWATCH volunteers received invitations to participate in the Secchi Dip-In. This project, housed out of Kent State University in Ohio, helps instill a sense of connection among all volunteer water samplers.

Unfortunatley, due to limited funding, the program is unable to send reports and 2005 questionnaires to each program and volunteer. If you want to participate in this program this year please go to their website (listed below) and download a copy of the questionnaire directly. All of the data, including 2004 data, are now available on the Dip-In website also.

If you want all of the information for your state, please don't hesitate to contact Bob Carlson via email at [Dipin@kent.edu](mailto:Dipin@kent.edu), or call (330) 672-3992.

**This year's Secchi Dip-In will take place June 25 to July 17.**

To download this year's questionnaire go to:  
<http://dipin.kent.edu/Questionnaire.htm>.

## LITTLE LAKEWATCH HANDS



Photo courtesy of Jim Adkins, LAKEWATCH Volunteer

Brendan McCrea shows off the crappie he just caught on Lake Davis in Citrus County!

Jim Adkins, a LAKEWATCH volunteer, shares the joy of a day on the lake with his 8-year-old grandson Brendan McCrea. Brendan helps his grandfather take water samples on Lake Davis, in Inverness, Florida. "He wants to be a biologist or scientist when he grows up" says Jim. Jim and Brendan also spend time on the lake fishing. Here is Brendan catching his first black crappie on Lake Davis.

LAKEWATCH is pleased to see Jim passing on the value of maintaining Florida's beautiful freshwater lakes.

**Keep up the good work Jim and Brendan!**

## A Note to Our Hard Working Volunteers...

Volunteers, you all work hard to collect and process your samples, and we here in the lab want to be sure that you get the best and most accurate results possible. Please check your supplies a few days before you plan to take your samples and be sure that you have enough filters to process your algae samples.

Here's the reason. There is no substitute for the actual small filter. The small filter "papers" are really not paper at all. Instead, they are made of glass fibers that are woven and bound together, and they have a

very specific pore size. The ones we use are made to filter very small algae cells as well as the larger ones. Some folks have tried to use coffee filters or paper towels to filter their

samples, but the small algae cells just go straight through, and these filters are not usable.

So, please check your supplies, and if you need filters or anything else, just call the lab or your regional coordinator and we'll put whatever you need in the mail. Thanks!



# ulletin Board

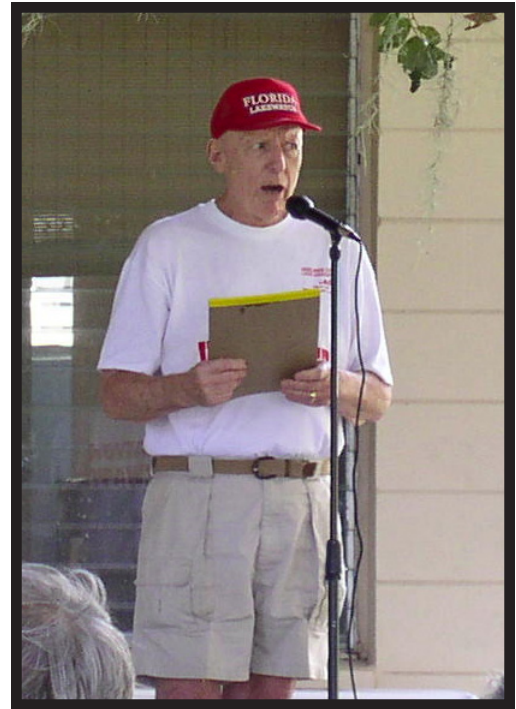


Photo courtesy of Dick Coon, LAKEWATCH

Gerry Hogan, proprietor of the Crystal Lodge Dive Center in Crystal River, has provided one of his rental boats free of charge as well as his time, space and gear to LAKEWATCH volunteers Dick Coon and Ed Brokhoff since 1993. Dick and Ed have been able to sample stations in Crystal River monthly since 1993 with the help of Gerry and his staff. Dick and Ed presented a plaque to Gerry for his support all these years. LAKEWATCH thanks all of you for your efforts!

Keep up the good work!

## In Memory of Jim Wilkins



Jim Wilkins was an important asset to the lakes of Highlands County. He was an active member of the Highlands County Lakes Association and the volunteer liaison for LAKEWATCH efforts in Highlands County. **His work was greatly appreciated and he will be remembered by all that knew him.**



If you have called our office or had us call you, chances are you have spoken with Mary Lettelier, our LAKEWATCH Assistant.

Many of you know from first hand experience how she takes the time to listen to each and every one of you. She then finds the people

here at UF or elsewhere to help resolve each issue she is presented with. She is definitely a pleasure to work with.

Well, our secret about Mary is out. Mary was one of only 23 people within the University of Florida/ Institute of Food and Agricultural Sciences to be recognized for her Superior Accomplishment. I know that each of you will join us in congratulating Mary on her recent award!

**WAY TO GO MARY!**

Florida LAKEWATCH was recognized with two awards from the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS). The LAKEWATCH Newsletter won a GOLD IMAGE award and our Color Circular (#108) and Oxygen and Temperature Circular (#109) received a BRONZE IMAGE award.

The purpose of the IMAGE awards program is to recognize outstanding examples of marketing & communications projects and products enhancing the UF/IFAS image throughout the state.

Many cudos to our LAKEWATCH Staff for working hard to bring these products to you!

## FEATURED BIRD

### Common Moorhen *Gallinula chloropus*

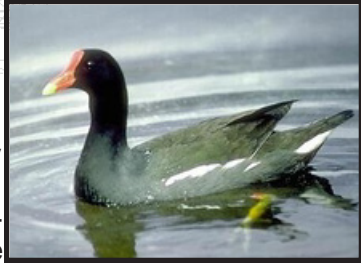


Photo Courtesy of University of Michigan, Museum of Zoology, Animal Diversity Web

One of the most frequently observed aquatic birds in Florida lakes and freshwater marshes is the common moorhen. This species is found worldwide and on all continents except Australia and Antarctica. However, it is not found in desert regions and prefers wetter areas. The common moorhen was observed in 42 of the 92 lakes participating in the LAKEWATCH Bird Survey. This species was observed more frequently in eutrophic and hypereutrophic lakes with abundant aquatic plants.

The common moorhen is colored slate gray and has a distinct red frontal plate on its forehead with a yellow-tipped chicken-like bill. The flanks of adult are edged with white, the wings are entirely dark, and the feathers underneath the tail are white. The feet and legs are bright yellow-green. Unlike many bird species, the males and females are very similar in appearance. Adults have a wingspan of about 20-23 inches, length of 12-15 inches, and weight of about 14 ounces. They generally make soft clucking sounds. But occasionally they are heard making loud, strange, laughing cackles. This can be unnerving and downright startling to an uninitiated fisherman.

This bird is often seen feeding along the edge the open water. This species prefers to eat seeds, grasses, rootlets, snails, crawfish, grasshoppers, and insects. They are good swimmers and their large feet and long toes allow them to walk on floating vegetation and lily pads.

It builds a nest using dead stems of cattails, bulrushes, or other aquatic plants. The nest has a wide shallow cup in the center for the eggs with sloping "runways" leading the out to the water. Sometimes additional platforms are constructed to rear the young once they have hatched out.

The female lay 7-12 cinnamon to olive or buff colored eggs that are brown spotted. Both the male and female take turns incubating the eggs that hatch in 18-21 days. The chicks are colored black and have red bills tipped in black. The skin at the base of the bill is bright red and they have white tipped curly hairs on the chin and throat.

The adults eat the empty eggshells and soon begin feeding the chicks nymphs of dragonflies and mayflies. The chicks have enormous feet when compared to their relatively small body size. This allows them to follow the adults by walking on dense aquatic plant mats and lily pads.

The young chicks are vulnerable to predation by raptors, snakes, turtles, alligators, and even large fish! Fishermen have reported seeing bass crash up through the vegetation and engulf young moorhens. Survival of the chicks depends on their ability to utilize the plant cover when danger approaches.

Artificial lures were reported to have been made to imitated the color and movement of young moorhen chicks. Locals protested and the lure makers changed the design to look like a mouse. The "mouse lure" have become popular in areas of large populations of common moorhens.

## FEATURED FISH

### Spotted Sunfish *Lepomis punctatus*



The spotted sunfish or "stumpknocker" is a common sunfish found throughout Florida in lakes, rivers, creeks and swamps. In the rest of the U.S. they are found in the Atlantic and Gulf slope drainages from Cape Fear, N.C. to the Nueces River in Texas. They have been introduced as far north as the Mississippi River basin in Central Illinois.

Spotted sunfish have a compressed egg shape with the body length about twice the depth. The body is olive green to brown in color with black spots on the base of each scale that form rows of dots on the sides and back. The caudal fin is slightly forked and the pectoral fin is short and rounded, usually not reaching past the eye when bent forward. This fish can grow from 8 to 12 inches long however, 4 to 5 inches is common.

Spotted sunfish in Florida are relatively common, being found in 19 of 60 lakes in a 1992 study of Florida lakes by the University of Florida/Department of Fisheries and Aquatic Sciences (UF/FAS). However, they are more common in the slow to moderate moving waters of rivers where they were found in 17 of 17 rivers sampled between 1985 and 1987 (UF/FAS).

The spotted sunfish gets its common name "stumpknocker" because it feeds on insects attached to submersed logs and plants. This species is very aggressive and will take almost anything it can attack and catch. They generally feed on the bottom but will sometimes go to the surface for food. Their diet consists mainly of plants and animals commonly associated with aquatic vegetation or submersed brush. They have even been known to eat small fish when readily available.

The spotted sunfish spawn primarily from early spring to November in Florida. The species builds a nest in shallow water in root wads and the males are very aggressive when guarding the nest often making grunting noises at intruders.

Some stream anglers prize spotted sunfish as an active and feisty panfish. Because of their small size and relatively low abundance compared to other sunfish in lakes, spotted sunfish are primarily an accidental catch in lakes and reservoirs.

The spotted sunfish may soon serve another role in Florida's streams and rivers. In a recent scientific study researchers at UF/FAS found a relationship between the abundance and weight of fish per sample of spotted sunfish versus flow in rivers and streams. They found that when flows were higher in a given year, the next year spotted sunfish were more abundant. Because of this finding, spotted sunfish may be an important indicator species for flow conditions in Florida rivers and streams. Additional research is being done to see if this species can be used to help establish Minimum Flow and Level Regulations for Florida rivers.

## Volunteers Frequently Ask: Why Is The Color Of My Lake Brown, Black or Red?

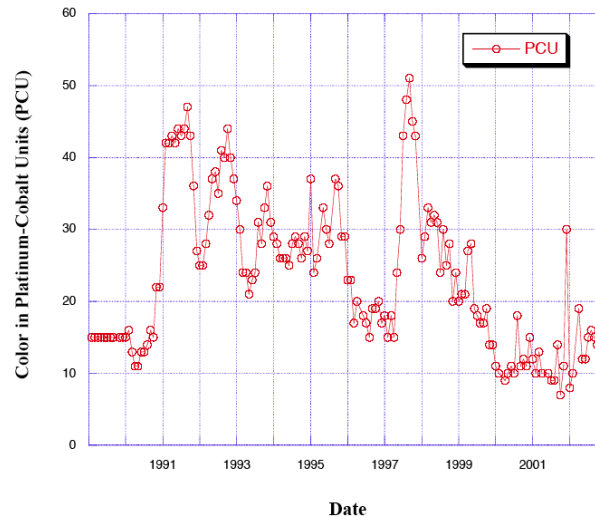
The color of water in a lake is one of the main attributes, besides water clarity that capture people's attention. Many lakes and waterways in Florida can display a wide variety of hues over time, ranging from a clear blue to vivid green, to orange or almost black. There are two basic terms commonly used when referring to the color of the water in a lake. One is known as apparent color and the other as true color. Apparent color is the color of the water as seen by the human eye. For example, when a person looks into a lake, the water may appear to be clear, blue, green, yellow, red, brown, or even black. Most of the time, apparent color is the result of substances that are either suspended or dissolved in the water column. True color is defined as the color of water resulting from dissolved substances only after all suspended substances have been removed and are therefore not allowed to influence the color of the water. In the United States, when lake management professionals talk about "color," they are generally referring to true color. The most commonly used color scale is the platinum-cobalt color scale (PCU) that ranges from 0 - 1000 PCU. If one were to use the platinum-cobalt color scale to measure lake water that is especially clear, the color readings would probably be less than 10 PCU, whereas lakes that have a little color will have a true color measurement ranging from 20 to 50 PCU. Lake water that is extremely dark in color will have a color reading of 500 PCU or higher. In Florida lakes, true color generally ranges from 5 PCU to 600 PCU.

Dissolved substances that impact color often include metallic ions of iron and manganese from natural sources (e.g., rocks and soils) and humic acids and tannins derived from organic matter (e.g., dead leaves and plants). These substances enter lakes by surface water runoff from the surrounding watershed, usually following a rain event. The dominant dissolved substances found in the water are typically organic compounds including humic acids and tannins that originate from many types of terrestrial and aquatic plants. There are literally hundreds of lakes in Florida that are colored due to the presence of these substances. Lake Charles

(PCU=700), in the Ocala National Forest, is a good example of this type of lake; its clear brown tea-colored water is the result of humic acids entering the lake from the surrounding watershed. In addition, algae can be another source of dissolved organic matter in water. The substances are released directly into the water from the algal cells. This type of organic matter can

change the true color of a lake by affecting light absorption. Dissolved inorganic substances can also influence color in lakes. For example, in lakes that receive inputs high in dissolved iron compounds, apparent color might be de-ga-ange-brown.

Figure 1 Color Measurements Over Time (1989 - 2003) from Lake Santa Fe in Alachua/Bradford County.



scribed as rusty or or-

Those who have had experiences with Florida lakes for a long period of time will tell you that the color of lakes change seasonally, and over a period of years, based on regional climate patterns. For example, in 1991 and again in 1998, residents from Lake Santa Fe in Alachua and Bradford Counties, were alarmed to see the color of the water change from a clear green, with a color measurement of 15 PCU, to a dark reddish brown, with color values exceeding 40 PCU (Figure 1). It turns out that rainfall patterns were largely responsible for the changes. Due to a marked lack of rainfall, there was less opportunity for tannins and other dissolved substances to wash or seep into the lake. As a result, Lake Santa Fe became fairly clear and stayed that way from about 1989 to 1991 and again from 1996 through mid-1998. However, once the drought events were over and rainwater flooded the swamps around the lake, dissolved substances were released into the lake and the lake became tea-colored again.

Recently, many of our volunteers have been noticing color changes similar to the Lake Santa Fe experience. These recent changes in water clarity in most cases can be explained in part by the hurricanes of 2004. The hurricanes and rain events that came with them flushed the surrounding wetlands and swamps bringing lots of humic acids and tannins derived from organic matter into the lakes, causing the water color to become stained either red or brown.

color continued on page 8

color continued from page 7

Color impacts light penetration, and light is critical to the growth of aquatic plants and algae. Lake scientists have spent a great deal of time observing and documenting just how much light is required for optimal growth. As the amount of color increases in a lake, light penetration decreases and results in a limited amount of algal and/or submersed aquatic plant growth. Thanks to Florida LAKEWATCH data and an analysis by Brown et al. (2000), we know that a true color value of 50-100 PCU can have a negative effect on a lake's algal biomass. However, most of the time, phosphorus and nitrogen have a much greater effect on algal abundance. When light levels reaching the bottom of the lake are around 10% or less of the light reaching the surface, there is insufficient light for most submersed aquatic plants to grow or remain established in a lake. LAKEWATCH data show that Florida lakes with lower true color measurements (i.e., values less than 50 PCU) can have as much as 100% of the lake bottom covered in plants (also called Percent Area Covered or PAC) (Bachmann et al. 2002). However, once the true color exceeds 50 PCU, the PAC seldom exceeds 40. Thus, if color impacts aquatic plants growing, it can also the aquatic animals that use aquatic plants for habitat. That is one of the reasons that LAKEWATCH added color to its sampling protocol.

## Florida LAKEWATCH



This newsletter is generated by the Florida LAKEWATCH program, within UF/IFAS' Department of Fisheries and Aquatic Sciences. 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 or call:

Florida LAKEWATCH  
PO Box 110600  
Gainesville, FL 32611  
1-800-LAKEWATCH (800-525-3928)  
(352) 392-4817  
E-mail: lakewat@ufl.edu  
<http://lakewatch.ifas.ufl.edu/>

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## 1 2 3 4 5... Countless ways to use LAKEWATCH Data

Lake Powell, the largest coastal dune lake in Florida, sits in both Walton and Bay Counties. This 700-acre lake was designated an "Outstanding Florida Water" in 1991. It was in 1991 that volunteers from Florida LAKEWATCH began to sample part of the lake in Bay County. Volunteers from the Walton County side of the lake joined LAKEWATCH in 2003.

Concerns over Lake Powell were sparked when heightened levels of phosphorus were measured in Lake Powell's water samples collected by Florida LAKEWATCH volunteers. Concerned citizens went to the County Commission and the Lake Powell Community Alliance was formed. The alliance was specifically designed so that developers, citizens and landowners would be able to come to the table to discuss issues and concerns about the lake. The alliance's mission is to keep tabs on the health of the 700-acre lake and to develop strategies to protect it.

One of the best ways to begin to preserve a lake is to raise awareness and get residents involved and interested. The Lake Powell Community Alliance is a good mechanism for doing that. **WAY TO GO!**

## Stocking Bass into Lake Griffin

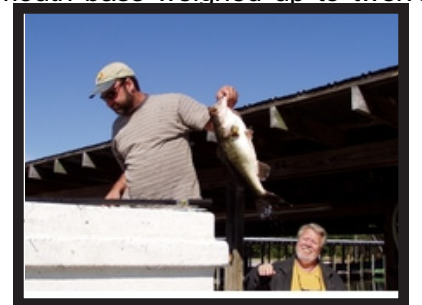


In the winter of 2004-2005, the University of Florida/ Institute of Food and Agricultural Sciences' Department of Fisheries and Aquatic Sciences with funding from Lake County Water Authority transferred 4,230 Florida largemouth bass (*Micropterus salmoides floridanus*) into Lake Griffin located in Lake County.

Many thanks go to the Orlando Airport Authority for providing assistance and access to non-fished ponds located on their property. Security and safety issues keep the ponds on airport property restricted from public access.

The objectives of this research/demonstration project were to determine if large numbers of larger-sized Florida largemouth bass could be transported successfully from one water body to another and to assist in restoring the economic vitality of Lake Griffin's fishery. The bass that were relocated to Lake Griffin were tagged for identification and were at least 8 inches in length. Some largemouth bass weighed up to twelve pounds!

Signs of success have already been noticed. The Bassmasters tournament held on Lake Griffin after the stocking project was very successful. Many of the large fish caught during the tournament had tags showing they were fish from this project. Follow up



surveys collected a significant percentage of fish marked or tagged during this project, proving the bass had survived being relocated from the airport waters to Lake Griffin. The airport also benefited by the removal of some fish from the airport ponds. By removing fish that could attract birds, the airport reduces potential for collisions between planes and birds.

**ALL SIGNS POINT TO A WIN-WIN PROJECT!**