

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

Florida LAKEWATCH Helps to Facilitate an In-Depth Review of Hydrilla Management in Florida

HISTORY shows that following the introduction of hydrilla (*Hydrilla verticillata*) into Florida's waterways in the late 1950's, it has spread throughout the state. The ability of this plant to occupy nearly the entire water-column of small lakes and thousands of contiguous acres of large lakes has resulted in the expenditure of millions of state dollars on an annual basis for control efforts.



A large central Florida lake topped out with hydrilla. **Current Methods**

of Control Used

Through the 1990's the herbicide fluridone was used to selectively and economically control hydrilla, particularly in large Florida lakes. By maintaining low concentrations (5-10 ppb), fluridone offered selective treatment for large acreages of hydrilla at a relatively low cost compared to other methods such as contact herbicides and mechanical harvesting.



A close-up picture of the plant Hydrilla.

Hydrilla control with triploid grass carp is also cost-effective but offers limited plant selectivity and grass carp add the risk of complete removal of all submersed habitat that is so important to the largemouth bass fisheries of large lakes. Nevertheless, triploid grass carp are stocked for hydrilla control in more than 70 public lakes.

The Problem

Research during the last several years revealed that several populations of hydrilla, particularly in large Central Florida lakes, have become resistant to low concentrations of fluridone. Fluridone will still control hydrilla at higher, sustained doses (15-40 ppb), but these high doses impact



A hydrilla bed growing in a Central Florida lake.

non-target native aquatic macrophytes and using higher concentrations significantly increase the cost of control. There are no other registered herbicides available with comparable environmental, cost, and application characteristics to replace fluridone, placing management agencies in the difficult situation of trying to balance cost and selectivity as they attempt to manage hydrilla in Florida lakes.

Professionals Convened

Due to the above-mentioned new challenges, Florida LAKEWATCH and other researchers from U.S. Army Engineer Research and Development Center, University of Florida, and Center for Aquatic and Invasive plants sponsored a workshop on December 6 and 7, 2004 to identify issues related to the management of hydrilla in Florida. The workshop included over 40 experts from county, state and federal agencies that have professional experience with water resource management.

Continued on page 8 UNIVERSITY OF FLORIDA IFAS

DOES YOUR FISH HAVE LICE?

LAKEWATCH has been involved in a cooperative fish sampling project with the Florida Fish and Wildlife Conservation Commission for the past 6 years. During our sampling this year (2005) we noticed that the largemouth bass (*Micropterus salmoides*) and bowfin (*Amia calva*) in several of the lakes had fish lice (*Argulus* sp.).

Several LAKEWATCH volunteers have also noticed fish lice and made telephone calls to find out what they were. So we thought an article letting our volunteers know what fish lice are is in order, just in case you see the organisms on fish in your water body.

What are fish lice?

Fish lice are parasitic crustaceans that can be found on the eyes, fins, gills, or scales (skin) of freshwater and marine fishes. They are flattened and disk-shaped organisms measuring about 0.4 to 1.2 cm in diameter depending on the species.



A microscopic view of *Argulus* sp. (Fish Lice). The two circular suckers that lice use to attach to fish are identified.

There are several species common in Florida waters. all in the scientific genus Argulus. These organisms attach themselves to a fish with two circular suction cups and once attached it penetrates the fishes skin with a proboscis like mouth that is used to suck blood and other fluids from the fish. The method that the organism attaches and penetrates the fish leaves reddened, inflamed lesions and allows for the possibility of secondary infections.

Fish lice actually mate on the fish host and once mating is over the female swims away and lays her eggs on underwater structures such as plants or stumps. Approximately four days after hatching, the young parasites try to find a host. If the parasite is unsuccessful it will die. But if it finds a host it will develop into an adult, which takes around 30 to 100 days depending on the water temperature.

Are the fish safe to eat?

There are no problems with eating the fish if fish lice are present on the fish. However, it is always common sense not to eat fish that seem to have unusual physical abnormalities.

In lake systems fish lice typically don't reach population densities high enough to hurt fish populations. In aquaculture situations, however, they have been known to reach densities that can significantly hurt fish production.



Another microscopic view of Argulus sp. (Fish Lice).

We are not sure if the recent calls and LAKEWATCH's observations of fish lice around the state are an indication that fish lice are currently more prevalent in Florida lakes. We will continue to talk to other professionals around the state and ask if others are observing a similar trend. It may be possible that the rapid increase in water levels from last summer's hurricanes made the lakes more favorable for fish lice. If we hear anything more about fish lice, we will let you know in the future.

Please Note:

Fish lice cannot use people as a host because they require an aquatic environment and when infected fish are removed from the water the fish lice readily leave the fish.

FEATURED BIRD Great Blue Heron Ardea herodias

The Great Blue Heron is one of the most commonly observed aquatic birds in Florida's lakes and fresh-water marshes. This species is the largest and most widespread heron in North America. The Great Blue Heron was observed on 67 of the 92 lakes participating in the Florida LAKEWATCH Bird Survey. It was most frequently observed in productive eutrophic and hypereutrophic lakes.

The Great Blue Heron is a large blue-gray bird with long legs and a long "S"-shaped neck. Distinguishing characteristics include a long thick yellow

bill. white crown stripe, and a distinct black plume that extends from behind the eye to off the back of the neck. The legs and feet are brownish or greenish in color and unlike many bird species, the males and females are similar



in appearance. Adult Great Blue Herons are from 38 to 54 inches tall with a wingspan of about 66 to 79 inches. Although seemingly large birds, adults generally only weigh from 4.5 to 5.5 pounds. This is because they have hollow bones that are strong yet still light.

The Great Blue Heron is often seen feeding along the edges of lakes in the littoral zone that separates the open water from the shoreline. This species prefers to forage in shallow areas for fish, frogs, crawfish, salamanders, snakes, and insects. Sometimes even small birds and mammals such as rodents are captured and consumed.

The Great Blue Heron seldom stabs its prey but prefers to use its bill like a pair of tongs to clamp down on food items. The special vertebrae that create the distinctive "S"-shape allow its neck to curl up like a spring that

> can then spring out to attack prey. This also allows the neck to be folded back in while flying.

Great Blue Herons usually build their large nests of twigs and sticks lined with moss and lichen in trees near water and away from human activity. They are adept at weaving nests side by side.

"condominium" style, in high tree top canopies. The size of the heronry grows with the amount of food available nearby. If humans disturb the nesting areas during breeding season, the reproductive rate of the colony



can drop or the entire colony may move. Bald eagles have also been known to prey on heron chicks and have caused heron colonies to move.

The Great Blue Heron lays 3-7 eggs one to two days apart. The eggs begin hatching in about 28 days, again, one to two days apart. Both adults incubate the eggs and feed the young by regurgitating directly into the chick's open beaks. Weaker chicks that may be pushed out of the nest by siblings are not cared for by the parents. At 10 weeks of age, the young leave the nest and follow the parents to the feeding grounds.

The Great Blue Heron can live to be 15-20 years old and can begin breeding in their second year. Adults usually return to nest in the same colony where they were born, although some herons are attracted to other colonies which helps to ensure genetic diversity. The Great Blue Heron is one of the most commonly seen herons in Florida lakes and is easy to identify.

Volunteer Bu

Collection Center Changes

Citrus County

The UF/IFAS Citrus County Cooperative Extension Office has moved from Inverness to Lecanto. We extend a heart felt thank you for the years of support by allowing our volunteers to drop off samples! Unfortunately, LAKEWATCH was unable to move its collection center from Inverness. Please welcome the new collection listed below.

TOOFAR Office 26 N Florida Ave Inverness, FL 34451 Phone: 352-726-5004 Hours: Monday through Friday 10 am to 3 pm

Crystal River collection center has moved from Fancy's Pets to Oysters Restaurant. Again, thank you Fancy's Pets for the support over the years. We will miss you!

Oysters Restaurant 606 N.E. HWY 19 Crystal River, FL 34428 Phone: 352-795-2633

Osceola County

The Lakeside Inn in Osceola County

continues to go through renovations, but is still available for storing samples.

Alligator Lakeside Inn Owned by Harmony Contact: Jim O'Keefe (managing renovations) 6264 Iast Irlo Bronson Memorial Hwy St Cloud, FL 34771 Phone: 407-433-0635



WANTED:

If you or someone you know would be interested in joining the LAKEWATCH team to monitor water chemistry on any of the following lakes, please contact our office. Call toll free: 1-800-LAKEWATCH (1-800-525-3928) or e-mail: lakewat@ufl.edu.

Putnam County Lakes: Volusia County Lakes

Bell Bream Clear Church Crescent Darkwater Galilee Georges Hardesty Hewitt Junior Lagonda Little McMeekin Maragret McCarthy North Twin Susan Swan

Big Blue Clough Emporia Gleason Hammock Juanita Lindley Marie McGarity Odom Offspring Sawyer Shaw Spring Garden Tedder Three Island Tivoli Upper Louise

REWARD:

- Access to lake experts around the state.
- Quarterly and annual water chemisty 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.



Hot off the presses!

Your Guide to Eating Fish Caught in Florida

Prepared by the Florida Department of Health in cooperation with Florida Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission.

The Florida Department of Health (DOH), the Florida Department of Environmental Protection (DEP), and the Florida Fish and W i I d I i f e Conservation Commission



(FFWCC) operate jointly to determine if environmental chemicals are present in fish from Florida waters. In most instances FFWCC determines what fish species should be sampled and collects those samples. Florida LAKEWATCH has cooperated with FFWCC to collect fish from private lakes. DEP measures the levels of chemicals in the fish tissue. DOH determines the potential for adverse human health effects from consuming the fish and issues fish consumption advisories when needed.

DOH provides a brochure that includes

the fish consumption advisories that are in effect in the first quarter of each year. New advisories are published on line at: <u>http://www.doh.state.fl.us/floridafishadvice/newadvisories.html</u>

You can download this 19 page brochure at: <u>http://</u> <u>www.doh.state.fl.us/floridafishadvice/index.html</u>. Select Eat Healthy, Eat Smart - The 2005 Florida Fish Advisories Brochure (pdf).



Nine publications now available on-line! They can be downloaded at http://edis.ifas.ufl.edu/DEPARTMENT_FISHERIES_AND_AQUATIC SCIENCES.

Cat tails causing problems?

According to Dr. O.P. Gupta, two properly timed mowings have given 90% to 100% control of cattails.

Mowing should first be done when pistillated spikes are at least twothirds the full size but before these have formed seeds. The second mowing is done about a month later when the regrowth is approximately 24 inches tall. Success tends to be greater when water covers their cut clumps.

If you give this control method a try.....please call us and let us know how it worked.

Please note that with any plant control, you must check in with your local DEP Bureau of Aquatic & Invasive Plant Managment biologist to see if you need a permit.

Traveling scholar visits Florida LAKEWATCH!

Ursula Condon from Ireland spent most of the summer working for the Florida LAKEWATCH program. She did field samplings, attended regional meetings, prepared supplies and helped with data checking. In exchange for her work Ursula gained credit towards her degree

in urban development and planning with an emphasis on environmental stewardship.

Good Luck Ursula in your future endeavors!



FEATURED FISH Seminole Killifish Fundulus seminolis

Seminole killifish is a common fish found only in the State of Florida. They range from the New River (the first river drainage east of the Apalachicola River) to just below Lake Okeechobee.

Seminole killifish are small fish with the adult size ranging between 3.5 to 6.3 inches. They have a long slender body with an olive green back and greenish yellow to silvery sides. Males

have dark green bars formed by spots on scales while females have 10-15 faint dusky bars. Seminole killifish fins are

rounded and clear to dusky orange except in breading males where the anal fins are bright pink to red. The mouth is upturned with two rows of teeth.

Seminole killifish are somewhat common in Florida being found in 29 of 60 lakes in a 1992 study of fish in Florida lakes. These lakes were located as far west as Leon County and as far south as Polk County. These lakes ranged from being low productive (clear water lakes with



low plant growth) to very productive lakes (very green or very full of aquatic plants) and they were found in lakes with no color (clear water lakes) as well as lakes that were tea colored (black or red water lakes). This suggests that Seminole killifish are adapted to live in a large variety of habitat types in Florida lakes, but they are usually found in open areas of those lakes and in quiet stream pools with vegetation.

Seminole killifish feed primarily on small invertebrates in shallow open, sandy areas. They swim and feed mainly in the mid-water or near the bottom with the young usually in schools near vegetation.

Seminole killifish spawn mainly in April or May with some spawning occurring throughout the summer. Spawning usually occurs around clumps of vegetation.

Seminole killifish are not a sportfish but because of their hardiness have a limited commercial value as a live baitfish for some top predators. When sold as a baitfish they are often referred to as bullhead minnows and on rare occasions are referred to as Florida brook trout because of their resemblance to small brook trout from northern streams.

What is a Boating I.D. Card?

Florida Statutes 327.395 requires anyone 21 years of age or younger operating a vessel with a motor of 10 HP or more in Florida to carry, on board, his or her Boating Safety Education I.D. card issued by the Florida Fish ad Wildlife Conservation Commission (FWCC) and a photographic ID card.

Where can I get a Boating I.D. Card?

An approved boating course can be taken online. To learn more visit: <u>www.myfwc.com/boating/safety/education</u> and click on "How to Boat Smart Florida Boating Safety Course Online". There is a \$15 testing charge online. If you pass with a score of 80% or higher, your certificate will be sent to you in two to three weeks. Take the exam for free at any local tax collectors' office.

Who Needs a Boating I.D. Card?

Anyone 21 years of age or younger operating a vessel with a motor of 10 HP or more in Florida. The law does provide for some exemptions to the boating education requirements. The following are exempted from the requirements of boater education:

- Persons licensed by the U.S. Coast Guard as a master of a vessel.
- · Persons operating a vessel on a private lake or pond.
- · Persons accompanied in a vessel by a person exempt.
- Persons who are nonresidents and have proof of completion of a NASBLA approved course from another state and are visiting the state for 60 days or less in an out-of-state boat.

Send a copy of your certificate to your insurance company. You may be eligible for a discount on your boat or PWC insurance.

Have you noticed an increase in algae in the water?

Recently, Florida LAKEWATCH volunteers have called the office regarding a peculiar slimy algae in their lakes that occasionally rises to the surface forming mats of floating algae. While we have received other types of algae samples to date this year, we have noted a greater number of reports and samples of a bright green filamentous alga.

We are unsure if last years' hurricanes, the increase in rain, or some other environmental factor is responsible for the increased reported incidence (dominant algae in 12 samples collected from five different counties). Some general characteristics are:

- the alga which is slimy to the touch often first appears on the bottom or attached to emergent or submersed aquatic plants
- it tends to show up in shallow protected areas
- at times it will have lots of bubbles associated with the filaments strands
- often rises to the surface where it changes from a bright almost brilliant green color to a lighter green or mix of green and brown looking floating scum

As always, we encourage callers to send us a sample so we can positively identify it for them. (See how to send in an algae sample below). Samples analyzed so far this year having the characteristics outlined above have predominantly been identified as

Spirogyra (pronounced "spy-row-ji-rah").

What is Spirogyra?

Spirogyra is a filamentous green alga that is common in freshwater habitats. Filamentous algae form long strands which are like long fine hair or filaments as compared with many floating algae. Spirogyra appears as very fine, bright, dark-green filaments that are slimy to the touch when attempts are made to collect



Algae mat dominated with Spirogyra floating on the surface of a lake.

it. The slime serves to protect the alga by preventing other algae and organisms from attaching to them. *Spirogyra* blooms occur in a wide range of aquatic habitats in Florida from clear low nutrient oligotrophic waters to nutrient rich eutrophic waters. It thrives in nutrient rich environments, but is not generally associated with any particular type of water chemistry, therefore it is not commonly used as an indicator for any kind of disturbance or problem.

Spirogyra blooms can occur throughout the year, but are generally more obvious during periods of warmer weather. It occurs in the water column in the cooler months unobserved and as a highly visible surface scum as warmer water temperatures and increased sunlight provide longer growing periods. Bright green surface blooms are a result of *Spirogyra* producing lots of oxygen gas bubbles during photosynthesis that stick between the tangles or filaments of algae. Brown or yellow-brown patches are a result of spirogya dying off at the surface or in the water column and floating to the surface due to entrapped gas bubbles resulting from decomposition.

This alga is not uncommon and poses no human health risk concerns according to specialists.

How can I send in a sample for Identification?

Algae samples should be collected in a small plastic container and kept in a dark cool place prior to shipping. PLEASE DO NOT FREEZE! Plant samples can be mailed in a small ziplock bag. Place the stem with leave and flower attached, blow a puff of air in the bag, seal, and mail. If you have questions about this or any other mysterious algae blooms or plants in your lake please call our toll free citizen hotline 1-800-525-3928.

Continued from page 6

What about Personal Watercrafts or Jet Skis?

Florida Statutes 327.39 regulates personal watercraft. It states that no person under the age of 14 shall operate any personal watercraft on the waters of this state {even if such person possesses a Boating Safety Education ID Card}. It is also unlawful for the owner of any personal watercraft or any person having charge over or control of a personal watercraft to authorize or knowingly permit the same to be operated by a person under 14 years of age in violation of this section.

A person may not operate a personal watercraft at any time between the hours from one-half hour after sunset to one-half hour before sunrise.

Modified from the Friends of Maitland's Waterways Newsletter



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

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Continued from page 1: Hydrilla Workshop

Findings from the Workshop

There were several issues identified and lines of discussion pursued in the workshop, and these include but are not limited to the following:

- 1) Hydrilla is an exotic plant that can cause numerous problems with the intended use of Florida's aquatic systems. In recognition of the historical problems caused by hydrilla, Florida State law mandates management of hydrilla to the lowest feasible level.
- 2) The selective management of hydrilla is difficult and expensive and has become further complicated by the development of increased resistance to fluridone, our most cost-effective treatment.
- 3) Using current control methods, hydrilla cannot be selectively eradicated from the waters of Florida.
- 4) There are some recognized benefits of hydrilla to fish and wildlife; however, maintaining optimal coverage levels that do not impact other uses of the water body over an extended period of time has proven to be very difficult in most aquatic systems.
- 5) Given the funding constraints and the lack of cost-effective or selective controls, we are faced with the reality that in some water bodies we may have to live with the presence of expanding hydrilla populations for one or more seasons. Current technology and funding will dictate the lowest feasible level of hydrilla until new and more effective management techniques become available.
- 6) When possible, efforts should be focused on reducing hydrilla coverage to the lowest feasible level and encouraging the reestablishment and proliferation of native submersed vegetation.

Final Document

A final document entitled "Hydrilla Management in Florida: A Summary and Discussion of Issues Identified by Professionals with Future Management Recommendations" was produced that compiled the issues, discussions, relevant literature and put forward an initial set of recommendations. Based on all of the discussions and comments, recommendations were made for developing lake-specific management strategies and for identifying future research needs.

One reoccurring issue identified in the workshop was the need to involve more of the Florida stakeholders involved in hydrilla management, including lay audiences. Unfortunately, the report was not written for a the lay public, because of its scientific nature and length. The content and length of the report reflects a desire to provide pertinent background information to strongly support the recommendations. However, the document has now been sent to the participants in the Hydrilla Workshop, who are all free to share it with any interested stakeholder. An electronic copy is posted on the Florida LAKEWATCH web page (<u>http://</u> <u>lakewatch.ifas.ufl.edu</u>) for general readership. We hope LAKEWATCH's efforts will help with statewide plans to manage hydrilla.