

**Mark your calendars...**

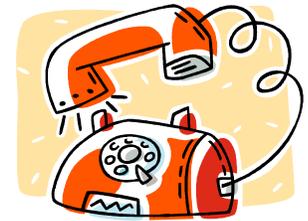
- August 3—Water quality meeting sponsored by GTM NERR at Whitney Lab; 6-9 pm. Contact Terri at 904-823-4500 for information.
- August 8—Aquatic preserves public meeting (see this page)—GTM Guana; 7 pm.
- September 1—4-H Marine Ecology Judging Event workshop; 5:30 pm at St. Johns County Agricultural Center. Contact Maia for more information.
- Sept 1-22—Freshwater Master Naturalist Program (Trout Creek Park). Register at [www.masternaturalist.org](http://www.masternaturalist.org).
- September 8—Duval Environmental Educator Network meeting. 3pm at Jacksonville Zoo Education Building. For information about DEEN, see [www.enviroedjax.org](http://www.enviroedjax.org)
- More on back page!

## New phone and fax numbers

Starting on August 1, 2005, many St. Johns County offices will have new telephone and fax numbers. The Agricultural Center, which houses the extension programs, including Sea Grant, is part of this change. Our physical location, website and e-mail addresses will not be changing, but you will no longer be able to reach us at 904-824-4564. The new phone number is **904-209-0430** and the new fax number is **904-209-0431**. Please make these changes in your phone books.

*M. P. McGuire*

Maia McGuire, PhD  
Marine Extension Agent



## Goodbye Cathy, welcome back April!

I am continually amazed at the way that challenges turn into opportunities. In May, my secretary, Cathy Williams, told me that she and her family were going to be moving to Nashville, TN so that her husband could pursue his songwriting career. A few weeks later, I had a phone call from April Alexander. Many of you may remember April—she was my previous secretary but left to become a teaching assistant at St. Johns River Community College. April graduated with her Associate of Arts degree from SJRCC this spring and is going on to UNF to pursue a Bachelor of Science degree in Chemistry. To make a long story short, April has now been re-hired as the NE Florida Sea Grant extension secretary and I'm thrilled to have her back in the office! Cathy has successfully relocated to Nashville and is enjoying her job working in an analytical chemistry lab.

**Inside this issue:**

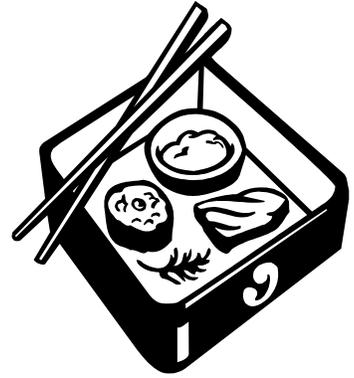
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## Aquatic Preserve Management Workshop August 8

To increase protection for Florida's natural and cultural resources, the Department of Environmental Protection is updating the management plans of the state's aquatic preserves. Regional workshops will focus on explaining the existing aquatic preserve program and involving the public in the process for creating statewide and site-specific preserve management. You can attend a workshop at 7 pm on August 8 at the new GTM Environmental Education Center at 505 Guana River Road (by the Guana River Dam). Call 904-823-4500 for more information.

## Incredible edible...seaweed?!

I recently attended a presentation by Dr. Isabella Abbott (University of Hawaii) about the use of seaweeds in food and industry. I was interested in hearing her presentation as I am fond of pointing out to children (and adults!) that many of the products we use and eat contain extracts from marine algae (often called seaweeds). For example, some species of red algae produce carrageenans, which are used to thicken toothpaste, cosmetics, pudding, ice cream, yogurt and chocolate milk. Other red algae produce agar. While humans cannot digest agar, we do use it to make gels for canned meats and for frostings for baked goods. Agar is also used to make molecular gels which are used for biological research. Some kelps (brown algae that grow in cold water) produce a compound called alginate which is used to make wallpaper paste.



Dr. Abbott informed us that all seaweeds are high in potassium and recommended including seaweeds in our diets. Many people are accustomed to having sushi wrapped in seaweed, but there are many different ways of preparing seaweed. In Hawaii, it is traditional to eat raw seaweed, while in Japan the seaweed is typically pickled. In China, seaweeds are cooked before they are eaten. Sargassum seaweed (the brown seaweed that washes up on our beaches after storms) can be rinsed in fresh water, patted dry and then deep fried to make a crunchy snack.

## New Environmental Education Center to open on National Estuaries Day

The Guana Tolomato Matanzas National Estuarine Research Reserve Environmental Education Center located at 505 Guana River Road in Ponte Vedra Beach (by the Guana River Dam) will hold its Grand Opening on September 24, 2005.

The Grand Opening of the GTMNERR Environmental Education Center will begin at 9:30 am with welcome and speeches given by top officials from NOAA, Florida Department of Environmental Protection and Federal and State Elected Officials in attendance. After the speeches, the building will be open for visitors. The day will wrap up at 4pm. This event is open to the general public.

Inside the 21,000 square foot Environmental Education Center will be an exhibit hall, aquariums, Nature Store, research laboratory, classrooms, meeting rooms and offices. You can browse the natural history exhibits and hands-on displays, study live animals, read a book from the library, or visit our nature gift shop. Special activities for the grand opening will include nature crafts, mini lectures and environmental programs, demonstration of research projects, aquariums and touch tanks and viewing of the exhibits.

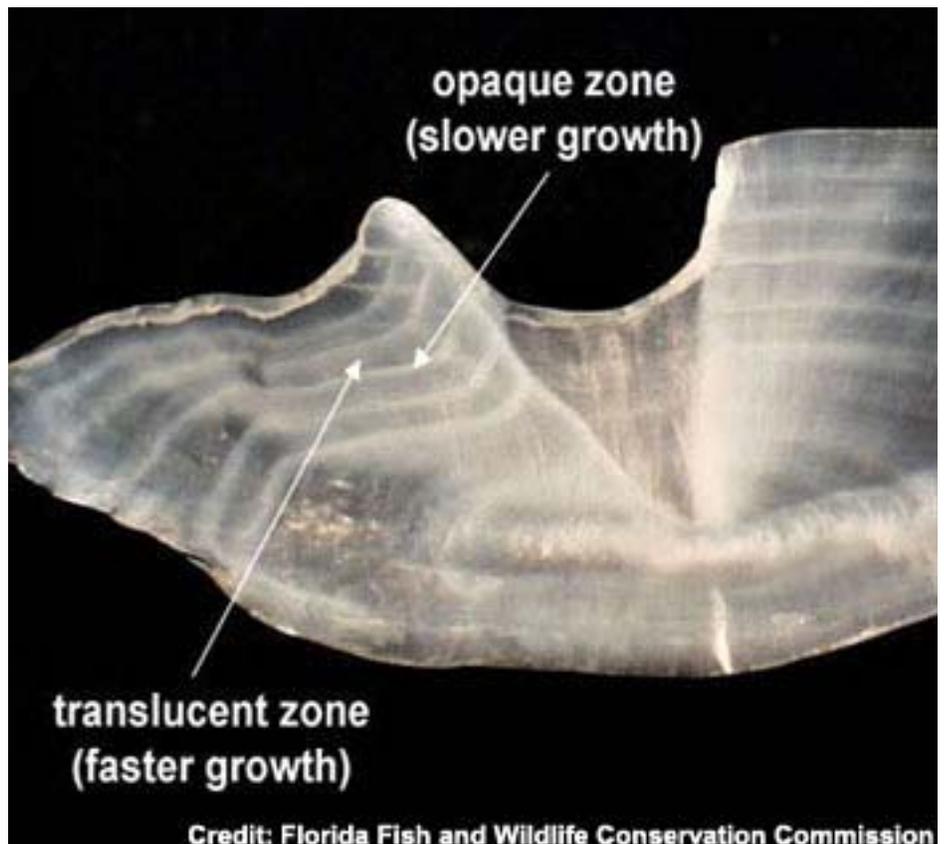
For more information contact GTMNERR Education Coordinator Janet Zimmerman at [Janet.Zimmerman@dep.state.fl.us](mailto:Janet.Zimmerman@dep.state.fl.us).

## Otoliths (fish “ear bones”)

Most people will probably be surprised to learn that not only do fish have ears, but they have three small ear bones, called otoliths, on each side of their heads (just behind the brain). The exceptions are the cartilaginous fishes like sharks and rays. Otoliths help fish with hearing and balance. Otoliths are mostly made of calcium carbonate (limestone). As the fish grows, so do the otoliths—new layers of calcium carbonate are added to the otolith in concentric rings, very similar to the manner in which trees and corals grow.

Like trees and corals, the rings found in fish otoliths can be used to determine the age of the fish. However, unlike trees and corals, the rings may not be laid down on an annual basis. In order to use otoliths to calculate fish age, studies must first be done using single fish species to determine how frequently new rings are added to the otoliths. Young fish are incubated injected with a dye which is incorporated into calcium carbonate in the fish’s otoliths. The fish are then tagged and released into the wild. When those tagged fish are caught (sometimes years later), they are sacrificed and the ear bones are removed and examined. Under a microscope, the stained band can be spotted. Researchers can also count the number of rings that have been added to the otolith since it was stained. Since they know the time period between the staining and the capture of the fish, they can determine how frequently new bands are added to the otolith. For snook, the bands are added annually, so a seven-year-old fish will have seven bands on the otolith.

The bands on the otolith are best seen in thin sections of the bone. Researchers use a special saw to carefully slice the small bone into slivers which are mounted on microscope slides for examination. One reason for studying otoliths is to help determine the age at which different species of fish become sexually mature. This information will be useful to fisheries managers. For more information about otoliths go to <http://www.floridamarine.org/> and search for “otoliths”.



Photograph of a section of an otolith (species not given) showing the growth bands.



NE Florida Sea Grant Extension Program  
3125 Agricultural Center Drive  
St. Augustine, FL 32092

Phone: 904-209-0430  
Fax: 904-209-0431  
E-mail: [mpmcguire@ifas.ufl.edu](mailto:mpmcguire@ifas.ufl.edu)  
<http://stjohns.ifas.ufl.edu>

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coastal Florida*

### More “Mark your calendars”

- September 20—Ocean and Beaches FAQ’s. Presentation by Maia McGuire at Ponte Vedra Beach Library; 7 pm.
- September 24—“Wild for Wildlife” at Flagler County Extension Office. Call 386-437-7464 for more information.
- September 24—GTMNERR Environmental Education Center Grand Opening (see pg. 2)
- September 24—National Estuaries Day. See [www.estuaries.gov](http://www.estuaries.gov) for information.
- October 3-7—Exploring our Environment—from the ocean to the river. GTM NERR office in Marineland. Download a registration brochure from <http://stjohns.ifas.ufl.edu> (click on Sea Grant and follow the education link.)
- October 8—Rainbarrel workshop at St. Johns County Ag Center. \$35 per barrel. Payment due by September 22. Call Donna at 904-209-0430 to reserve a space.
- October 15—4-H Marine Ecology Judging Event practice competition. 10 am—noon at St. Johns County Ag. Center. Contact Maia for more information
- October 29—4-H Marine Ecology Judging Event at Camp Ocala.
- November 2-13—Duval Agricultural Fair. See <http://www.jacksonvillefair.com/>
- November 3-5—Florida Association of Science Teachers Conference (Orlando). See [www.fastscience.org](http://www.fastscience.org).
- November 15-20—St. Johns County Fair. See <http://www.stjohnsfair.com/>

Aqua Notes is provided as one of the many services relating to educational programs offered by the University of Florida/IFAS cooperative extension service. This publication is available on the Web at <http://stjohns.ifas.ufl.edu> or in an alternate format on special request. In compliance with ADA requirements, participants with special needs will be reasonably accommodated with 5 days advance notice by contacting the St. Johns County Extension Service at 904-209-0430. Those needing telecommunications assistance, please call the Florida Relay Service (TDD) at 1-800-955-8771. The use of websites or product names in this publication is not a guarantee, warranty or endorsement of the sites/products named and does not signify that they are approved to the exclusion of others. For more information about this document, contact Maia McGuire at the St. Johns County Extension Service at 904-209-0430.