

Florida LAKEWATCH



A Publication Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume XIV Summer 1999

“Significant changes in human behavior can only be brought about rapidly if the persons who are expected to change participate in deciding what the change shall be and how it shall be made.”

— H.A. Simon 1995

The TEAM Approach

A Process for Developing Effective Lake Management Plans

TEAM. The acronym sums it up pretty well: “Together for Environmental Assessment and Management.” The concept evolved several years ago by a group of researchers at the University of Florida’s Department of Fisheries and Aquatic Sciences as a way of bringing citizens, scientists, and water managers together to develop lake and/or water management plans.

Why the emphasis on developing management plans?

Diffusing user conflicts is one major reason. As the number of lakefront residents continues to grow in Florida, controversies related to how lakes are used and managed is also increasing. As LAKEWATCH can certainly attest to, it seems that most lake user conflicts are rooted in conflicting values of what

makes a quality lake — and how a waterbody is being used.

A classic example is the clash between lakefront property owners who want relief from the prolific growth of aquatic plants in their lake and anglers who see the same aquatic plants as prime fish habitat.

It was the goal of the researchers who developed the plan (Susan L. Canfield and Daniel E. Canfield, Jr.) to create a framework that allowed a “combination of input from all interests and the community-at-large with guidance from the scientific community.” This was a fresh approach after years of the more traditional command and control management techniques.

This all sounds well and fine. But does it work? There was only one way to find out. It wasn’t long before an ideal candidate presented itself. Homeowners from the Tsala Apopka Chain-of-Lakes in Citrus County approached Dr. Canfield a few years back and requested information about this new TEAM approach. Since then, they’ve embarked on a rare adventure in lake management. The process they’re using is a modified version of the original and has been broken into three main phases. They are currently in the third phase.



Once priority issues were decided upon by citizens and water managers, a group of lake management specialists held a series of meetings to discuss and develop a variety of approaches that could be used to manage the Tsala Apopka Chain-of-Lakes.

Phase 1

The initial phase, which began in May of 1998, involved a series of meetings with citizens, during which the public was asked to identify water or lake management issues that were of special concern. Through a series of short “round robin” talks, everyone was allowed to speak about what concerned them most. More than 50 topics were identified and discussed. Many issues were interrelated and most seemed to fall into eight major categories:

- Water Level Management
- Aquatic Plant Management
- Management of Fish and Wildlife
- Muck and Tussock Management
- Water Quality
- Public Education
- Land Use Management/Growth and Development
- Streamline Government and Government Accountability.

Continued on page 2.

Attention

Don’t miss out! Enroll your Florida Homeowner Association with LAKEWATCH today. Please provide us with the name of your association, the president’s name, and phone number.

Call 1-800-LAKEWATCH



UNIVERSITY OF
FLORIDA

Institute of Food and Agricultural Sciences
Department of Fisheries and Aquatic Sciences

The second part of Phase 1 involved meetings where professionals sat down and did the same thing. Interestingly, they came up with a list of concerns that was almost identical to the citizen list.

Phase 2

Once a list of priority issues was compiled, a series of individual meetings were held on such topics as water quality, fish and wildlife, aquatic macrophytes (plants) and water level management. Within each group, experts were brought together to review the best data available for the specific issues. They were then asked to discuss and develop a variety of approaches that could be used to manage the Tsala Apopka Chain-of-Lakes. (LAKEWATCH data played an important role in this phase of the project.) As one might expect, this phase took many months to complete as it involved multiple issues concerning several lakes.

A report is currently being assembled as a result of these discussions. In August, it will be distributed to the citizens that were

involved in Phase 1. Included in the report is list of proposed management options for further debate.

"This is not a report that will sit on the shelf collecting dust. This final plan will be a living changing document for use in managing the Tsala Apopka Chain-of-Lakes."

— Mark Hoyer

Phase 3

The third phase begins in September when, after reviewing the report, the original group of participating citizens will be given an opportunity to discuss the scientific evaluation and try to decide which of the options will work best.

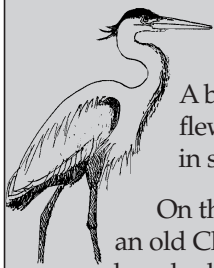
Mark Hoyer, a UF/IFAS researcher that has been very much involved in the process, wants to stress that this TEAM approach is "an

attempt to not only organize a management plan, but also to create a living document that will continue to evolve along with the process." As Mark points out, "We currently don't have all the data needed to answer all of our questions. However, as more information becomes available we want to be able to make adjustments to the management plan as we go along. This is not a report that will sit on the shelf collecting dust. This final plan will be a living changing document for use in managing the Tsala Apopka Chain-Of-Lakes."

A final management plan will be finished and distributed by December 31 to everyone involved including representatives from the Southwest Florida Water Management District (SWFWMD), Citrus County leaders, scientists, and private citizens — a great way to ring in the new millennium of lake management!

For more information about the TEAM approach, or to obtain a copy of the Tsala Apopka TEAM report, contact the LAKEWATCH office at:

1-800-LAKEWATCH (1-800-525-3928).



SOME HERONS

A blue preacher
flew toward the swamp,
in slow motion.

On the leafy banks,
an old Chinese poet,
hunched in the white gown of
his wings,

was waiting.

The water
was the kind of dark silk

that has silver lines
shot through it
when it is touched by the wind

or is splashed upward,
in a small, quick flower,
by the life beneath it.

The preacher
made his difficult landing,
his skirts up around his knees.

The poet's eyes
Flared, just as a poet's eyes

are said to do
when the poet is awakened
from the forest of meditation.
It was summer.

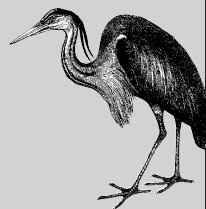
It was only a few moments past
the sun's rising, which meant
that the whole long sweet day
lay before them.

They greeted each other,
rumpling their gowns for an instant,
and then smoothing them.

They entered the water,
and instantly two more herons —
equally as beautiful —

Joined them and stood just beneath
them in the black, polished
water
where they fished,
all day.

— Mary Oliver



Florida

LAKEWATCH

newsletter is generated by the *Florida* LAKEWATCH program, within the Department of Fisheries and Aquatic Sciences of the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida (UF). 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:

Editor / Florida LAKEWATCH

PO Box 110600

Gainesville, FL 32611

or call 1-800-LAKEWATCH (1-800-525-3928)

(352) 392-9617 ext. 228

E-mail: lakewat@ufl.edu

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

Inclusion does not constitute endorsement, nor does exclusion represent censure of any item, organization, individual, or institution by the University of Florida or the *Florida* LAKEWATCH program.



Photo by John Yocum

This beautiful sunset reflection on Riley Lake accompanied John Yocum's report on milfoil management. If this were printed in color you'd see why John wrote "God must be a Gator because he loves orange and blue so much."

The Riley Lake Pause

Dear LAKEWATCHers,

...In the fall of 1997, milfoil was covering well over 50 percent of our lake. It made the lake almost unusable for boating, fishing and swimming. We had two meetings to determine what action would be taken ... and decided to solicit bids from contractors for control using either contact or systemic herbicides.

About the same time the bids were being received, several residents noticed that the milfoil was dying in massive quantities. After consulting with several elders, prophets, wise men and wise women around Riley Lake it was concluded that the best source of action for us to take was to observe the "Riley Lake Pause." In other words, don't do anything and see what happens in a few months. The milfoil continued to die off over the summer. Each month the status of the milfoil was monitored and it continued to die off until early November, when no milfoil was observed growing in open water.

The milfoil problem began in 1992, and became much worse during the drought and low water conditions that prevailed for several years. The heavy rains of 1996, the winter of 1997 and late summer rains of 1998 caused the lake to rise and the water to darken. The dark water is probably the major reason why the milfoil has diminished so dramatically. Milfoil is not entirely gone from the lake and it is strongly suggested that we develop a plan of action that will be taken if conditions return (a long-time drought) which would enhance milfoil growth.

— John and Janet Yocum
Lake Riley / Putnam County

Editor's Note: Although, it worked out well here, waiting isn't always recommended when it comes to managing aquatic plants. However, these folks had the right idea by carefully monitoring things and consulting a variety of aquatic plant management experts, including the Bureau of Aquatic and Invasive Plant Management/DEP. It's also a good example of how the presence of dissolved organic sediments in your lake (called tannins) can help to inhibit the growth of aquatic plants in your lake.

Florida Fish and Wildlife Conservation Commission

A New Commission to Replace Florida GFC

By Henry Cabbage

Excerpted with permission from *Florida Wildlife* magazine.

As of July 1, 1999 the Florida Game and Fresh Water Fish Commission (GFC) and the Marine Fisheries Commission (MFC) no longer exist. Florida voters abolished them in a 1998 election and replaced them both with one agency — the Florida Fish and Wildlife Conservation Commission (FWC).

As a result, the responsibility for conserving the state's freshwater and marine life, and terrestrial wildlife, are all under a single agency with roughly 1735 employees.

While officials are still sorting out such details as office space, equipment, phone lines, uniforms, colors for the vehicles, budgets, letterhead and what-not, one thing is clear; the new FWC basically encompasses all the programs of the old GFC and MFC, plus a few new ones. A few employees and programs from the Department of Environmental Protection (DEP) and the Marine Fisheries Institute are now under the new FWC umbrella.

All law enforcement employees from the DEP (except the Park Patrol), the Bureau of Emergency Response, Office of Environmental and Resource Crimes Investigations and some field investigators are now part of the new FWC. Former Marine Patrol officers will continue to concentrate on enforcing saltwater laws, and former wildlife officers will continue to focus on freshwater and wildlife laws. However, when there is a need to reassign law enforcement officers to deal with an emergency, the agency can do so. A new executive director must be selected by the FWC Commissioners and, for the first time, must be confirmed by the Florida Senate.

Questions about the new commission can be directed to the Office of Informational Services at (850) 488-4676.

Just for you...

A Key to Water Management: Nutrients

Just like the plants and trees in your yard, algae and aquatic plants need nutrients in order to grow. Knowing more about these nutrients and their relationship to your waterbody can help you work more effectively with water managers, as well as your neighbors and lake association, if there is one. The following information was excerpted from **Keys to Water Management: Nutrients (Circular 102)**. For more information and/or a complete copy of the circular call 1-800-LAKEWATCH.

“P” is for Phosphorus

Phosphorus — represented as “P” on a chemical element chart — is an element that, in its different forms, stimulates the growth of aquatic plants and algae in waterbodies.

It’s a building block for growth and life. If low in phosphorus, plants and algae don’t have enough resources to build new cells. Phosphorus compounds are also found naturally in many types of soils and rocks. Phosphorus mines in Florida and throughout the world provide phosphorus for many agricultural and industrial uses.

In water, phosphorus occurs in two forms: dissolved and particulate. **Dissolved phosphorus** is defined based on its size, as being small enough to pass through a 0.45 micron (one millionth of a meter) filter. It includes phosphorus forms like soluble reactive phosphorus and other soluble organic compounds that contain phosphorus.

Its counterpart, **particulate phosphorus**, is too big to pass through a 0.45 micron filter. It’s formed when phosphorus becomes incorporated into particles of soil, algae, and small animals that are suspended in the water. A combination of dissolved and particulate forms of phosphorus put together is referred to as **total phosphorus** (abbreviated “TP”).

(continued on page5)

Trophic State: A Waterbody's Ability To Support Plants, Fish, and Wildlife

When faced with the challenge of trying to describe and categorize water bodies, scientists developed the Trophic State Index (TSI). It's a way of measuring the amount of plant life in a waterbody and is used by Florida LAKESWATCH to help water managers and citizens understand the health of their lakes. The TSI is based on three factors: Secchi depth, chlorophyll *a*, and total phosphorus. Each factor is assigned a value from 1 to 10, and the average of these three values is the TSI. A TSI of 1-3 indicates a clear, healthy lake; a TSI of 4-6 indicates a lake with some plant life; a TSI of 7-10 indicates a lake with a lot of plant life and is often called eutrophic or hypereutrophic.



The names of the four trophic states, from the lowest level of biological productivity to the highest, are listed below:

- Oligotrophic (low plant life)
- Mesotrophic (medium plant life)
- Eutrophic (high plant life)
- Hypereutrophic (very high plant life)

The most used trophic index is the TSI. The TSI is based on three factors: Secchi depth, chlorophyll *a*, and total phosphorus. Each factor is assigned a value from 1 to 10, and the average of these three values is the TSI. A TSI of 1-3 indicates a clear, healthy lake; a TSI of 4-6 indicates a lake with some plant life; a TSI of 7-10 indicates a lake with a lot of plant life and is often called eutrophic or hypereutrophic.

Using Water Chemistry To Determine a Waterbody's Trophic State

It is common to use water chemistry to determine a waterbody's trophic state. The TSI is based on three factors: Secchi depth, chlorophyll *a*, and total phosphorus. Each factor is assigned a value from 1 to 10, and the average of these three values is the TSI. A TSI of 1-3 indicates a clear, healthy lake; a TSI of 4-6 indicates a lake with some plant life; a TSI of 7-10 indicates a lake with a lot of plant life and is often called eutrophic or hypereutrophic.

Florida LAKESWATCH
Department of Fisheries and Aquatic Sciences
P.O. Box 110000, Gainesville, FL 32611-0000
Phone: (352) 339-2200 • Fax: (352) 339-2201
Website: <http://www.floridalakeswatch.com>

materials will provide a basic foundation to the terminology and concepts used in the water management arena. We do want to point out, however, that not all scientists and water managers use this information in precisely the same way. The descriptions and explanations that we’ve assembled represent water management as the Florida LAKEWATCH team has come to understand it after much research, observation, and feedback from volunteers.

The last thing we want to do is inundate you with unwanted reading material. That’s why most of these materials are made available upon request. A few are being included in this year’s data packets. We will also be featuring excerpts from some of the information circulars in this issue (see “P” is for Phosphorus) and future issues of the LAKEWATCH newsletter.

The following is a list of the latest circulars/pamphlets now available. Consider it our way of saying thanks for your dedication in “watching” your lake.

♦ Florida LAKEWATCH Data - What Does It All Mean —

leads you through the tables and graphs and shows you how to spot trends and patterns;

♦ Trophic State: A Waterbody's Ability to Support Plants, Fish, and Wildlife —

explains four trophic states, discusses how LAKEWATCH determines your waterbody’s Trophic State and how the information can be useful to you;

♦ Florida Lake Regions: A Classification System —

explains the development of 47 Florida Lake Regions and discusses why it’s important for you to know which Lake Region your lake is in and how such information can be useful.

♦ A Key to Water Management: The ABCs (Circular 101) —

is a handbook of commonly used terms and concepts used in water management. This circular is almost a one-stop shop for the basics in Florida limnology (lake science).

♦ A Key to Water Management: Nutrients (Circular 102) —

provides background information on algae, aquatic macrophytes (plants), nitrogen, phosphorus, “limiting” nutrients and “limiting environmental factors,” lake region and trophic state with many references to LAKEWATCH data and how they are used to support the information.

♦ A Key to Water Management - Water Clarity (Circular 103) —

describes water clarity and how it’s measured; factors that affect water clarity such as algae, geographic location and seasonal variation, etc. as well as management strategies for changing water clarity.

There is ongoing scientific inquiry about when, where, and how often these specific phosphorus forms are found in waterbodies. LAKEWATCH analyzes water samples for total phosphorus measurements because by measuring the sum of all types of phosphorus, it gives us an estimate of the potential of a waterbody's biological productivity — its ability to support plants, fish and wildlife. Plants can only use phosphorus in certain forms. Phosphorus that is in unusable forms is said to be "unavailable" to plants and algae. (See below: *Phosphorus As A Limiting Nutrient.*)

Understanding the relationship among aquatic plants, algae, and phosphorus is additionally complicated by the fact that the ability of algae to use specific forms of phosphorus is strongly influenced by several factors, including the following:

- ◆ alkalinity (pH),
- ◆ water hardness (caused by the presence of calcium and/or magnesium),
- ◆ the amount of dissolved oxygen in the water,
- ◆ concentrations of iron in the water, and
- ◆ thermal stratification (layers of water having different temperatures).

For more about these factors and how they affect water chemistry, see A Key to Water Management: the ABCs (Circular 101).

A Bum Rap

It's been found that waterbodies with low concentrations of TP usually have relatively clear water. Because many people prefer clear water, it's often assumed that high concentrations of TP (and less water clarity) are bad. It's a misconception, however, that clearer

water is intrinsically better. The association of clear water with low phosphorus levels has given the public the mistaken notion that phosphorus is a pollutant. And yet there are many lakes in Florida with high phosphorus concentrations that are naturally occurring. These high phosphorus lakes often have high fish and wildlife populations.

There are many ways in which phosphorus finds its way into waterbodies. The more common ways are described below.

- ◆ Some areas of Florida and other parts of the world have extensive phosphate deposits in the soils. In these areas, rivers and water seeping or flowing underground can become phosphorus
- Continued on page 6.*

Phosphorus as a limiting nutrient...

While talking with lake scientists, you may hear them refer to a lake's **limiting nutrient**. A limiting nutrient is a nutrient that is necessary for plant growth — but is in short supply or available on a very limited basis to the plants and/or algae in a waterbody. Once the limiting nutrient is exhausted, further growth of the algae population stops.

If more of the limiting nutrient is added, larger algal populations will result until their growth is again limited by nutrients or by other limiting environmental factors.

In most freshwater lakes in Florida, the limiting nutrient is believed to be phosphorus. Aquatic plants may not respond as directly to nutrient limitation in the water as do algae, because many of these plants take their required nutrients from the bottom sediments through their roots, rather than from the open-water.

In general, it's believed that waterbodies that have higher phosphorus levels also have higher

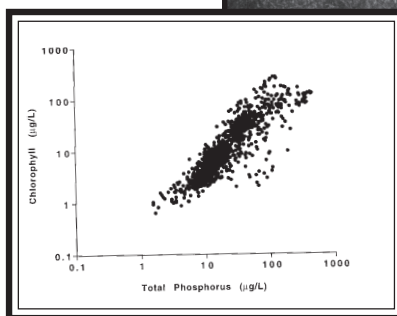


Figure 1

levels of algae in the water. This is based in part on surveys of lakes in Florida and throughout the world and on results of whole-lake experiments. A picture of this relationship emerges when average yearly chlorophyll concentrations are plotted on a graph versus the total phosphorus concentrations (see Figure 1).

The graph shows that increasing phosphorus values are generally accompanied by increasing chlorophyll levels.

As a result, aquatic scientists often recommend the manipulation of phosphorus, called "phosphorus

control," as a primary management strategy for controlling algal biomass (the mass or weight of algae in a waterbody at a given time). The high priority placed on phosphorus control by regulatory and professional management agencies in Florida is evidenced by its use in the multi-million dollar lake management programs at Lake Apopka and Lake Okeechobee.

See the next LAKEWATCH newsletter for information on the role **nitrogen** plays in a lake's nutrient supply. ^{FLW}



This graph depicts a strong relationship between total phosphorus and chlorophyll concentrations for Florida lakes. As phosphorus levels increase (indicated as dots), so do chlorophyll levels (which are also depicted as dots).

(continued from page 5)

enriched and may carry significant amounts of phosphorus into waterbodies.

◆ Sometimes phosphorus is added intentionally to waterbodies as a management strategy to increase fish production by fertilizing aquatic plant and algal growth.

◆ Phosphorus can enter waterbodies inadvertently as a result of human activities such as landscape fertilization, crop fertilization, wastewater disposal, and stormwater run-off from residential developments, roads, and commercial areas.

Waterbodies in the Florida LAKEWATCH database analyzed prior to January 1998 had total phosphorus concentrations which ranged from less than 1 to over 1000 µg/L.

Analysis of total phosphorus concentrations in Florida shows the following three patterns that should be of interest to both managers and lake residents/users:

◆ There seems to be a relationship between the geographic location of a waterbody and its total phosphorus concentration.

◆ The Florida LAKEWATCH database shows that there is a seasonal pattern for total phosphorus concentrations in Florida lakes. Total phosphorus concentrations tend to be lower during December and January, but higher and more variable during the rest of the year.



UF/IFAS water chemistry laboratory technicians John Douglas and Kelly Schulz analyze LAKEWATCH water samples for total phosphorus and total nitrogen

◆ Using total phosphorus from the Florida LAKEWATCH database, Florida lakes were found to be distributed into four trophic states* as follows:

◆ Approximately 42% of the lakes would be classified as **oligotrophic**, with TP values less than 15µg/L. Oligotrophic lakes have very low levels of biological productivity.

◆ About 20% of these lakes would be

classified as **mesotrophic**, with TP values between 15 and 25 µg/L. Mesotrophic lakes have moderate levels of biological productivity.

◆ Approximately 30% of these lakes would be classified as **eutrophic**, with TP values between 25 and 100 µg/L. Eutrophic lakes have moderately high levels of biological productivity.

◆ Nearly 8% of these lakes would be classified as **hypereutrophic**, with TP values greater than 100 µg/L. Hypereutrophic lakes have very high levels of biological productivity.

These patterns suggest that it's important to consider the range of phosphorus concentrations found in your particular lake region, their seasonal fluctuations, and your waterbody's trophic state in order to evaluate the feasibility of goals you may set for phosphorus levels in your waterbody.

See the next LAKEWATCH newsletter for information on the role **nitrogen** plays in a lake's nutrient supply. **FLW**

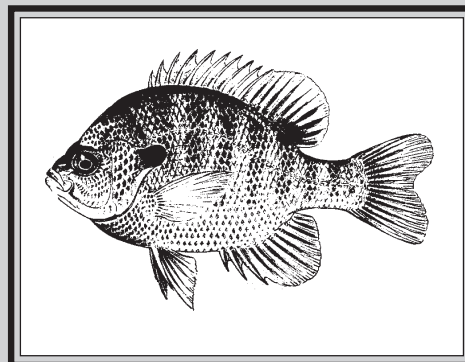
* For more information about trophic states, see the LAKEWATCH information pamphlet entitled: *Trophic States: A Lake's Ability to Support Plants, Fish, and Wildlife*.

Featured Fish: Bluegill ~ *Lepomis macrochirus*

Despite the fact that people catch bluegills more than any other freshwater fish, this feisty little sportfish still suffers from an identity crisis. What most folks call a "bream" is in fact a bluegill. (Bream is a generic term used to describe many types of panfish.)

Greenish on the top and sides with dark vertical bars and small amounts of blue and orange colors around the head, the bluegill is a handsome fish. It's also an important sportfish and excellent food fish.

Bluegills were originally restricted to western and central North America, ranging from coastal Virginia to Florida; west to Texas and northern Mexico; and



north to Minnesota and western New York. Currently, bluegills have been transplanted to most other parts of North America, into Europe, and South Africa.

Biology

The bluegill may spawn throughout the growing season, which in most years is from February through October in Florida. Pairs nest in colonies with males fanning nests in shallow water, usually less than 1 meter deep. They have diverse food habits including algae, vascular plants, zooplankton, aquatic and terrestrial insects, crayfish, and small fish. A wealth of additional biological information has been published on the bluegill.

Note: Information for this Featured Fish column was excerpted from the *Handbook of Common Freshwater Fish in Florida Lakes* (Mark V. Hoyer and Daniel E. Canfield, Jr.).

VOLUNTEER BULLETIN BOARD

Volunteers Needed in Polk County

Florida LAKEWATCH has recently begun an effort to expand its volunteer base in Polk County — home to some of the best bass fishing and water skiing in the state.

Roger Griffiths, with the Lake Regions Lake Management District, is excited about LAKEWATCH's efforts to expand in that area. "There are hundreds of private lakes within the County that have never been monitored before and that we know very little about."

Volunteers will be trained on a first come, first serve basis.

Anyone interested in monitoring a lake in the Polk County area should call John Brenneman at: 941-533-0765.

New Leon County Collection Center

Volunteers living south of I-10 in the Tallahassee area now have a collection center closer to home. Located near the Leon County Fairgrounds, you can drop your samples at the:

Leon County Extension Office
615 Paul Russell Road
Tallahassee, FL 32301
Phone: 850/487-3003
Contact: Cindy Boyer
Hours: Monday - Friday 8 AM - 5 PM

Collection Center Changes in Marion County

The Marion County collection center (US Forest Service Visitor's Center on Hwy 40) has been closed. **A temporary collection center has been designated at the Lake George ranger station, located 7 miles east of the old collection center on Hwy 40.** The ranger station is open from 7:30 AM until 4 PM Monday through Friday. It's closed on federal holidays.

Tell the receptionist that you're a LAKEWATCH volunteer. Remind them that your samples need to be stored in the freezer. This is a temporary collection center until a permanent one can be set up at the Silver River State Park. Questions? Call:

1-800-LAKEWATCH (1-800-525-3928).



Something Buggy at UF

The Florida LAKEWATCH office is fortunate to have a new neighbor these days. The Freshwater Invertebrate Resources Unit of the Florida Fish and Wildlife Conservation Commission (formerly the GFC) is now housed right here at the Department of Fisheries and Aquatic Sciences. Laboratory staff Gary Warren and Darrie Hohlt are providing

invaluable taxonomic and ecological expertise to UF faculty, staff, students, as well as LAKEWATCH volunteers. Need a mussel, snail, insect, or other mysterious aquatic critter identified? "The bug lab," as we affectionately call it, is a good place to start: (352) 392-9617 ext 279.

Hillsborough Lake Atlas On-line

One more example of how LAKEWATCH data are utilized is now available for you to use and peruse. Hillsborough County's lake atlas is on-line. The atlas provides one-stop shopping for data acquired from a multitude of sources including Florida LAKEWATCH. Creation of the atlas was a collaborative effort of Hillsborough County, Southwest Florida Water Management District (SWFWMD) and the University of South Florida's Center for Community Design and Research. It's an interactive site that provides bathymetric maps, aquatic plant surveys, rules, regulations, permit information, educational materials, as well as opportunities for feedback from experts.

Check it out:

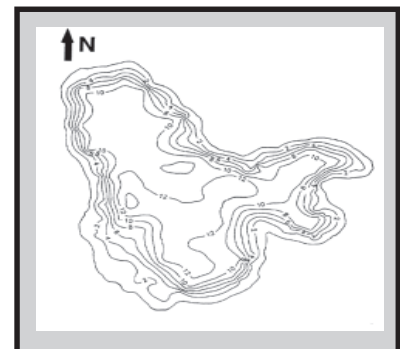
<http://www.lakeatlas.usf.edu>

Bathymetric maps on the web

Lakefront homeowners, as well as anglers, will be glad to know that for the past several summers, LAKEWATCH has been in the process of generating **bathymetric maps** for a number of Florida lakes. Even better, the maps are now at their fingertips on the LAKEWATCH web site.

The maps have been produced with the help of students working under the supervision of Christy Horsburgh, research assistant for the Florida LAKEWATCH program. There are currently only 45 maps available. However, the number of maps available will continue to grow each year as LAKEWATCH plans to continue its annual summer collection of mapping data and aquatic plant surveys, as funding is made available. For access to the maps, go to the LAKEWATCH web site at:

<http://www.ifas.ufl.edu/~lakewatch/index.htm>



Bathymetric maps depict physical features of a waterbody such as the contour of the shoreline and water depths at various locations within the waterbody. Bathymetric maps can be used to determine surface area, maximum length, maximum width, total volume of water, and the average and maximum depths. Note: Florida LAKEWATCH bathymetric maps are not intended for navigational use.

Do You Know Your Regional Coordinator?

Thanks to your support, LAKEWATCH has been able to expand its staff right along with the growing number of lakes entering the program. This summer, the LAKEWATCH program has undergone a re-organization with the addition of two more regional coordinators and the designation of a program leader, Mark Hoyer.

We want to stress that any of our regional coordinators can answer your questions or provide you with data, regardless of whether or not your lake is in their region. (The regions are just our way of dividing up the responsibilities.)

If you don't know who your regional coordinator is, we encourage you refer to the chart below and give them a call to get acquainted. You can call our toll-free citizen message line at 1-800-LAKEWATCH (1-800-525-3928) or reach the regional coordinator office directly at (352) 392-4817.



Mark Hoyer
Program Leader



Claude Brown
Regional Coordinator



Eric Schulz
Regional Coordinator



Julie Terrell
Regional Coordinator



David Watson
Regional Coordinator



Dan Willis
Regional Coordinator

County	Coordinator	County	Coordinator	County	Coordinator
Alachua	Claude Brown	Hamilton	Claude Brown	Okeechobee	Dan Willis
Baker	Claude Brown	Hardee	Dan Willis	Orange	David Watson
Bay	Julie Terrell	Hendry	Dan Willis	Osceola	Dan Willis
Bradford	Claude Brown	Hernando	Julie Terrell	Palm Beach	Dan Willis
Brevard	Dan Willis	Highlands	Dan Willis	Pasco	Eric Schulz
Broward	Dan Willis	Hillsborough	Eric Schulz	Pinellas	Eric Schulz
Calhoun	Julie Terrell	Holmes	Julie Terrell	Polk	Dan Willis
Charlotte	Dan Willis	Indian River	Dan Willis	Putnam	Claude Brown
Citrus	Julie Terrell	Jackson	Julie Terrell	Santa Rosa	Julie Terrell
Clay	Claude Brown	Jefferson	Julie Terrell	Sarasota	Dan Willis
Collier	Dan Willis	Lafayette	Claude Brown	Seminole	David Watson
Columbia	Claude Brown	Lake	David Watson	St. John's	Claude Brown
Dade	Dan Willis	Lee	Dan Willis	St. Lucie	Dan Willis
Dixie	Julie Terrell	Leon	Julie Terrell	Sumter	Julie Terrell
De Soto	Dan Willis	Levy	Julie Terrell	Suwannee	Claude Brown
Duval	Claude Brown	Liberty	Julie Terrell	Taylor	Julie Terrell
Escambia	Julie Terrell	Madison	Julie Terrell	Union	Claude Brown
Flagler	Claude Brown	Manatee	Dan Willis	Volusia	Claude Brown
Franklin	Julie Terrell	Marion	Julie Terrell	Wakulla	Julie Terrell
Gadsden	Julie Terrell	Martin	Dan Willis	Walton	Julie Terrell
Gilchrist	Claude Brown	Monroe	Dan Willis	Washington	Julie Terrell
Glades	Dan Willis	Nassau	Claude Brown		
Gulf	Julie Terrell	Okaloosa	Julie Terrell		

Recommended Resources

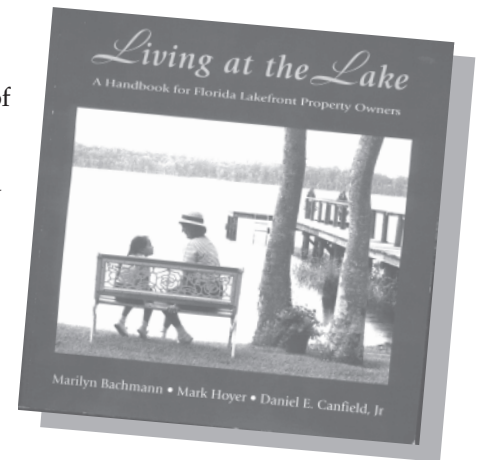
Living at the Lake

By M. Bachmann, M. Hoyer, and D. Canfield, Jr.

Whether you live on a lake or hope to someday, here's help on how to enjoy the benefits of waterfront living as well as wisdom about the responsibilities that come with it.

Living at the Lake, a new book published by the University of Florida's Institute of Food and Agricultural Sciences, provides readers with useful advice on how to choose lakeside property, as well as manage it. Several chapters cover regulations that apply to lakeside construction, fishing, boating, hunting, and other water uses. The beautifully illustrated, 182-page resource describes the variety of unique lake-types found in Florida, along with information about the plants and wildlife that inhabit them. A 'Short Guide to Common Aquatic Plants in Florida' rounds out this useful resource, along with a handy listing of the agencies and organizations related to lake and/or water management.

Price: \$ 15.00 plus appropriate FL sales tax and \$ 4.00 shipping and handling



Aquatic Plant ID Deck

By Vic Ramey Photography by Kerry Dressler, Alison Fox, David Sutton, Jess van Dyke & Karen Brown This pocket sized field guide (3" X 4") includes color photographs and information for 67 aquatic and wetland plant species. The deck is laminated and bound with a metal fastener, making it suitable for outdoor use. It's proven to be extremely popular with lakefront homeowners, amateur and professional naturalists, teachers, scientists — anyone that's a freshwater enthusiast.

Price: \$ 10.00 plus appropriate FL sales tax and \$4 shipping and handling.



Grasses, Sedges and Rushes of Wetlands ID Deck

By Vic Ramey Photography by Ann Murray

This handy field guide and/or desk reference for wetlands and wildlife managers, naturalists and outdoor enthusiasts, waterfront homeowners and science teachers. The laminated 3" X 4" card deck is designed for in-the-field identification of 84 species (including 11 non-native species) of grasses, sedges and rushes. Each plant is illustrated with color photographs, line drawings and reader friendly text. Notes about how these plants are utilized by wildlife such as ducks, cranes, geese, rabbits and deer are invaluable to the wildlife manager or lake manager. Pages are bound together by two easy-to-open bindery rings, allowing for easy use. **Price: \$ 12.00** plus appropriate FL sales tax and \$4 shipping and handling.



To order any of the above publications, contact:

IFAS Publications
PO Box 11011
Gainesville, FL 32611-0011
(352) 392-1764

VISA and MC orders call:
1-800-226-1764

Free Information About Aquatic, Invasive, or Wetland Plants

The University of Florida's Center for Aquatic and Invasive Plants might have a new name (formerly the Center for Aquatic Plants) but it continues to be a one-stop shop for information about aquatic, wetland and invasive plants.

It's also the home of APIRS, an aquatic plant information retrieval system (library) that houses over 46,000 references. The collection is mostly comprised of scientific articles from peer reviewed journals, but also includes books, agency reports, and proceedings of research conferences. Articles are available concerning chemical control methods (herbicides), biological control methods (plant eating fish, insects, or pathogens), and mechanical control methods (machines) as well as all other aspects of aquatic and wetland plant science.

Anyone can contact APIRS for a free literature search list about aquatic and wetland plants. Copies of up to 10 documents from the APIRS library are available for research purposes. The library, located in Gainesville, is also open to the public during normal working hours. Inquiring minds with access to the Internet can do their own literature search on the APIRS database via

their web site. The web site itself is a gold mine of information about aquatic, invasive, and wetland plants. The Center also offers a newsletter, AQUAPHYTE, published twice a year. The newsletter is on-line at the APIRS website or the printed version can be subscribed to for free. For more information, contact:

Karen Brown 352/392-1799

E-mail: kpb@gnv.ifas.ufl.edu Web site: <http://aquat1.ifas.ufl.edu/>



UNIVERSITY OF FLORIDA

Institute of Food and Agricultural Sciences
Department of Fisheries and Aquatic Sciences

Florida LAKEWATCH

7922 NW 71st Street
PO Box 110600
Gainesville, FL 32611

NON-PROFIT
ORGANIZATION
U.S. POSTAGE PAID
UNIVERSITY OF FLORIDA
IFAS / CES

ADDRESS SERVICE REQUESTED



Happy Campers at Hillsborough County's Lake Day

Many happy aquatic gardeners went home with handfuls of free macrophytes (another word for aquatic plants) from a recent Hillsborough County Lake Day, held on May 22. LAKEWATCH volunteers, Adopt-a-Pond volunteers and the general public were invited for a day of fun in the sun on Lake Crescent at Camp Keystone in Odessa. Activities included fish and aquatic plant displays, a fishing derby for kids, fish fry, water

skiing demonstrations and even water sampling races via canoes. You'll be glad to know that while the LAKEWATCH staff didn't win 1st place, they did score big points in technique and also accomplished their main objective of not flipping the canoe!

The free aquatic plants were made available to Lake Day participants thanks to the

Hillsborough County Public Works Department and the fishing derby was organized by the Florida Fish and Wildlife Commission (formerly the Florida Game and Fresh Water Fish Commission).



Dear Friend of Your Lake,

Do you have a concern about your lake and an interest in its future? If you have access to any type of boat, can spend two hours each month on your lake, and are willing to monitor for at least a year, you might be eligible for the Florida LAKEWATCH volunteer program.

Florida LAKEWATCH is currently the only research program gathering monthly data to study such a large number and a wide variety of Florida's lakes. However, without the help of volunteers, it would not be possible. Participants in the Florida LAKEWATCH program receive:

- * a free newsletter subscription
- * use of sampling materials
- * training in monitoring procedures
- * periodic reports and an annual report
- * access to lake experts (limnologists)
- * invitations to LAKEWATCH activities

For more information about how you can become a FLW volunteer, contact:

Florida LAKEWATCH

PO Box 110600
Gainesville, FL 32611
1-800-LAKEWATCH (1-800-525-3928)
E-mail: lakewat@ufl.edu

Web site address:

<http://www.ifas.ufl.edu/~lakewatch/index.htm>