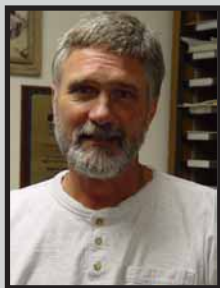


# Florida LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume XXXIII 2006



## A Heartfelt Thanks!

I am writing to thank all Florida LAKEWATCH volunteers for their dedication and hard work. You make this the best volunteer monitoring program in the country, if not the world. I know many of you hear this often but I am not sure that everyone really has a feeling for how successful you have made LAKEWATCH. Florida LAKEWATCH data are used by many lake managers and research scientists in local, county, state, national and international agencies. When I travel to meetings in and out of the State there is never a meeting that I go to where participants do not thank me for the data. However, they should be thanking you, the volunteers.

For the past few years there has been some confusion among different agencies about how LAKEWATCH data can be used. This confusion came to the attention of the Florida Lake Management Society (FLMS) and they convened a meeting with the FLMS Board, LAKEWATCH representatives, and Department of Environmental Protection representatives to discuss this issue. I commend the FLMS board for their actions and include in this newsletter their findings (see the article "How will Florida LAKEWATCH Data be used in the State's Total Maximum Daily Load Program?").

To summarize their findings, legislative language that initiated the Florida LAKEWATCH program prevents data collected by Florida LAKEWATCH volunteers from being used for regulatory procedures (see F.S. 1004.49 on page 5). However, everyone I visited with agrees that the data are invaluable for modeling aquatic systems, trend analysis and for an early warning system for the lakes of Florida. Please take time to read the article "How Florida LAKEWATCH data will be used in the State's Total Maximum Daily Load Program?" and know that your efforts are appreciated by many people all over the world!

Mark Hoyer  
Assistant Director Florida LAKEWATCH

## How will Florida LAKEWATCH Data be used in the State's Total Maximum Daily Load Program?



*Rainbow over Western Lake, located in Walton County, one of the coastal dune lakes located in Florida. It has a creek that intermittently opens to the Gulf of Mexico. This helps create a unique lake system that has both freshwater and saltwater plants and wildlife.*

On September 16<sup>th</sup>, 2005, the Florida Lake Management Society (FLMS) Board of Directors met with Jan Mandrup-Poulsen of the Florida Department of Environmental Protection (FDEP), Dr. Dan Canfield (Director of Florida LAKEWATCH), Mark Hoyer (Assistant Director of Florida LAKEWATCH) and Dr. Karl Havens (Department Chair of the University of Florida's Department of Fisheries and Aquatic Sciences). The meeting was designed to help the participants learn more about ways FDEP is using LAKEWATCH data in the process of establishing lists of impaired waters and Total Maximum Daily Loads (TMDLs). To learn more about the State's Impaired Water Lists and TMDL process, see page 4. This meeting was organized in part because of concerns by the FLMS Board that FDEP might be ignoring data from the volunteer

*Continued on page 4*



Photo courtesy of Philip Ellis, Choctawhatchee Basin Alliance Coastal Dune Lakes Coordinator.

## Featured Fish

## Bluespotted Sunfish (*Enneacanthus gloriosus*)



Photo taken from [www.cnr.vt.edu/efish/families/bluespotsun.html](http://www.cnr.vt.edu/efish/families/bluespotsun.html)

*Bluespotted sunfish are dusky green olive above with blue or silver spots in irregular rows along the sides and fins. There is a dark spot on the ear flap not quite as large as the eye pupil. The caudal fin is rounded which separates this sunfish from most other common Florida sunfish. The bluespotted sunfish is a very small fish with adult sizes ranging from 2 to 3 inches in length.*

Bluespotted sunfish are extremely small fish with adult sizes ranging from 2 to 3 inches in length. They are a dusky green olive above with blue or silver spots in irregular rows along the sides and fins. There is a dark spot on the ear flap not quite as large as the eye pupil. Bars found on the sides of juvenile fish are indistinct in the adult. The body is deeply compressed and the caudal fin is rounded which separates this sunfish from most other common Florida sunfish.

Bluespotted sunfish are found in coastal lowlands from southern New York to South Florida. They are usually found in dark or stained waters of sluggish coastal streams, swamps and lakes. They frequent thick vegetation or submerged branches and roots. The major food items for the bluespotted sunfish includes small crustaceans, aquatic insects, plants, worms, and mollusks.

In a 1972 article from American Currents (Issue #1, Fall 1972), Robert T. Rosen described the mating behavior of the bluespotted sunfish. The male builds the nest in thick vegetation or filamentous algae. The male then courts the female into the nest to spawn. The two fish touch and wave in a dance over the nest. By the next day the male pushes the

female out of the nest. The eggs will hatch in approximately 60 hours. Spawning in the wild usually occurs when the water temperature reaches 73°F (23°C).

In a study of 60 Florida lakes the bluespotted sunfish was found in 25 of the 60 lakes sampled. These 25 lakes included a wide variety of lakes in Florida ranging in size from 4 hectares to 5580 hectares and in water clarity from 0.4 meters to 5.3 meters. These lakes tended to be lakes with abundant aquatic vegetation.

When biologists sample the bluespotted sunfish in a system there are several peculiarities that this species presents. The first problem has to do with correctly estimating the population numbers of the bluespotted sunfish in a system. The bluespotted sunfish, when present, are often too numerous to estimate the true population size. So population estimates for this species are conservative at best.

Another problem when sampling this species is in obtaining accurate weights. Accurate weights cannot be obtained with normal fisheries scales because normal fisheries scales usually weigh only to the nearest gram. The bluespotted sunfish usually weighs less than one gram. In the study mentioned earlier, the

*Continued on page 10.*

# Yellow-crowned night-heron (*Nycticorax violacea*)

The yellow-crowned night-heron (*Nycticorax violacea*) is an attractive, relatively secretive species of heron widely occurring on the continent. The yellow-crowned night-heron was observed in only 4 of the 94 water bodies participating in the LAKEWATCH Bird Survey.

The yellow-crowned night-heron is a medium sized, short-legged wading bird. Adult birds are blue-gray with a black and white patterned head. The head of the adult is black with a yellow-white crown and a white cheek patch. When in breeding plumage, white streamer like feathers extend from the crown.



Photo taken from [www.animalworldspecialimages.com](http://www.animalworldspecialimages.com)

*An adult breeding yellow-crowned night-heron.*

Juvenile yellow-crowned night-herons are grayish-brown overall with thin, buffy spotting on the back and upper wings. Juveniles have buff-white throats and bodies with fine, grayish-brown streaking.



Tim Fennell © 2002

*A juvenile yellow-crowned night-heron.*

The eye color is red for the adults and yellow or orange for the juvenile herons. The legs are yellow

and turn pinkish red on breeding adults where as the legs of the juveniles are greenish-yellow. Yellow-crowned night-herons acquire adult plumage by two years of age.

Yellow-crowned night-herons can be easily confused with the black-crowned night-heron or the American bittern. Black-crowned night-herons have a black cap and white cheeks and a black back while the back of the yellow-crowned is solid blue-gray and they have the yellow-white crown.



[www.epa.gov/regions/supertundecology/html/casestudies/images/pages/bcnheron.htm](http://www.epa.gov/regions/supertundecology/html/casestudies/images/pages/bcnheron.htm)

*Yellow-crowned night-herons can be easily confused with black-crowned night-herons. An adult black-crowned night-heron is pictured above.*

Juvenile yellow-crowned night-herons have longer legs and shorter, thicker bills than the black-crowned juveniles. The yellow-crowned night-heron tends to have a slimmer body with an elongated neck and posture compared to the stocky body and shorter neck of the black-crowned. The immature yellow-crowned night-heron has a solid upper wing in flight compared to the two-toned upper wing of the black-crowned night-heron. The black-crowned night-heron also lacks the buffy spotting on the back and upper wings and has a much longer, thinner and lighter colored bill than the yellow-crowned night-heron.

The yellow-crowned night-heron is more diurnal than the black-crowned night-heron. The yellow-crowned tends to forage throughout the day, but peak activity is during the early morning and evening hours.

The primary diet of this species is made up largely of crustaceans such as, crayfish, fiddler or larger crabs along with aquatic insects, leeches,

## Featured Bird

mussels, frogs, and small fish. This night-heron forages the majority of the time by still-hunting with its neck extended making it the most sedentary forager among the 8 species of North American herons.

Yellow-crowned night-herons breed as early as February and as late as mid-June in Florida. The primary breeding habitat is coastal swamps and interior lakes, rivers, and wetlands. Nests consist of sticks and twigs that are mainly brought by the male and are lined with grasses and leaves. The nests can be located in trees or on the ground and the female will lay three to four pale blue eggs. The eggs hatch in about 21 to 25 days and the nestlings are cared for by both parents and fledge at about 25 days of age.

Evenings are the best time to catch a glimpse of this secretive rather solitary heron foraging for food, flying overhead, or you might hear their guttural, "whoc", call, if you listen carefully.

## 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 to:

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(352) 392-4817

E-mail: [lakewat@ufl.edu](mailto:lakewat@ufl.edu)

<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. 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.



*Continued from page 1*

LAKEWATCH program and that LAKEWATCH data may not have been used to its fullest potential by the FDEP. As is frequently true, reality proved to be more complex and less controversial than conjecture.

### **LAKEWATCH Data and TMDLs**

Florida LAKEWATCH is a volunteer citizen lake monitoring program that facilitates hands-on citizen participation in the management of Florida lakes through monthly monitoring activities. Coordinated through the University of Florida's Institute of Food and Agricultural Sciences/Department of Fisheries and Aquatic Sciences, the program has been in existence since 1986. In 1991 the Florida Legislature recognized the importance of the program and established Florida LAKEWATCH in the state statutes (Florida Statute 1004.49).

LAKEWATCH is now one of the largest lake monitoring programs in the nation with over 1800 trained citizens monitoring over 600 lakes and 150 near-shore coastal areas, in more than 40 counties. The LAKEWATCH program and LAKEWATCH volunteers are important partners with FLMS in promoting the enhancement, conservation, restoration and management of Florida's aquatic resources.

The LAKEWATCH database is used by many groups, including FDEP, and is a tremendous asset to all state, regional and local water resource managers, lake homeowners associations, educational institutions, consultants, and the general public. However, there are legal barriers that prevent the use of LAKEWATCH data in the full TMDL process (it has been used in the initial phases) as will be discussed later. The

## **Brief Background on Florida's Total Maximum Daily Load Program**

A Total Daily Maximum Load (TMDL) is the amount of a specific pollutant a water body can tolerate and still meet water quality standards; a TMDL is adopted for each pollutant causing impairment in a water body. The identification of impaired waters is required by the *Federal Water Pollution Act of 1972*, the *Clean Water Act of 1977* and the *Water Quality Act of 1987*. In Florida, the listing process and other aspects of the TMDL program are governed by the *Florida Watershed Restoration Act* found in section 403.067 of the Florida Statute (F.S.), and chapter 62-303 of the Florida Administrative Code (FAC).

The general schedule for completing TMDLs in Florida is based on the 1999 Consent Decree between the U. S. Environmental Protection Agency (USEPA) Region 4 and Earth Justice. The Consent Decree requires completion of 1,981 TMDLs, based on the FDEP's 1998 impaired waters list, by 2011. FDEP's 1998 impaired waters list was developed before passage of the *Florida Watershed Restoration Act*, and is based on 1996 water quality monitoring data. These listings had no minimum number of samples required and many of the underlying data lacked verifiable quality assurance, and therefore were not considered by FDEP as an adequate basis to be the sole support for establishing a TMDL. Therefore, the Consent Decree Schedule for adopting specific TMDLs may be adjusted as a result of Florida's verification process and the addition or delisting of waters relative to the 1998 list.

The Florida TMDL process has been formalized by FDEP's five step approach which can be summarized as: (1) data collection and assessment; (2) follow-up data collection; (3) setting the total allowable pollutant load in the form of a TMDL; (4) development of a Basin Management Action Plan (BMAP), and (5) implementation of the plan. During the BMAP development step the FDEP works with stakeholders to allocate pollutant loads to point and non-point sources and determine the party responsible for the specific pollution load, identify funding sources, set forth management strategies (stormwater retrofits, wastewater upgrades, best management practices, etc.), and secure commitments to implement the actions called for in the plan. Each BMAP will be adopted by an order of the Secretary of the FDEP and the implementation of the BMAP is accomplished cooperatively with stakeholders and can be viewed as an adaptive management tool. Its success is measured against objective standards and, where necessary, changes may be made (through Secretarial adoption).

Additional information on the TMDL program is available via internet at: <http://www.dep.state.fl.us/water/tmdl/index.htm>

following is the legislative language that describes the structure and activities of the LAKEWATCH program:

*"Section 1004.49, Florida Statutes. Florida LAKEWATCH Program—The Florida LAKEWATCH Program is hereby created within the Department of Fisheries and Aquaculture of the Institute of Food and Agricultural Sciences at the University of Florida. The purpose of the program is to provide public education and training with respect to the water quality of Florida's lakes. The Department of Fisheries and Aquaculture may, in implementing the LAKEWATCH program:*

- (1) Train, supervise, and coordinate volunteers to collect water quality data from Florida's lakes.*
- (2) Compile the data collected by volunteers.*
- (3) Disseminate information to the public about the LAKEWATCH program.*
- (4) Provide or loan equipment to volunteers in the program.*
- (5) Perform other functions as may be necessary or beneficial in coordinating the LAKEWATCH program. Data collected and compiled shall be used to establish trends and general background information and shall in no instance be used in a regulatory proceeding."*

Importantly, item (5) clearly states LAKEWATCH data "shall in no instance be used in a regulatory proceeding." This prevents these data to be used in certain phases of the TMDL process. Jan Mandrup-Poulsen pointed out, in his presentation to the FLMS Board, that after careful review of this legislation, the FDEP legal staff determined that LAKEWATCH data can be used to

track water quality as it compares to numeric criteria for lakes and for trend analysis and to initiate additional sampling by FDEP or other authorized agencies. For example, LAKEWATCH data can be used to document long-term water quality trends and to compile the planning list of impaired water bodies. LAKEWATCH data also can be used to assess nutrient or contaminant loads to lakes and in modeling of lake function to calculate TMDLs. Mr. Mandrup-Poulsen also emphasized the importance of data collected by LAKEWATCH and other volunteer monitoring groups in tracking water quality trends.

### Summary

The primary limitation in use of LAKEWATCH data by FDEP is that these data may not be used to develop the final (verified) list of impaired water bodies for TMDLs or for the basis of enforcement actions.

*LAKEWATCH data is extremely valuable and represents the largest single source of lake water quality sample data in Florida and is used by FDEP for trend analysis and as part of the initial data collection and analysis step in the TMDL process. It may also serve to initiate further sampling by FDEP or other agencies to support enforcement actions.*

The FLMS Board wants to thank Jan Mandrup-Poulsen, Dr. Dan Canfield, Mark Hoyer and Dr. Karl Havens for allowing us to better understand the important role of LAKEWATCH data as well as the limitations to its use in the TMDL process and providing the basis of this article. We hope the reader now realizes with the FLMS Board that the FDEP recognizes the importance of these data and that these limitations do not detract from the usefulness of the data for documenting long-term trends and for assessment of water quality in

making sound water resource management decisions. Users of LAKEWATCH data benefit immensely from the hard work of numerous volunteers and LAKEWATCH staff. We want to commend the staff and volunteers who make LAKEWATCH one of the premier volunteer networks in the Nation.

It has long been recognized that FLMS and LAKEWATCH have many goals in common. FLMS members can continue to support LAKEWATCH in the following ways:

- volunteer as a LAKEWATCH water quality monitor;
- use FLMS meetings for general public education and encouragement of participation in the LAKEWATCH program;
- enhance local involvement in LAKEWATCH through workshops held by FLMS chapters.

The value of volunteer monitoring by citizen scientists in Florida as well as the rest of the country can not be overstated. Data are needed on as many aquatic systems as possible to monitor trends and protect our valuable aquatic resources. Federal, state and local governments do not have the resources needed to cover all of the systems and volunteer monitoring can fill this gap. So, please support citizen scientists as they sample, protect and enjoy the wealth of aquatic systems in Florida.



*LAKEWATCH volunteer John Goodwin, who samples Lake Lynn in Highlands County, receives his data from Dan Willis, one of the LAKEWATCH Regional Coordinators.*

# Volunteer Bu

## LAKEWATCH Volunteers come in all sizes and shapes!

Glenn Hawkins, our LAKEWATCH volunteer on Lake Huckleberry in Highlands County, sent in this photo of his "friend" who accompanies him on his monthly LAKEWATCH sampling. Thankfully LAKEWATCH doesn't discriminate on who samples as long as one trained volunteer is present for each sampling event.



Photo courtesy of Glenn Hawkins.



## Do you have a water monitoring success story ?

Have you been able to use your LAKEWATCH data to achieve an important goal for your lake? Has it helped you red-flag changes in phosphorus, nitrogen or water clarity? Has it been used to establish new water quality standards? Or influence local land-use decisions? If so, we'd like to hear about it so that we can continue to inspire others. We'd also like to include the information in presentations to various lake management and water monitoring groups. Send your story to:

Florida LAKEWATCH  
7922 NW 71st Street  
Gainesville, FL 32653-3071  
E-mail: lakewat@ufl.edu

## We salute our 10-year volunteers!

*If you've been sampling for 10 years or more and were unable to attend a regional meeting, call us so we can send you a 10-year LAKEWATCH pin.*



Highlands County volunteers

*The dedication of individuals, like these pictured here from Highlands County, are the reason why LAKEWATCH has been so successful. All of these folks have been monitoring for at least 10 years — some of them even longer! **Left to right:** Bob Alexander, Bob Polk, Jim Wilburn, Susie Entel, Jerry Entel, Jack Richie, Bob Irvine, Dave Boyer, Ted Clay and Gordon Davis.*

## WANTED Volunteers:

If you or someone you know is interested in joining the LAKEWATCH team and help sample any of the following lakes, please contact our office by calling 1-800-525-3928 or e-mail us at lakewat@ufl.edu.

### Lake County

Akron	Linda
Arlene	Little Mary
Arthur	Little Nellie
Black	Lucy
CR Big	Mathews
CR Small	Mill Stream Swamp
Crescent 2 (near Eustis)	Nettie
Crystal	Norris
David	North Twin
Denham	Pearl
Desire	Placida
Dixie East	Purdum Pond
Dixie West	Saunders
Dolls	Shady Nook
Eldorado	Silver Paisley
Glonia	South Twin
Grassy	Spencer
Haines	Sunset
Holly	Sunshine
Idlewild	Swatara
Jack's	Umatilla
Kirkland	Woodward
Lady	Zephyr

### Osceola County

Ajay	Kissimmee
Cecile	Live Oak
Gentry	Tohopekliga—
Hatchineha	(South Basin)

## REWARD:

- ◆ Access to lake experts around the state.
- ◆ Quarterly and annual water chemistry reports on the lake(s) of your choice.
- ◆ Free quarterly newsletters and educational publications about lake ecology.
- ◆ The knowledge that you are contributing to the future of Florida's lakes.



# Bulletin Board

## How's Your Filtering Kit Holding Up?

We asked that you bring your equipment to the regional meetings so we can replace and repair broken or old pieces. If you have been unable to attend a meeting you can still get your equipment updated by just calling our office. We will send new parts directly to your home.

- If your graduated cylinder is cracked, becoming "tarnished," or hard to see through, we'll be glad to trade it out for a newer one,
- If your filter pump is broken or needs repair, please call us and we'll have a new set delivered to you in return for the old set. (We now have the capability to repair them.)
- How does your tubing look? Dirty and needs to be replaced? Call us and we'll send you a new one.
- Please don't hesitate to call if you should have any questions or need supplies.

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



Mark your calendar: June 5-8, 2006  
Annual Lake Management Conference  
in St. Augustine



The Florida Lake Management Society (FLMS) has created a new membership category for volunteer monitors. This new category has a non-voting status but will offer full privileges in all other respects. There will be no dues for this category. FLMS only asks you to continue your volunteer efforts.....so LAKEWATCH volunteers take the opportunity and join this great organization!

Also, join lake management professionals and fellow citizens at the 17<sup>th</sup> Annual FLMS Conference in St. Augustine, Florida. This meeting is a great way to become acquainted with many of the people involved with lake management and to hear presentations on a variety of topics including toxic algae blooms, lake water levels, exotic and invasive species of plants and animals, etc. Travel grants will be available from FLMS to attend the conference. Travel grant can be used to pay for the attendee's conference registration and/or room accommodations at the Casa Monica Hotel. Applications are due before March 30, 2006.

For more information about becoming a FLMS member or the travel grants for the FLMS conference visit the website: <http://flms.net/conference/info.htm> or contact Chuck Hanlon at 561-682-6748 or [chanlon@sfwmd.gov](mailto:chanlon@sfwmd.gov).

# HURRICANES.....

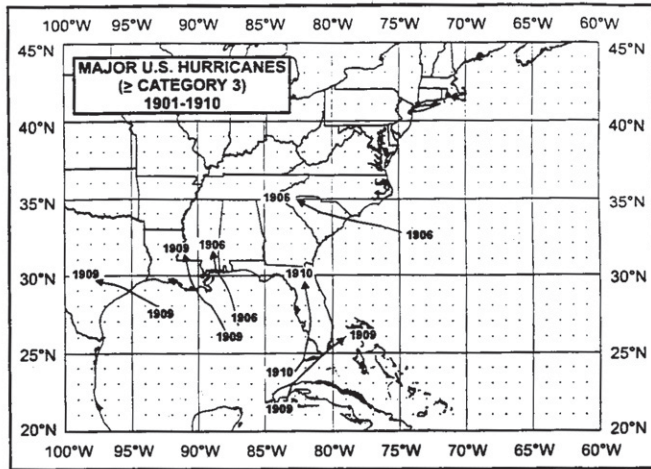


Figure 1. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1901-1910.

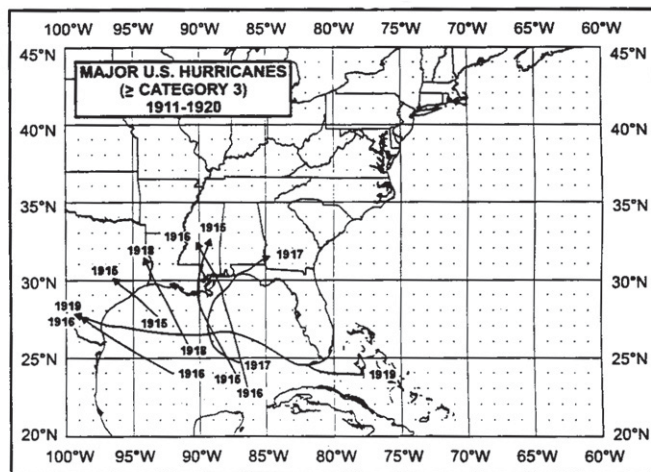


Figure 2. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1911-1920.

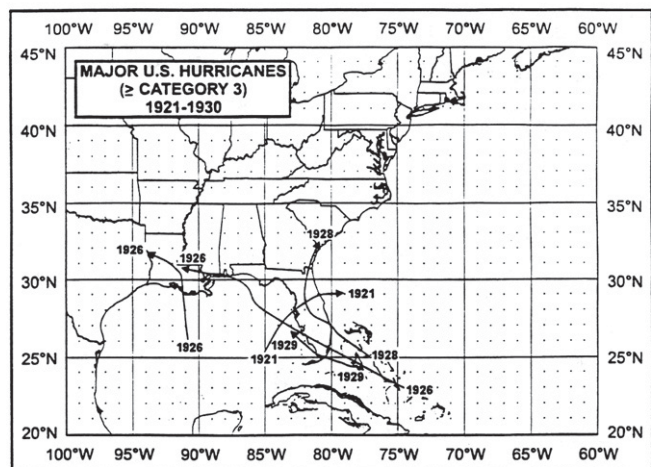


Figure 3. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1921-1930.

*If you live in Florida you are well aware that the hurricane season runs from June 1 to November 30. And if you have lived in Florida for the last decade, the last couple of hurricane seasons have felt as very active years. With the perceived increase of activity of hurricanes, there has been a lot of information reported about hurricanes and Florida—what is fact and what is fiction?*

*Dr. Dan Canfield, director of the Florida LAKEWATCH program, recently took some time and researched the frequency of hurricanes to Florida. Below is a short synopsis of what he found. The figures and information he wrote about can be found at <http://www.aoml.noaa.gov/hrd/Landsea/deadly/>.*



Dr. Dan Canfield, Director Florida LAKEWATCH

We humans are born, age, and die. In the course of life, we are influenced by events that make us what we are. Some events are so powerful, they become known as “Life Changing.”

Communities, like individuals, are born, age, and sometimes die. For a community to continue to live, commitments must be made by generation after generation. Each generation, however, experiences “Life Changing” events and responds to insure the survival of the community and future generations.

Florida is known as a land of environmental extremes. Floods, drought, and fire are natural events of great importance, but the great hurricanes (category 3 and above) are natural events that have been Florida’s most well-known “Life Changing” events. People living outside Florida are fascinated by and fearful of hurricanes, often making light of the “Life Changing” events of their region (e.g., tornados in the Midwest).

Floridians are not unduly fearful of hurricanes, but like people everywhere we tend to focus on our day-to-day life problems. In 2004, storms named Charlie, Francis, Jeanne, and Ivan rekindled our respect for hurricanes. In 2005, Hurricanes Katrina and Rita sealed our respect for Hurricanes.

*Continued on page 10.*



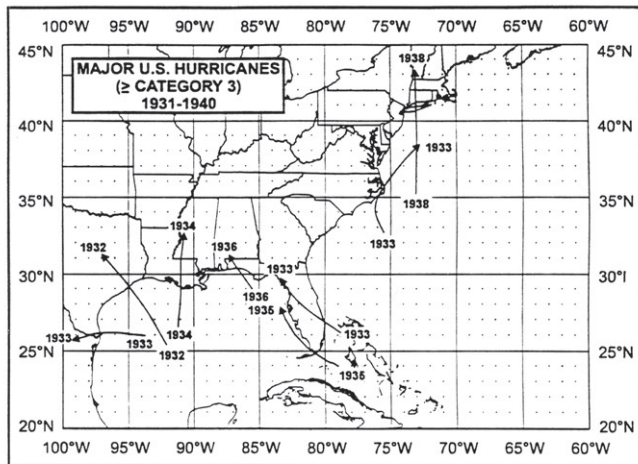


Figure 4. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1931-1940.

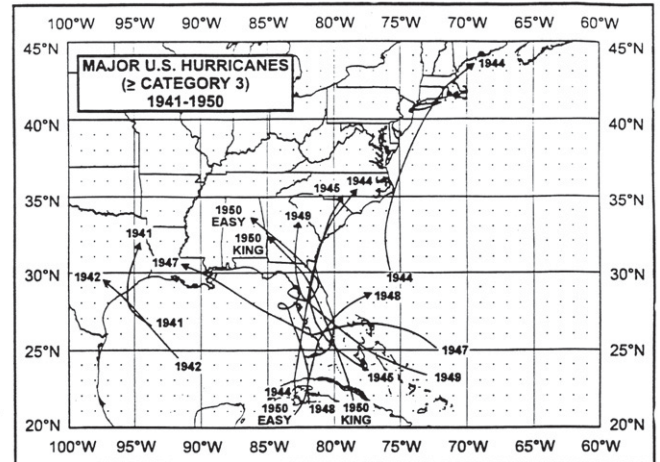


Figure 5. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1941-1950.

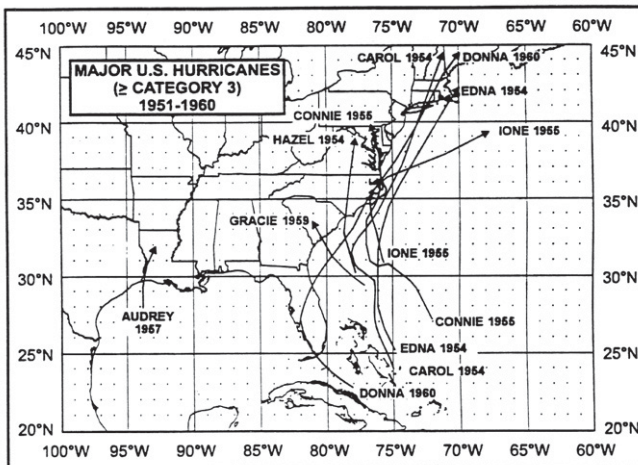


Figure 6. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1951-1960.

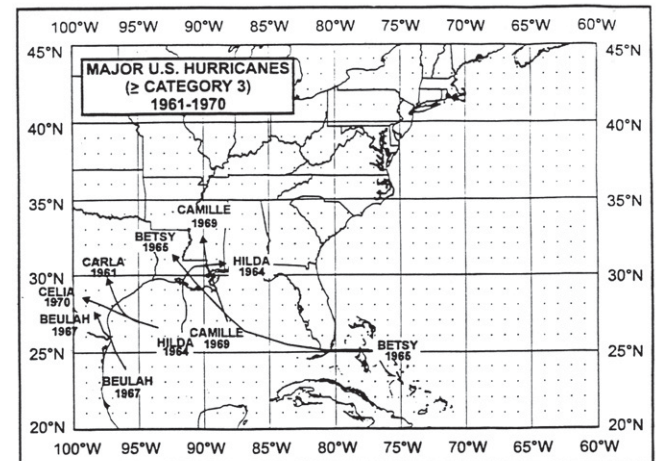


Figure 7. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1961-1970.

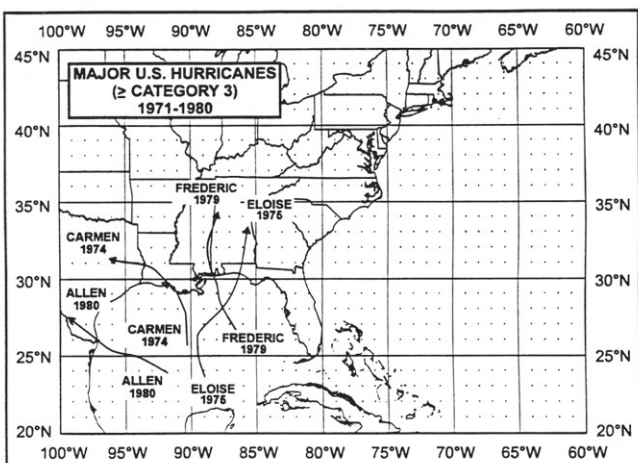


Figure 8. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1971-1980.

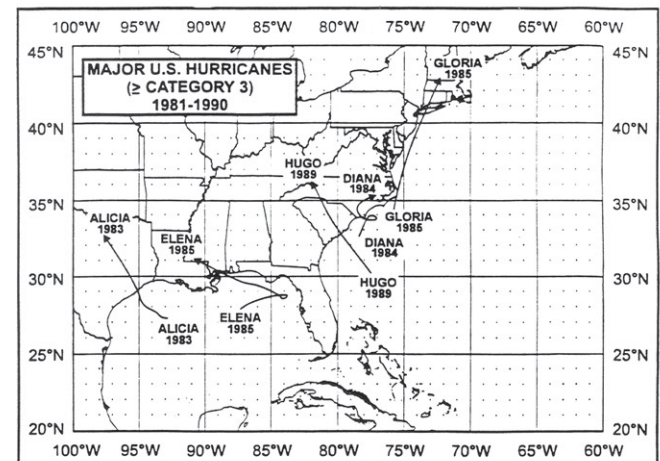


Figure 9. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1981-1990.

*and FLORIDA...*

Continued from page 9.

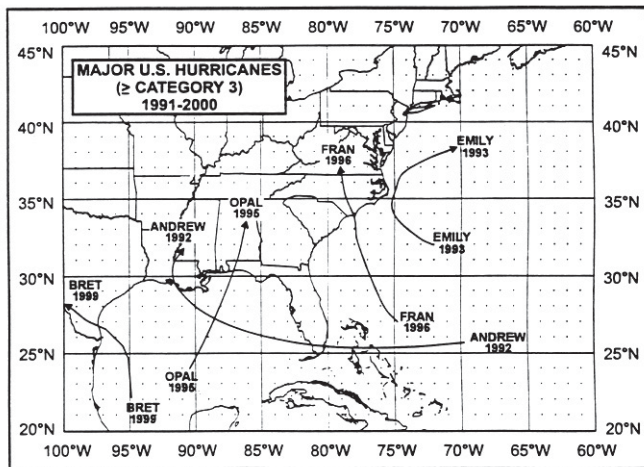


Figure 10. Landfalling United States major hurricanes (stronger than or equal to a category 3) during the period 1991-2000.

Unfortunately, we are still guilty of failing to remember our history. Why did past generations of Floridians build levees around Lake Okeechobee? Why was the Kissimmee River dredged? Why are there so many flood control canals? Answers to these questions are linked to Florida's great cycle of hurricanes.

Florida LAKEWATCH has produced this newsletter article so that each of you can ponder great issues that you, your community and state will confront in the future as we enter a more active hurricane period. The tracks of the great hurricanes occurring from 1900 to 2000 are presented for your thoughtful consideration.

Note the decade (1941 to 1950) when seven great hurricanes struck Florida then compare to the 40-year period 1961 to 2000 when only four great hurricanes made landfall. So always be prepared for hurricanes and remember Florida's Hurricane history.

Daniel E. Canfield, Jr.  
Director, Florida LAKEWATCH

Continued from page 2.



Photo taken from <http://www.millevolte.com/nativefish07.html>

More photos of the blue-spotted sunfish swimming.



Photo taken from <http://fishiezoo.com/images/showphoto.php/photo/463>

maximum weight obtained for the bluespotted sunfish from the 25 lakes containing the bluespotted sunfish was 2.0 grams.

Bluespotted sunfish are not considered a sportfish and have no commercial value other than forage fish for some top predators like the largemouth bass. The scientific name of the bluespotted sunfish describes this species well. The genus is *Enneacanthus*, which means nine-spined, and the specific epithet is *gloriosus*, which means handsome. Therefore, bluespotted sunfish make an excellent aquarium fish because of their coloring. They are docile in nature and they get along well with other fish.

## So what about Florida Lakes and Hurricanes?

What we know is that hurricanes seem to have cycles. The length of the cycles and frequency is yet to be determined. But definitely by looking at history (read article on page 9 and 10), it is clear that there are decades where many major hurricanes (category 3 or greater) have struck Florida contributing to very wet years (see Figure 5 on page 9). There also have been decades when there were few major hurricanes contributing to record droughts and very dry years (see Figures 2, 7, 8, and 9 on page 9 and figure 10 on page 10). What might this mean to Florida's lakes and to lake management, in general?

All we can say is "STAY TUNED!" With the dedication of LAKEWATCH volunteers, who collected data through some of these decades, responses of lakes to hurricanes will begin to be investigated. Researchers here at LAKEWATCH plan to review, study, and perform statistical tests on the water chemistry data that has been collected before, during, and after the recent hurricanes.

You will read about their findings here in the LAKEWATCH newsletter as soon as they finish!



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DEPARTMENT OF FISHERIES & AQUATIC SCIENCES  
FLORIDA LAKEWATCH  
PO BOX 110600  
GAINESVILLE FL 32611-9988



*Dear LAKEWATCHers,*

*Thank you for taking the time to contact us with your address changes and information updates. Because we are a state-funded research program, we are required to update our mail list every couple of years. This turns out to be a good exercise for us all, as area codes and zip codes seem to be changing daily.*

*Your efforts help immensely by allowing us to streamline our mail list and volunteer database. It also gives us a chance to touch base with many of you.*

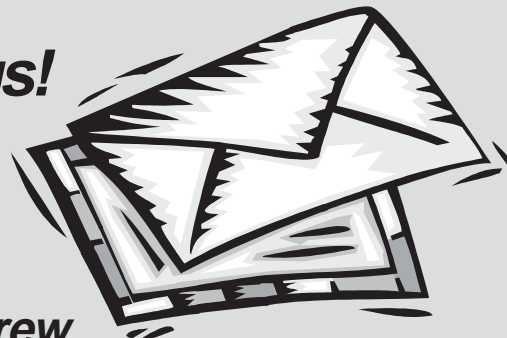
*Please take the time to complete and return the last page of this newsletter. Please fill out page 12 clearly. Cut the last page out and fold it in thirds. Place a piece of tape on the end to hold together the folded paper and put it in your mailbox..*



**Postage is on us!**

*Thanks again,*

**The LAKEWATCH crew**



# Your name will be deleted from our mail list.... if we don't hear from you soon.

State law (Section 283.55 Florida Statutes) requires that we purge our mail list periodically.  
So we will be deleting names and addresses of all those individuals who don't respond  
before April 1, 2006.

To ensure that you will continue to receive the free LAKEWATCH newsletters:

FILL OUT YOUR CONTACT INFORMATION BELOW. Please print clearly.  
ANSWER THE QUESTIONS BELOW (if you have any questions, please feel free to contact us).  
DETACH THIS PAGE.

FOLD IT INTO THIRDS ALONG FOLD LINES (first fold bottom up and then fold top down).  
PLACE A PIECE OF TAPE ON THE END TO SECURE THE FOLDS.  
PLACE IN YOUR MAILBOX. WE WILL PAY FOR THE POSTAGE!

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LAKEWATCH Contact Information:

Florida LAKEWATCH  
7922 NW 71st Street  
Gainesville, FL 32653

Phone: 1-800-LAKEWATCH (1-800-525-3928)  
Fax: 352-392-4902  
E-mail: lakewat@ufl.edu

Please be sure to provide the following information (*please print clearly*):

Water Name: \_\_\_\_\_ County Name: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Phone (s): \_\_\_\_\_

E-mail: \_\_\_\_\_

Fold up along line.

Fold up along line.

Do you want to remain on our mailing list? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you generally find the newsletter articles interesting? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you find the newsletter easy to understand? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you have any sampling materials? Yes \_\_\_\_\_ No \_\_\_\_\_

What is your current status (select all that apply)?

primary water sampler \_\_\_\_\_ co-primary water sampler \_\_\_\_\_

back-up water sampler \_\_\_\_\_ bird sampler \_\_\_\_\_

fish diary sampler \_\_\_\_\_ mail list only \_\_\_\_\_

Thank you for your assistance!