

Florida LAKEWATCH

Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume XXVII 2007

LAKEWATCH Sampling expanded to include Exotic Species Monitoring

Last year marked the 20th anniversary of the Florida LAKEWATCH program. Over this time period, all aspects of the program have expanded, including the amount and range of information collected by LAKEWATCHers.

While LAKEWATCHers have always collected water quality data, supplemental data sets such as surveys of aquatic birds and angler catch diaries have evolved along the way as well.

Now, for the next step, we are beginning to implement a survey of exotic species. **Exotic species are those that are introduced from another area.** The purpose of this ongoing survey is to document the reported locations of exotic species in Florida lakes.

Why exotic species? Increasingly, we have been asked to provide information on exotic species as citizens have come to recognize their presence and are concerned about the potential impact that exotic species can have on native systems. This is likely a consequence of elevated public awareness through media reports and a maturation of

the research concerning non-native species and their ecological and economic impacts. As citizen lake managers, many of you are all too familiar with the presence of exotic

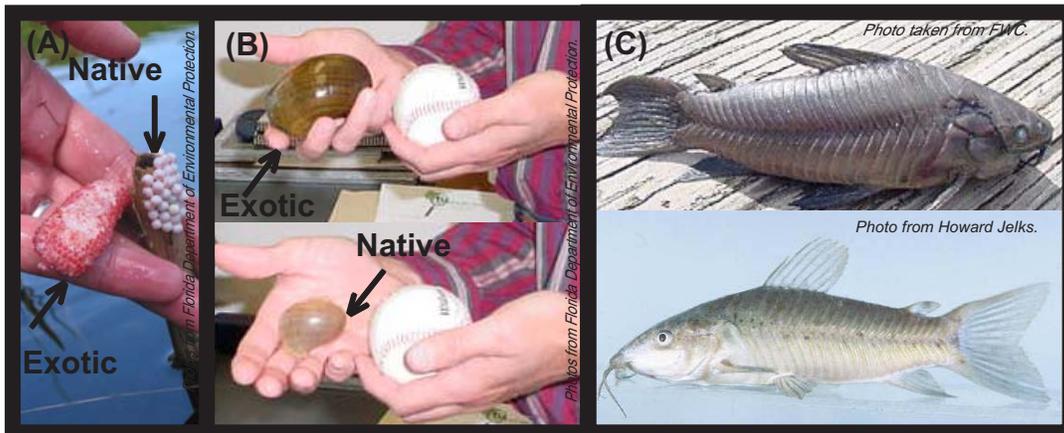
aquatic plants and the associated impacts they have had on your lake. The same potential for lake-wide change exists as a consequence of other exotic species as well.

One exotic species we have frequently been asked about is the Channeled apple snail (*Pomacea canaliculata*). Originating from South America, these herbivorous (plant eating) snails are expanding their range in Florida and are often found in great numbers. Exotic apple snail populations in Florida are now reported for most of the central and southern peninsula and we would like

to further identify specific water bodies with exotic apple snail populations. For information on the biology and identification of this species, the channeled apple snail has been featured in previous LAKEWATCH newsletters (Volumes 30 & 35).

Remember, one of the best indicators for the presence of channeled apple snails are their egg masses (see photo above). Egg masses are attached to firm substrates like dock pilings and emergent vegetation located above the water line. Egg masses contain between 100-

Exotic species continued on page 3.



Photos of some of the exotic species which are found in Florida waters. A) Photo comparing exotic apple snail egg masses with that of native apple snail egg masses. B) Photo depicting the size of the exotic apple snail and the native apple snail compared to a baseball. C) Photos of the exotic armored catfishes (*Hoplosternum littorale*) that are now found in many parts of the Florida Peninsula.

Potential Impacts from exotic species include

- *undesirable changes in natural communities
- *reduced production of desirable fisheries
- *increased costs associated with management control

Although a broad range of research and monitoring of exotic species exists, there remains more unknown than known about their ultimate impact. This is where you come in. LAKEWATCHers who wish to participate, are asked to report sightings of exotic species.



Featured Bird

Snowy Egret (*Egretta thula*)



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The adult Snowy Egret is easy to identify if you see its feet. They are medium sized white herons with black legs and bright yellow slippers.

The Snowy Egret is a member of the Heron Family (Ardeidae) and it is frequently observed near Florida water bodies. Its preferred habitats include marshes, swamps, ponds, lakes, shallow coastal areas, and tidal flats. Occasionally the Snowy Egret is even observed hunting in dry fields. The call of this bird is a loud, nasal squawk that is used in aggression or territorial defense.

The Snowy Egret is a small to medium sized white heron with black legs and bright yellow feet, which can be used for quick identification. They are active, slender birds with long thin necks, dark thin bills, and long dark legs. This species measures from 22-26 inches tall with a wingspan of about 39 inches and weighs around 13 ounces. The different sexes look alike. In breeding season, the Snowy Egret has long plumes on its head, neck and back. The appearance of immature birds is similar to that of adults but their bills are pale at the base, they lack plumes, and their legs are yellowish with a black front edge.

A similar species is the Great Egret, which is a larger bird with a yellow bill and deep black legs and feet. Also similar is the immature Little Blue Heron, which has a stouter, bluish-gray bill, greenish-yellow legs and feet, and no

yellow skin between the eyes and the base of the bill. The white form of the Reddish Egret is a larger, shaggier bird found only in salt water and has a dark or bi-colored bill with a pink base with dark legs and feet. The Cattle Egret is much shorter and stockier with a thick pale-colored bill, legs, and feet. It also has a reddish colored wash over its head, back, and chest.

In eastern North America, Snowy Egrets can be found in their summer range along the Atlantic and Gulf coastal areas from southern Maine and inland across the western USA to Texas and southward. In winter, northern populations migrate to southern coasts of the USA and southward to Central America, South America, and the West Indies. In warmer locations like Florida, some Snowy Egrets become permanent residents much like their relative, the "Northern Snowbird," which migrate to Florida to avoid higher taxes and the ardors of winter snows and cold weather.

The Snowy Egret eats fish, insects, amphibians, crabs, and aquatic invertebrates. They stalk their prey in shallow water, often sprinting rapidly and shuffling their feet to flush minnows and shrimp. This unique feeding behavior can be used to identify this species when viewing their bills and feet is not possible. It is thought that their white color and sprinting behavior may attract other "Snowies" that join each other in the feast and as a result, they are often observed feeding in small groups. Sometimes Snowy Egrets practice "dip-fishing" by flying with their feet just over the water. They may also be observed standing still waiting to ambush prey or stalking insects stirred up by domestic animals in open fields.

Snowy Egrets breed once a year. The breeding habitat of the Snowy Egret includes inland and coastal wetland areas from the Great Lakes south to the southwestern US and down into South America. They may wander north after the breeding season, and occasionally are seen in Western Europe. They usually nest in colonies, sometimes along with other wading bird species, on platforms built in trees and shrubs about 7 feet above the ground. Sometimes they even build their

nests on the ground.

The flat shallow nesting platforms are made of sticks and are lined with smaller twigs and softer plant materials, including rushes and cattails. As with other herons, the crudeness of their nests, the elliptical form of their eggs, and other signs suggest to some scientists that these birds are one of the lower forms on the scale of bird life. In other words, they are not that far removed from the reptiles when considering the big picture over eons of time.

The female Snowy Egret lays from 3-5 greenish-blue oval shaped eggs, which are then incubated by both parents until they hatch 3 to 4 weeks later. There is evidence that the members of a Snowy Egret pair cannot recognize one another except at the nest. Even there, a bird arriving to relieve its mate must perform an elaborate greeting ceremony in order to avoid being attacked as an intruder. During this display the plumes on the head are raised and the incoming bird bows to the one that is sitting. Satisfied with this display, the sitting bird leaves the nest and the other takes over. The young leave the nest in 20-25 days and can be observed hopping on branches near the nest before fledging.

At one point in history during the latter part of the 19th century and into the early twentieth century, the beautiful plumes of the Snowy Egret were in great demand by market hunters as decorations for women's hats. This hunting pressure reduced the population of this species to dangerously low levels and they almost became extinct! Since being protected by law, the Snowy Egret population has rebounded.

The Snowy Egret was observed in 27 of the nearly 90 lakes participating in the Florida LAKEWATCH Aquatic Bird Survey. There were 141 sightings of this bird to date and on 63 of these sightings, only 1 bird was observed. However, on 9 sightings as many as from 10 to 57 birds were sighted! The lakes with large numbers of Snowy Egrets were generally eutrophic to hypereutrophic lakes. Birds were sighted during all months but there was no apparent monthly pattern when birds were more or less frequently sighted.

Exotic species continued from page 1. 200 grit-sized eggs (2 mm to 3.5 mm) and are colored pink to reddish.

Other examples of exotic species include two groups of exotic armored catfishes that are now found in many parts of the Florida Peninsula. The first group of exotic armored catfishes are one of the most rapidly expanding exotic fishes: the brown hoplo or *Hoplosternum littorale* (see photo (C) on page 1). This catfish belongs to the South American family Callichthyidae. Members of this family are often called the mailed or plated catfishes, a reference to their armor. This small catfish (up to about 9.5 inches or 240 mm) is easily distinguished from native and other exotic catfishes by the overlapping plates of armor found on its sides. There are two pairs of prominent barbels (whiskers) around the mouth. It is often seen swimming to the surface to gulp air for breathing and can survive in waters with little oxygen. They mostly eat insects, worms, snails, and other invertebrates. The brown hoplo builds a floating, bubble nest in surface vegetation and guards the eggs. Although they can be very abundant in some places, the effect of brown hoplos on native species is unknown. Even though they are small fish, some people cast net for them and the meat is delicious.

The other group of armored catfishes are the armored suckermouth or sailfin catfishes. These are the familiar "plecos" or "plecostomus catfish" found in pet stores. There are 500 to 600 members of the South American family Loricariidae, but the species in Florida lakes are members of the genus *Pterygoplichthys*. There are at least three and possibly four species now in Florida—*P. anisitsi* (maybe), *P. disjunctivus*, *P. multiradiatus*, and *P. pardalis*. The species are very difficult to differentiate, even by experts. However, it is easy to distinguish these catfish from native and other exotic catfishes in Florida. Key characteristics are the sucker-like mouth; hard, rough skin; a single prominent (but short) barbel on each side of the mouth; and a large, sail-like dorsal fin. There are some armored suckermouth catfishes of the genus *Hypostomus* in Florida, but so far, these have only been found in a few streams near Tampa and in a few canals near Miami. Although they look similar, *Hypostomus* can be distinguished by a



Photo by M Landlines.
Photo by KS Cummings.
Photo by MH Sabaj.
Photo by M Camargo.
Photo by USGS.

Species of armored catfishes from the genus *Pterygoplichthys* (commonly known as the "plecos" or "plecostomus catfish" found in most pet stores).

shorter dorsal (top) fin that has only seven rays (as opposed to 10 or more in *Pterygoplichthys*). Also, members of *Pterygoplichthys* reach about 27 inches (685 mm) whereas *Hypostomus* seldom exceed 8-10 inches (200-254 mm). They are adaptable to many water conditions, including low oxygen, and may be seen rising to the surface to gulp air. These catfish eat primarily algae and detritus. They dig burrows into banks or in depressions on the lake bottom where the female deposits a round mass of eggs. The male guards and tends the eggs. Very little is known about their effects on native species or ecosystems, but their burrows can cause local erosion. Although the meat is said to be good, these catfishes are seldom eaten in Florida.

If you observe any exotic species, please report it to us. It is our

hope that the information gathered from this study will further define the range and distribution of exotic species utilizing Florida's aquatic resources. It will assist in determining if negative impacts can be attributed to the presence of these exotics and what management control activity is warranted.

On page 7 of this newsletter and on our website there is an exotic species report form that you can use to report exotic species. Please send the information to the LAKEWATCH office by US mail or contact us at 1-800-LAKEWAT (1-800-525-3928) or fl-lakewatch@ufl.edu.

Please do not mail specimens without making prior arrangements.

Exotic Species Reporting Tips!

When reporting exotic species, try to remember the 5 W's:

- What** species,
- When** it was observed,
- Where** it was observed,
- Who** saw it and
- Why** you think it was the species identified.

Quality pictures will greatly increase the likelihood of correct identification; so if possible, include pictures in your reports.

When taking photos of an exotic species place a ruler or coin next to the exotic species for scale.

For the suckermouth catfishes, the following photos will assist in identification:

- 1) the side view,
- 2) the head from above, and
- 3) the suckermouth/chest/belly.

For the brown hoplo, the side view of the fish is sufficient.

A Home for Florida LAKEWATCH

The campaign to raise \$1,000,000 for a new LAKEWATCH home is underway!

The vision for a new "LAKEWATCH HOME" is an exciting prospect. When I met with leaders from various statewide LAKEWATCH groups, their decision to help raise \$1,000,000 was most gratifying. To date we have raised approximately \$40,000. We have received donations from individual LAKEWATCHERS and lake homeowner associations. Special thanks to:

Richard and Ann Dominica

Nadine D. Foley

Jeffrey George and Rosemary Mahoney-George

Donald L. and Betty J. Millner

Paul R. and Paula B. Morrow

Chester and Foy Windsor

John and Phyllis Nelson

Bear Lake Preservation Association Inc.

Forest Lakes of Cocoa Condominium Association, Inc.

Lake Powell Community Alliance, Inc.

Property Owners of Sun-N-Lakes of Lake Placid Recreation District, Inc.

Robert and Terry Ern

Richard and Justine Fry

Thomas C. Luche

Thomas and Ann Moore

Theodore and Joan Niermann

Lake Winnemissett Civic Assoc.

Daniel and Susan Canfield

Lake Broward Assoc., Inc.

John's Lake Improvement Association, Inc.

Summerbrooke Property Owners Assoc.

Tallavana Homeowner's Association Inc.

This is a good start, but as you can see lots of hard work remains to be accomplished!

I am asking the fundraising committee to meet in Gainesville at the current LAKEWATCH home on January 27, 2007. This meeting is to discuss what has been accomplished and what needs to be done to meet our \$1,000,000 goal. Our goal is very reachable if we all work together. If you are interested in participating in the fundraising campaign that is under way, please contact me at (352) 392-9617 ext 246. New ideas and approaches are welcome!

Sincerely,



Daniel Canfield, Jr., Professor of Limnology
Founder and Director of Florida LAKEWATCH

ATTENTION LAKEWATCHERS

Florida LAKEWATCH
has a new e-mail
address:

fl-lakewatch@ufl.edu

WANT TO GET YOUR NEWSLETTER ELECTRONICALLY?

Due to many requests by LAKEWATCH volunteers, we are now offering our newsletters electronically. If you would like to receive the LAKEWATCH newsletter via the internet, please send us an e-mail using our new e-mail address and let us know. We will use your e-mail to send the newsletter to you in digital format in the future.

ulletin Board

Want an algae sample identified?

If you have an algae sample that you want identified please follow these simple steps:

- 1) Call your LAKEWATCH Regional Coordinator to arrange for us to get your sample.
- 2) Collect your sample in one of your small (250ml) sampling bottles.
- 3) Keep the sample in your **refrigerator** until we can get your sample as arranged with your Regional Coordinator.
- 4) **DO NOT FREEZE** the sample.

Thanks and Happy Sampling!



★ ★ Collection Center Update ★ ★

Orange County

The IFAS Extension Office at the corner of Michigan and Bumby is moving to a new location in February 2007. The new address will be 6021 South Conway Road which is the section of South Conway Road between Hoffner Avenue and McCoy Road. The telephone number will remain the same for the foreseeable future. If you have questions about where to drop your samples or pick up new supplies you can call Darla Wilks at 407-836-7570.

North Lake County

The collection center at the Visitors Center to the Ocala National Forest in Altoona (the Pittman House) has been closed. We are currently working to find another location in North Lake County to become the new collection center. Until a new collection center can be set up please take your samples to the Lake County Water Authority located at 107 N Lake Ave, Tavares FL, 32778. The telephone number at the Water Authority is 352-343-3777. If you are a Marion County resident, the closest collection center is the Silver River State Park at 1425 NE 58th Ave., Ocala, FL 34470. The telephone number at the State Park is 352-236-7148.

If you have any questions about any of these changes you can call us at 1-800-525-3928 or e-mail us at fl-lakewatch@ufl.edu.

Please make note of this change!

Lake Tohopekaliga (Toho) Enhancement Project

Over the course of 2004, the Florida Fish and Wildlife Conservation Commission (FWC) administered a project to consolidate the accumulated organic matter (muck from decomposing plant material) along the littoral areas of Lake Toho. When properly conducted, muck removal is an effective lake management action capable of reducing nutrients and harmful substances entrapped in the muck. Muck removal also counteracts the accumulation of organic material due to eutrophication, and was the principle goal for the Lake Toho enhancement project. With the removal of sediments from lake systems there are always some environmental concerns, including the liberation of nutrients that were contained in these sediments. To assess the impacts of this management activity on Lake Toho's water quality, Florida LAKEWATCH was requested to evaluate the key trophic state parameters: total phosphorus, total nitrogen, chlorophyll and Secchi depth.

Lake Toho is the 7th largest natural lake in Florida with a surface area of roughly 19,000 acres. With relatively shallow depths, the littoral area of the lake had been sustaining dense stands of aquatic plants including emergent species such as Pickerelweed (*Pontederia cordata*) and submersed forms including Hydrilla (*Hydrilla verticillata*). This abundance of aquatic plants in Lake Toho was likely enhanced through cultural eutrophication from watershed development and through the stabilization of water levels for flood control purposes. As a result, the aquatic plant community flourished and contributed to the buildup of thick deposits of organic matter on the lake bottom, particularly along the shoreline. Some of the consequences of this buildup of shoreline muck include lower dissolved oxygen concentrations as a result of increased biochemical demand for oxygen, the covering of sandy sediments used for sport fish spawning beds and a reduction of open water habitat for fish and wildlife. Eutrophication had also changed the aesthetics and reduced the recreational opportunities of Lake Toho.

Ideally the muck deposits would be permanently removed from the lake. However, finding uplands which can hold the enormous volume of muck was not economically feasible. Instead the majority of the material was used to construct wildlife islands around the lake edge. To accomplish this, the lake water level was drawn down approximately 7 feet and then heavy equipment was used to scrape the plants and

muck off the underlying sand substrates from over 3,500 acres of the littoral zone. This material was pushed into long rows, allowed to dry out, and then formed into 29 artificial islands of 1 to 8 acres in size. Following the lake enhancement project completion in the summer of 2004, the average thickness of muck in the scraped areas was reduced from approximately 18 inches to 1 inch.

During planning for the project, some natural resource managers were concerned that these islands may release nutrients into the lake, thus reducing their intended benefit. To address these concerns, Florida LAKEWATCH personnel were asked to design a study to determine if the islands released measurable amounts of nutrients to the lake and if the construction of the islands caused changes in trophic status of Lake Toho. As commonly occurs, an unintended factor was added to the experimental design

when three hurricanes and their associated high winds and heavy rainfall passed over the area in August and September of 2004. To account for the effects of this hurricane activity, we examined the total phosphorus concentrations and color values measured from 58 nearby lakes sampled by Florida LAKEWATCH during the same time period.

Our analyses of water quality parameters in the vicinity of the islands indicate that the islands **are not** having a significant impact on the water chemistry of Lake Toho through leaching of nutrients. While statistical analyses of long-term open water stations indicated that levels of total phosphorus, chlorophyll and color were slightly higher and dissolved oxygen were lower following the enhancement project, these differences most likely were the result of hurricane activity. These

storms delivered 37 inches in August and September of 2004 to the regions watershed, causing elevated nutrients and organic materials to be washed into the Lake Toho. This conclusion is supported by our control sample of 58 nearby lakes which also showed significant increases in both total phosphorus and water color coinciding with the passage of the hurricanes.

Lake Toho continued on page 7.



Lake Toho is located in central Florida in Osceola County (depicted in top right of the photo). Lake Toho is the 7th largest natural lake in Florida. Sampling stations are shown on the lake with black dots.

Lake Toho continued from page 6.

We would have expected to find similar increases in Lake Toho independent of the muck removal project. Following the hurricanes, some islands were eroded from wind driven waves, but the vast majority remain today as vegetated islands. Currently these islands are being utilized by wildlife such as alligators, several varieties of water snakes, aquatic birds, and other animals. The outcome of this project appears to have been successful, improving both the public perception of the lake and the shoreline habitat for fisheries. Included are pictures showing the dramatic changes made to Lake Toho and a diagram showing the locations of the resulting islands and water chemistry sampling stations.



(2) May 11, 2004



(1) April 26, 2004,



(3) February 14, 2005

Sequential pictures taken from Wayley's landing, Lake Tohopekaliga, during and after a lake enhancement project was conducted. Pictures were taken on the following dates, respectively: April 26, 2004, May 11, 2004 and February 14, 2005.

EXOTIC SPECIES REPORT

What Species*:

When Observed (Date, mm/dd/yyyy):

Where Observed:

Lake:

County:

Latitude:

Longitude:

Habitat observed in:

Who (Name and contact information):

Why (* Include pictures if possible. Any additional details):

Please return the exotic species report form above to the LAKEWATCH office by U.S. mail at:

7922 NW 71st Street
Gainesville, FL 32653

Or contact the LAKEWATCH office by phone or e-mail and report the information listed:

Toll-free Citizen's Hotline: 1-800-525-3928

LAKEWATCH's new e-mail address: fl-lakewat@ufl.edu.

You can download another form from the LAKEWATCH website: <http://lakewatch.ifas.ufl.edu>.

**Please do not mail
specimens without
making prior
arrangements.**

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 or call:

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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.

What is an Exotic Species?

An Exotic Species is any species that is not native to an area. So an exotic species is also called a non-native species.

WHAT'S THE PROBLEM?

In their native ranges, species generally behave well, but when they become established in non-native areas they replace and otherwise destroy the native species that are supposed to be there. That's because non-native species do not have their natural enemies such as: diseases, water regimes and other stresses that keep them in check in their native ranges. There are exceptions--for example Cattails are a native plant in Florida but can become invasive in some environments like disturbed areas.

When other species destroy and replace our native species, there can be significant consequences:

- 1) natural biodiversity is destroyed;
- 2) native species can be eliminated;
- 3) other species that are dependent on natives are usually not able to make use of non-native species;
- 4) exotic species can completely take over an area;
- 5) recreational uses can be eliminated from areas with exotics.

You can help stop the spread of non-native species in Florida.

- **Learn to identify** which species are exotics.
- **Never buy** exotic species.
- **Never collect, move or transport** exotic species.
- **Report exotic species** by using the form provided on page 7.

Information summarized from <http://plants.ifas.ufl.edu/guide/invplant.html>.