Florida LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume 40 (2007)

Secure the Legacy-A Fundraising Update

The most difficult task any organization can undertake is the raising of private funds. This is true no matter how much money seems to be out there or how good the cause. Success, however, is achieved through commitment, making the personal contacts, and persistence!

LAKEWATCH volunteers have demonstrated all three of these traits of success over the past few months, ***resulting in the raising of over $44,000***. Much of this money has come through the purchase of LAKEWATCH Legacy bricks. As the Christmas holiday approaches, consider donating a brick for each of your loved-ones or someone else that is special!

Substantial funds have been raised through soda/candy/chip sales in the name of Florida LAKEWATCH or the highly awarded youth education program, *Fishing for Success*. Other funds are now arriving from donations for the LAKEWATCH calendar. The calendar is an excellent way *you* can help to spread the word about LAKEWATCH to fellow Floridians as well as friends who live outside Florida. Besides, it is a beautiful product that will grace any wall!

Other funds come to LAKEWATCH from our friends who have contributed to building the "Home" for LAKEWATCH and *Fishing for Success*. An anonymous donor just sent a contribution of $10,000!

The campaign for a LAKEWATCH HOME is making great progress given that "word of mouth" has been the primary means of communication. Radio and TV shows have been released in parts of Florida as well as news articles in statewide publications. Success, however, will only be achieved with each of *you* making the personal contacts and persisting with the request for help. Available funds are close to $100,000 given past efforts and future pledges, but the fund-raising committee established a goal of $1,000,000 so the LAKEWATCH team has a long way to go. The LAKEWATCH advantage is that the State of Florida will match each dollar raised. If each of you will reach out to your neighbors and others using our lakes and coastal waters, the pooling of many small contributions will get the hard task of funding a LAKEWATCH HOME done!

Pictures of the current LAKEWATCH facilities and a diagram of the proposed new building.

UF UNIVERSITY of FLORIDA IFAS

2008 Florida LAKEWATCH Calendar Order Form

The 2008 Florida LAKEWATCH Calendar will be available October 22, 2007. We are currently accepting pre-orders. To receive a calendar print out this order form, fill it out, and send the order form along with your donation (suggested donation is $15 to $20 per calendar) to:

Florida LAKEWATCH Calendar
7922 NW 71st Street
Gainesville, FL 32653

Make CHECK out to: University of Florida Foundation, Inc. -- SHARE
in the MEMO line write: Florida LAKEWATCH Building

Name _____
Address _____
City/State/Zip _____
Email Address _____ Phone # _____
Donation Amount _____ Number of Calendar(s) _____

OFFICE USE ONLY

Number of Calendar(s) sent_____ Date Sent _____ Initials _____

RED TIDE!

Image courtesy of P. Schmidt

An aerial view of Red Tide moving into a southwest Florida beach.

Red tide, sometimes referred to as harmful algal blooms (HAB), occurs when toxic, microscopic algae in seawater proliferate to higher-than-normal concentrations known as blooms, often discoloring the water red, brown, green, or yellow. While more than 40 species of toxic micro algae live in the Gulf of Mexico, the most common species is called *Karenia brevis* also known as the Florida red tide organism.

The Florida red tide organism was identified back in 1947, but anecdotal reports of the effects of red tide in the Gulf of Mexico date back to the 1530's. Florida red tides occur in the Gulf of Mexico almost every year, generally in the late summer or early autumn. They are most common off the central and southwestern coasts of Florida between Clearwater and Sanibel Island, but they may occur anywhere in the gulf. They also occur, but are less common, along the southeastern Atlantic coast as far north as North Carolina. Most blooms last three to five months and may affect hundreds of square miles, however, blooms can continue sporadically for as long as 18 months and may affect thousands of square miles!

Karenia brevis is a common photosynthetic dinoflagellate (a type of free floating algae) found year-round throughout the Gulf of Mexico. It has two whip-like appendages, or flagella, that propel and direct it through the water. In Florida waters *K. brevis* thrives in high-salinity areas, but it can tolerate a wide range of salinities and temperatures common to the Gulf of Mexico. This species is able to out-compete other phytoplankton (free floating algae) and forms nearly monospecific blooms.

Karenia brevis produces brevetoxins that is capable of killing fish, birds, and other marine animals. Bottom-dwellers such as groupers and grunts are usually the first fish to die in a Florida red tide, although most fish are probably susceptible. Mortality, in terms of numbers killed and species affected, can be severe and is dependent upon factors such as bloom density and the length of time animals are exposed to the toxins.

Brevetoxins may also cause health problems in humans. The toxins accumulate in shellfish that are filter feeders, such as oysters, clams, and coquinas, and may reach levels capable of causing neurotoxic shellfish poisoning (NSP) when ingested. NSP is a temporary illness characterized by gastrointestinal and neurological distress. Symptoms include nausea and diarrhea;

Continued on page 4.

dizziness; muscular aches; and tingling and numbness in the tongue, lips, throat, and extremities. Symptoms of NSP usually appear within a few hours of eating contaminated shellfish and disappear within a few days.

Brevetoxins can also irritate eyes and respiratory systems when the toxins become airborne in sea spray; the irritation disappears once a person is no longer exposed. Other public health effects caused by red tides include puncture wounds from spines when beaches are littered with dead fish and, rarely, contact dermatitis from exposure to brevetoxins in seawater.

Florida red tides have economic impacts as well. Tourist communities lose millions of dollars when dead fish wash up on beaches or beachgoers experience eye and respiratory irritation. Shellfish-harvesting businesses lose income when shellfish beds must be closed because of *Karenia brevis* blooms. Even tourism, recreational activities, and other businesses not actually at the bloom site may be adversely affected. Although it is hard to calculate actual dollars lost, a study of three red tide blooms that occurred in the 1970s and 1980s estimated losses from each event at between $15 million and $25 million dollars.

Nick Tomecek

A victim of the Red Tide in Northwest Florida (October 2007).

Prior to the early 1970's, Florida red tides were believed to originate inshore because discolored water, fish kills, and respiratory irritation were most often observed first around passes and barrier islands. Later review of the historical data compiled from research cruises showed that Florida red tides actually begin in nutrient-poor water offshore. Resting populations of *K. brevis* are believed to exist in the water column or sediments in specific areas on the west Florida continental shelf.

Biologists have documented the occurrence and abundance of the *K. brevis* organism for more than 50 years. Most sampling occurred after a bloom had already begun as evidenced by reports of dead fish, discolored water, or respiratory irritation. Data collected from such response-oriented monitoring is incomplete and limited because by then it would be too late to study the initiation and growth phases of the bloom. Bloom detection using satellite technology and color imagery began in the 1970's. In the satellite images, different concentrations of chlorophyll are seen as different color densities, and the color densities are correlated with cell densities of *K. brevis*. Satellites can be used to track surface blooms as they move, but they cannot yet detect bloom development or subsurface blooms.

Several research programs have been used to study the possibility of mitigating the effects of red tides through prediction or advanced warning. One such project is the federally funded Ecology and Oceanography of Harmful Algal Blooms (ECOHAB) program. ECOHAB investigators in Florida collect data from research cruises and from moored buoys to study the biology of *K. brevis* and its

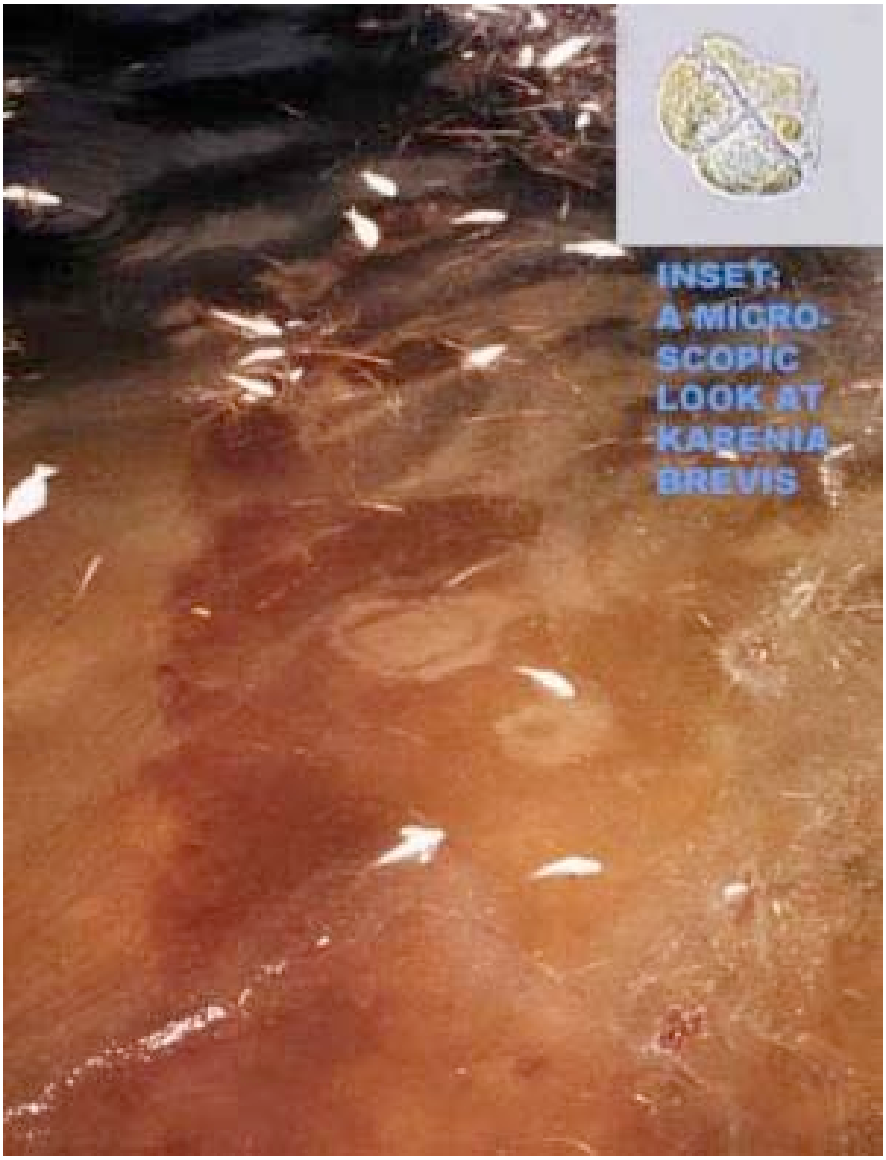
NOAA

Red Tide can affect us economically as well as ecologically

movement in response to environmental variables such as temperature, salinity, and currents monitored on the continental shelf. Physical, chemical, and biological data are used to model and predict bloom initiation, growth, maintenance, and dissipation or termination; to evaluate life-cycle processes; and to study the transport and eventual fate of the brevetoxins.

A pilot project called the **H**armful **A**lgal **B**loom**S** **O**bserving **S**ystem (HABSOS) is another federally funded program to collect from federal, state, and academic laboratories all available data on red tide events and to compile the information in a central, accessible, continually updated repository. Such a database will give investigators the ability to study events as they occur and perhaps forecast the movement and probable effects of a bloom. The Florida Harmful Algal Bloom Task Force was established in 1997 to identify gaps in the data already collected and to recommend additional research and monitoring needed on Florida red tides and their associated effects. The Task Force consists of representatives from federal agencies, state and local governments, water management districts, universities, private laboratories, and a citizen-volunteer organization. The volunteer program was established in 2000 to help monitor the extensive region over which Florida red tides may occur. Volunteers collect water samples from established offshore transects in a network extending from Pensacola to the Florida Keys and send them to the Florida Fish and Wildlife Research Institute (FWRI) for analysis.

Red tides are a part of Florida's history and will most likely remain a part of its future. Scientists continually strive to learn more about factors affecting the growth and intensity of *K. brevis* blooms. Although the biology of the organism and the role that red tides play in the dynamics of the Gulf of Mexico ecosystem are still not fully understood, predictive two and three-dimensional models are being developed and tested. Data generated through traditional environmental sampling and monitoring, in combination with data generated through newer approaches such as remote sensing and modeling, may give us the ability to forecast red tide events and mitigate, or even eliminate, their effects.



Woods Hole Oceanographic Institute/NOAA

Dead fish from Red Tide with an inset of a microscopic look at Karenia brevis.

The information used to compile this article came from the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute.

For more information on Red Tide and the current status of Red tide in Florida visit:

http://research.myfwc.com/features/

*and click on "***Red Tide***"*

Volunteer Bulletin Board

Making Cities a Greener Place to Live- The Orlando Example

It's always about leadership. Orlando, a city of vision, knows this. That's why the City of Orlando is asking local business leaders to join its innovative Orlando Green Business Program. The program encourages business owners to become partners in protecting Orlando's waterways.

The program can be applied to a variety of businesses, but during the initial phase the city has developed specific programs for restaurants, vehicle maintenance facilities and lawn care/maintenance specialists. In the future, the Orlando Green Business Program will be expanded to other types of businesses.

Specifically, the Orlando Green Business Program arms business owners with the knowledge and tools they need to reduce their pollution in stormwater runoff. Although the program is free for local businesses, there are several steps to becoming an Orlando Green Business Program member. They are:

- Participate in an on-site stormwater review by City of Orlando staff
- Select a representative to be responsible for implementing and following the Green Business guidelines, as well as act as a liaison between the participating company and Orlando's Green Business Coordinator
- Review the booklet, *Orlando's Lakes: The City Beautiful's Natural Connection* to understand the vital connection between what we do and what happens to our waters as a result
- Follow and post Best Management Practices throughout facilities
- Spread the word by requiring employees to participate in trainings/presentations provided by city staff
- Have all pertinent employees sign pledges stating they will continue their commitment to reduce the pollutant load to our lakes and streams

Once businesses have completed all of the program requirements, they will receive:

- Free publicity on the city's Web site and in a variety of publications featuring articles about the Orlando Green Business Program
- Orlando Green Business certification
- Promotional materials, such as posters and decals, to share with employees and customers
- Recognition from Mayor Buddy Dyer

Small changes in the way we do business result in major benefits to our local lakes. Stormwater transports everything in its path—trash, oil, grease, grass clippings, fertilizers and pesticides— into our waterways. Stormwater runoff impacts our drinking water supplies, alters aquatic habitats and puts our unique quality of life at risk.
We have more than 100 lakes in the City of Orlando, and by working together we can improve water quality in each one.

Collection Center Changes

Citrus County

There is a change in the collection center for Crystal River:

The collection center at Oyster's Resturant has been moved to the Crystal River Preserve State Park.

The new contact information is:

Crystal River Preserve State Park
3266 N Sailboat Ave.
Crystal River, FL 34428
352-563-0450

NOTICE TO ALL FLORIDA LAKEWATCH SAMPLERS

Keep those samples flowing!

Please be sure to deliver all frozen water and chlorophyll samples to your collection center as soon as possible. This will enable us to prepare the annual data reports on schedule.

We'd also like to take this opportunity to thank you for your hard work and dedication!

Sincerely,

The Florida LAKEWATCH Crew

An Update on the Largemouth Bass Stocking Project on Lake Griffin

Lake Griffin is a large 9,428 acre lake located in the Ocklawaha River basin near Leesburg, Florida. In 1999, the Florida Fish and Wildlife Conservation Commission (FWC) reported that the sport fish population and fishery of Lake Griffin was at a historical low point. The average biomass of Florida largemouth bass (*Micropterus salmoides floridanus)* per unit effort of sampling in the vegetated zone of Lake Griffin was 81% lower when compared to the average largemouth bass biomass sampled in 1986. During fish sampling in 1999 and 2000, the FWC found an extremely low density of largemouth bass and documented very few small, young of the year juveniles, indicating a possible problem with reproduction.

Consequently, the Florida LAKEWATCH program (FLW) proposed a research/demonstration project to transfer substantial numbers of largemouth bass greater than 8 inches in total length into Lake Griffin with the goal of restoring the economic vitality of Lake Griffin's largemouth bass fishery. Three main objectives of this stocking program were to: 1) mitigate damage done to the largemouth bass fishery while waiting for ongoing environmental restoration programs to improve largemouth bass habitat in Lake Griffin, 2) determine if sufficient numbers of largemouth bass greater than 8 inches in length could be collected from private waters and successfully transferred to Lake Griffin, and 3) determine if the stocking program could contribute to the economic vitality of Lake Griffin's largemouth bass fishery.

This project was funded and supported by the Harris Chain of Lakes Restoration Council and the Lake County Water Authority (LCWA). In 2005, the LCWA contracted with FLW to implement the transfer of approximately 4,000 largemouth bass into Lake Griffin. The LCWA then evaluated the project and considered it to be successful, so the project was funded again in 2006 and 2007.

In 2007, a total of 4,666 largemouth bass were transferred into Lake Griffin. Approximately 58% of the largemouth bass collected for transport were between 8 and 12 inches in length. The remaining 42% of the largemouth bass stocked were 12 inches or greater in length and weighed from 2.5 to 9.3 pounds. Since 2005, the total number of largemouth bass stocked into Lake Griffin that were greater than eight inches was 13,933, with 7,024 of those fish measuring over 12 inches in length.

About 50% of the bass stocked into Lake Griffin were fitted with orange plastic tags that were numbered and printed with the toll-free telephone number for the Florida LAKEWATCH program. These tags helped FLW monitor the progress of the project.

The FLW and FWC assessed the potential impact to the resident bass population of Lake Griffin of stocking almost 14,000 largemouth bass from 2005 through 2007. Florida LAKEWATCH recaptured a total of 87 tagged fish that were stocked in 2007 and 36 tagged fish that were stocked in 2005 and/or 2006. Florida LAKEWATCH captured tagged largemouth bass in 68% of their lake-wide sampling sites. The Florida Fish and Wildlife Conservation Commission captured 22 tagged fish that were stocked in 2007 and 5 tagged fish that were stocked in 2005 and/or 2006 during their sampling of Lake Griffin. Approximately 10% to 13% of the fish collected by FLW and FWC were tagged fish. The fact that stocked fish comprised 10% to 13% of total fish collected indicated that FLW had achieved a temporary increase in the number of largemouth bass available to anglers in Lake Griffin.

When undertaking a stocking program of larger-sized fish, the ultimate question that arises is the cost/benefit to the funding agency.

Continued on page 8

Florida LAKEWATCH

Florida LAKEWATCH personnel Dan Willis places an orange tag into a largemouth bass before stocking the fish into Lake Griffin.

An Update on the Largemouth Bass Stocking Project on Lake Griffin (continued from page 7)

Although this project was not designed to directly measure economic impacts, the information that was collected could provide some limited insights for the LCWA. According to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation published by the U.S. Department of Interior in 2001, Florida anglers spent an average of $1,341 per angler per year on fishing. This means that Lake Griffin anglers could have spent between $858,240 and $1,716,480 in 2007 alone. Since the beginning of the project in 2005, it is possible that from $4,800,780 to $9,601,560 could have been spent by anglers fishing in Lake Griffin.

A more conservative way of examining cost/benefit relationships is to calculate the replacement or recreational value assigned by the State of Florida according to the Florida Administrative Code 62-11.001. The replacement value in 2006 dollars for largemouth bass transferred in 2007 would be $68,341 and the recreational replacement value would be $74,694. Since December 2004, the total replacement value and recreational replacement values would be $230,692 and $352,843, respectively. These findings suggest that the largemouth bass stocking program has generated considerable economic activity in the local community. However, absolute dollar estimates can be obtained only when a comprehensive economic analysis of the sport fishery is completed.

Florida LAKEWATCH

Florida LAKEWATCH personnel Darren Pecora releases a tagged largemouth bass into Lake Griffin.

Florida LAKEWATCH

A largemouth bass with inserted orange tag ready to be stocked into Lake Griffin.

This research/demonstration project showed that considerable numbers of larger-sized Florida largemouth bass could be collected from private waters during a reasonable time window (determined by water temperature) and successfully transported to Lake Griffin. The underlying goal was to assist in restoring the economic vitality of Lake Griffin's largemouth bass fishery. Information obtained from angler reports, as well as reports from local fish camp owners, revealed that anglers fishing in Lake Griffin and other lakes of the Harris Chain were catching a substantial number of the transferred largemouth bass and were spending their money in the Harris Chain of Lakes area. It appears that the LCWA received an immediate return on their investment and economic returns should continue over the next few years given the practice of catch and release by most largemouth bass anglers. However, the magnitude and duration of economic returns to the community will require that anglers maintain an optimistic attitude about the potential for fishing success at Lake Griffin.

Drought! Here We Go Again.

In 2001 LAKEWATCH published an article in our Florida LAKEWATCH newsletter (Vol. 18) on the bright side of Florida's drought. During that time the whole state was experiencing a severe drought. We thought that given the current drought conditions in parts of the state this year, we should revisit the effects of drought on aquatic ecosystems in Florida.

A drought is an extended period of months or years when a region notes a deficiency in its water supply. Generally this occurs when a region consistently receives below average rainfall. According to the October 2007 drought summary provided by the Florida Department of Environmental Protection (FDEP), the statewide drought conditions have improved since this summer but FDEP still has concerns about the upcoming historically dry winter season. During the summer most of Florida experienced drought conditions, but as we approach winter it appears that only northwest Florida is experiencing severe drought conditions. According to the Northwest Florida Water Management District the average rainfall across the district (Tallahassee to Pensacola) was 22 inches below normal as of October 19, 2007. As we reported in Volume 18 of the Florida LAKEWATCH newsletter, there are some benefits of drought. This summer, the South Florida Water Management District (SFWMD) took advantage of a record low lake level in Lake Okeechobee to remove muck from the lake. The District's governing board approved more than 11 million dollars to remove a total of 3.8 million cubic yards of muck. The District conducted a similar muck removal project during the 2001 drought.

Also in Lake Okeechobee archaeological benefits of the drought recently surfaced. The exposed lake bottom yielded thousands of pieces of pottery, five boats and a number of human bone fragments. Most of the bones were extremely fragmented and were estimated to be 500 to 1000 years old. Because of the estimated age of the fragments the state has alerted the Seminole and Miccosukee tribes of the bones. The five boats were considerably younger and included a steam powered dredge, possibly used to dig canals, a steamship, a wooden motorized canoe and a catfish boat from the early 1900's . One of the vessels was 50 to 60 feet long. Archaeologists have left most of the finds in the lake but did remove a few items.

Florida LAKEWATCH

Juniper Lake in Walton County after several months of severe drought in the Florida panhandle.

Drought can affect Florida's coastal areas as well. Because of record low lake levels in Lake Okeechobee, the SFWMD has released little or no water into the Caloosahatchee River this year. This has reduced the flow of murky fresh water into the river and eventually into San Carlos Bay at Ft. Myers allowing greater light penetration and higher salinities in the estuaries associated with the river. Just to the south of San Carlos Bay, FDEP scientist working in the Estero Bay Aquatic Preserve noticed expansion (from 5-25% coverage to 50-75% coverage) in seagrass coverage versus two years earlier when the effects of increased water releases from Lake Okeechobee due to repeated hurricanes caused significant decreases in seagrass coverage. The FDEP scientists reported that the mouth of the Caloosahatchee has seen the greatest increase of seagrass bed coverage in the area.

During the drought of 1999-2001, the Department of Fisheries and Aquatic Sciences (FAS) at the University of Florida was conducting a study of the physical, chemical and vegetative characteristics of five gulf coast rivers. FAS discovered that during the time of drought and low water in the Chassahowitzka and Homosassa Rivers, the submersed aquatic vegetation in the rivers decreased, especially in the lower reaches of the rivers. They also noticed that during the drought the submersed plants in the lower reaches of the rivers switched from freshwater species to more saline tolerant ones. During severe drought periods saltwater intrusion in coastal areas can affect coastal river ecosystems.

While drought can certainly affect aquatic ecosystems here in Florida in both positive and negative ways,

Continued on page 10

Drought! Here We Go Again! (continued from page 9)

it is important to remember that the cycles of floods and droughts that Florida experiences is natural, normal and recurring. According to the Florida Fish and Wildlife Conservation Commission (FWC); "Florida's ecosystems are dependent on this cycle of drought and flood to maintain healthy fish and wildlife populations. The long-term benefits of droughts and floods often exceed the short-term negative effects." Some of the benefits listed by the FWC were increased effectiveness of planned habitat enhancement projects, opportunities for improvement to boat ramps, docks and seawalls, and increased angling opportunities to fresh water anglers as marine species are able to travel further up river in some river systems. Some of the negative affects listed were increased sinkhole formation resulting in lake drainage, increased stress on fish due to salinity increases in tidal creeks and low water levels that can trap fish, resulting in fish kills from low dissolved oxygen.

Florida can also feel the effects of drought in other states. The State of Georgia's attempt to press the Federal government to temporarily lift the Endangered Species Act and reduce the amount of water flowing from Lake Lanier (the source of Atlanta's drinking water) could affect Florida's ecology and economy according Governor Charlie Crist in a letter to President Bush earlier in November. This renewal of the tri-state water wars resulted in Officials from the White House, the Department of the Interior and the U.S. Corps of Engineers meeting with the governors of Florida, Georgia and Alabama to work out a temporary plan for how the three states would share the much-reduced waters of Lake Lanier.

J. Pat Carter/Associated Press

Areas of exposed lakebed of Lake Okeechobee. The area is normally submerged, but is now dry because of a severe drought.

So while the drought may temporarily cause problems and a change to Florida waterbodies, our main message is this…don't give up! It will rain again and water levels will eventually return to "normal." When that does happen, LAKEWATCH volunteers will have a chance of a lifetime to participate in the collection of some extremely important water chemistry data. So keep up the good work and stay tuned!

Bryozoa (Moss Animalcules) ----What is That?

Bryozoa are predominantly found in salt-water habitats with 4000 species listed as marine and only 50 species restricted to freshwater. As a group, they are often confused with their ecological analogs, the corals, but they are unrelated taxonomically.

All bryozoans are colonial with growth habits determined as a function of water energy. The growth forms include encrusting and massive or domal (blob-like) forms found in high-energy environments such as shallow lakes with a lot of wind activity and branching or erect forms found in low energy environments like protected backwaters.

In Florida, the freshwater species are usually found in unpolluted and unsilted waters of shallow ponds, lakes, and streams. Bryozoa usually occur where the light is dim as in colored waters. Colored or stained waters are often the result of the leaching of tannins and humic acid from plant material and soils surrounding the waterbody.

The picture submitted by our LAKEWATCH Volunteer on Oak Lake in Hamilton County is of a healthy specimen of Bryozoa known as *Pectinatella magnifica*. The colony is gelatinous, firm, and slimy to the touch. The inner mass is composed mostly of water and the surface appears to be divided into little rosettes. Millions of individuals can form one colony. In each colony, different individuals assume different functions: some gather food, others are devoted to strengthening the colony, and still others clean the colony. Bryozoans have no blood system as gaseous exchange occurs across the entire colonial surface. Massive colonies may exceed 2 feet in diameter, but typical sizes are 1 foot or less. As you can see by the photo this specimen is a champion!

All bryozoans are filter feeders. The bryozoan's diet consists primarily of small microorganisms, including diatoms and other unicellular algae. Studies have shown that bryozoans can filter free-floating algae) less than 0.045 mm in size (1/1800 of an inch) from the water column and that each individual in a colony can clear 8.8 ml (almost 1/3 of an ounce) of water per day. A large colony would act as a living bio-filter clearing several gallons to several thousand gallons of water a day.

Bryozoa themselves are an element in the diet of many freshwater invertebrates and some fish.

Bryozoans can reproduce sexually and asexually. Asexual reproduction occurs by budding off new individuals as the colony grows and is the main way colonies expand. Sometimes part of the colony breaks off, but it can continue to grow and will form a new colony.

All freshwater bryozoans are hermaphroditic, having both male and female sexes present in the colony. A unique feature of freshwater Bryozoa is the production of highly resistant statoblasts. Statoblasts are an asexually produced encapsulated bud of the freshwater bryozoans that appears with the onset of hot weather and functions mainly in tiding the species over unfavorable conditions such as droughts and drastic changes in water quality and temperature.

Statoblasts also aid in geographic dissemination. There are reports that statoblasts occur in mud found on the feet and feathers of waterfowl and the fur of mammals. In fact, some statoblasts are capable of germinating after passing through the digestive tract of waterfowl, turtles, frogs, salamanders, and fish.

The lengths of the statoblast dormant period are highly variable depending on the species, the individual, temperature, and other environmental conditions, but the majority over winter and germinate the following spring.

Rising temperatures initiate active budding in bryozoans and to some degree sexual reproduction. Most American species attain their greatest abundance in the summer when the water temperature reaches 23° C (72° F) or higher. Colonies of Pectinatella *magnifica* usually die off when the water temperature goes below 16° C (60° F).

A review of the literature indicates large floating gelatinous colonies of *Pectinatella magnifica* can clog the screens of water intakes

Continued on page 12

Tom Neeley

A bryazoan (Pectinatella magnifica) collected by LAKEWATCH volunteer Tom Neeley of Oak Lake in Hamilton County.

Department of Fisheries and Aquatic Sciences
Florida LAKEWATCH
7922 NW 71st Street
Gainesville, FL 32653

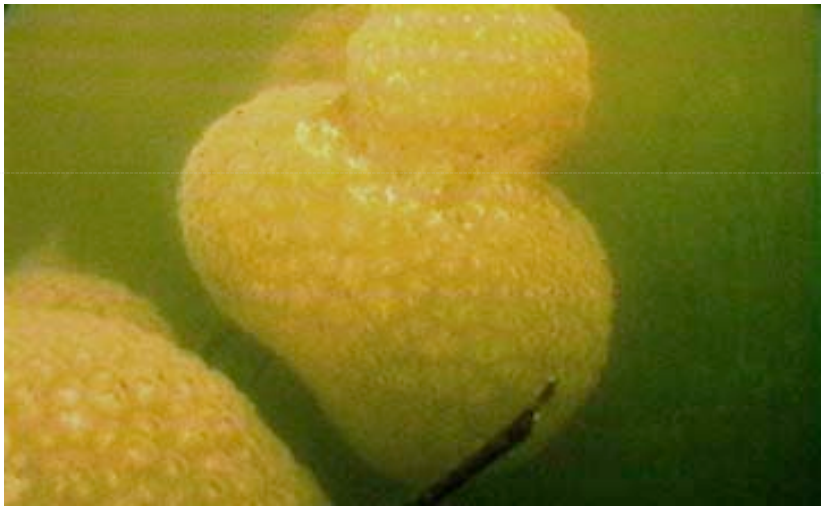
Florida LAKEWATCH

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:

Florida LAKEWATCH
7922 NW 71st Street
Gainesville, FL 32653
or call
1-800-LAKEWATCH (800-525-3928)
(352) 392-4817
E-mail: fl-lakewatch@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.

Bryozoa (Moss Animalcules)----What is That? (Continued from page 11)



NOAA/ Great Lakes Sea Grant Extension Office

Pectinatella magnifica growing attached to a submersed surface.

and grates of hydroelectric plants. If your lake water is not used for irrigation or cooling power plants then *Pectinatella magnifica* should not be a nuisance, just another marvelous curiosity of your lake environment to enjoy. *Pectinatella magnifica* has been observed on three dark water lakes in the Florida LAKEWATCH program: Oak/ Hamilton, Holden Pond/Alachua, and Little Orange/Alachua.