

aqua-notes

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Mark your calendars...

- September 13-17, "Exploring our Environment: from the ocean to the river." Adult environmental camp. Program is full—check Sea Grant website for announcement of spring program dates.
- Sept 16, 6-8 pm: "Splash into Science" at Hastings Elementary School
- Sept 21-24: National Estuaries Day (see www.estuarylive.org for details)
- More on back page!

What I did over the summer...

The past three months have been very busy for the NE Florida Sea Grant extension program. Summer camps (16 days), professional workshops and conferences (10 days), Master Naturalist and other adult field programs (5 days) all contributed to filling my summer calendar (and my desk, office floor, secretary's area!). Florida hosted the National Marine Educators Association annual conference this July. I was fortunate to be able to attend this conference and collected a wealth of resources. Now I just need a few weeks of "free" time to go through all the piles of "stuff" in and around my office, organize everything and file it away in some location where I can hopefully find it again when I need it! Before the November newsletter goes to press, I hope to have three new county extension directors—Harold Jones has retired from Duval County, Loretta Hodyss retired from St. Johns County and Chuck Lippi left Flagler County extension to start his own company. I wish all three of them the very best and will miss working with them.



It's a tough job, but someone's got to do it....seining in the surf zone for a Master Naturalist class.

M. P. McGuire

Maia McGuire, PhD
Marine Extension Agent

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What do bony fish and trees have in common?

At the National Marine Educators Association conference in July, I had the opportunity to tour the Fish & Wildlife Research Institute labs in St. Petersburg, FL. FWRI (formerly known as Florida Marine Research Institute) is part of the Florida Fish and Wildlife Conservation Commission. One of the labs that we toured conducts research into fish growth. Bony fish have "ear stones" or otoliths—calcium carbonate structures located behind the brain, which help the fish with balance and hearing. Scientists have discovered that when otoliths are sliced into thin sections, they contain a series of rings. These rings are formed annually and are the combination of a narrow, dense band of calcium carbonate (laid in the winter) and a wide, less-dense band of calcium carbonate, laid in the summer (during periods of more rapid growth). So...scientists can determine the age of a fish by counting the number of rings in the otoliths, in the same way that they can determine the age of a tree by counting the number of rings in a section of the trunk!

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Update on Green Mussels in NE Florida

In late June, I took a group of 4-H members to Vilano Beach for a summer camp program. While there, we explored the rocky breakwater (on the north side of the St. Augustine Inlet) and I was dismayed to discover THOUSANDS of the invasive green mussels growing on these boulders. You may be aware that green mussels were first reported from St. Augustine in 2002; until the trip to Vilano, I had not found large numbers of the mussels anywhere. Investigation of the rocks around the tip of Conch Island (Anastasia State Park, at the south side of the St. Augustine Inlet) revealed that there were hundreds of mussels growing there, too. Unfortunately, the waters of the St. Augustine Inlet are closed to shellfish harvest, so mussels growing there are not considered safe to eat. I did collect approximately 500 mussels from the two locations and froze them, then measured each of them before discarding them in the garbage. I have sent the length measurements to researchers in Gainesville who are tracking the spread of these mussels. While it is not realistic to expect to be able to eliminate these mussels from NE Florida, I am hoping that we can learn something about their biology by monitoring these locations for settlement of new mussels, and studying the local populations to determine at what size and during what time of year the mussels become reproductive. I also hope to confirm whether or not the mussels can survive our winter water temperatures. There may be opportunities for volunteers to help with removal of these mussels—I will let people know if this occurs. For information about green mussels in Florida, check out <http://greenmussel.ifas.ufl.edu>.



Some of the green mussels (*Perna viridis*) that were collected from the breakwater at Vilano Beach

Shellfish harvesting in Florida

(From the Florida Department of Agriculture, Division of Aquaculture's website at www.floridaaquaculture.com.) Most shellfish thrive in estuaries with mixtures of fresh and saltwater. Shellfish are filter feeders, which means that they get food and oxygen by pumping large quantities of water across their gills. During feeding, shellfish take in bacteria, viruses and chemical contaminants, and can concentrate these impurities in their digestive systems and tissues over 100 times the levels in the water. Because oysters, clams and mussels are often eaten raw and partially cooked, shellfish harvested from polluted areas are a health hazard if consumed. Diseases resulting from consumption of shellfish harvested from polluted waters include typhoid, hepatitis and salmonellosis. Waters are classified for harvest of shellfish as Approved, Conditionally Approved, Restricted, Conditionally Restricted, Prohibited and Unclassified (= Unapproved). Maps showing status of water bodies around the state can be found at www.floridaaquaculture.com.

Approved Area: Normally open to shellfish harvesting; may be temporarily closed under extraordinary circumstances such as red tides, hurricanes and sewage spills. **Conditionally Approved Area:** Periodically closed to shellfish harvesting based on pollutional events, such as rainfall or increased river flow. **Restricted Area:** Normally open to relaying or controlled purification, allowed only by special permit and supervision; may be temporarily closed under extraordinary circumstances such as red tides, hurricanes and sewage spills.

Conditionally Restricted Area: Periodically, relay and controlled purification activity is temporarily suspended based on pollutional events, such as rainfall or increased river flow. **Prohibited Area:** Shellfish harvesting is not permitted due to actual or potential pollution. This classification is least desirable, and is used only when standards are exceeded for Approved, Conditionally Approved, Restricted and Conditionally Restricted classification management schemes.

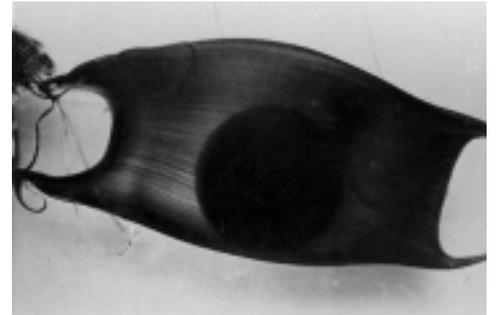
Stingray barbs, mermaid's purses, shark teeth and other cool beachcombing finds...

I have been a shell collector for the past 30 years. In fact, it was seeing the shells that a friend of my parents had collected that made me decide to become a marine biologist. Recently, I decided to put together a display of local (NE Florida) beachcombing finds to use as an educational tool. I would like to share with you a few of the more unusual items in the collection.



Stingray barb; a modified dorsal spine, located on the tail. A toxin is released through two grooves along the spine. The toxin can be broken down by heat, so the treatment for a stingray “sting” is to put the foot in hot water (as hot as the victim can tolerate) for at least 45 minutes.

Commonly known as “mermaid’s purses,” the egg case of the clearnose skate commonly washes ashore on Florida’s beaches. The clearnose skate looks similar to a stingray, and females can produce up to 40 eggs each year. Every egg is enclosed in a case like the one on the right. Eggs take about 12 weeks to develop into baby skates, which hatch out of the egg case and swim away. For photos of a hatching skate, check out www.mote.org/SKATE.phtml.



This diagram of commonly-found shark teeth is courtesy of the Nature Center at Amelia Island Plantation. Shark teeth are commonly found at Washington Oaks Gardens State Park, Vilano Beach, Jacksonville Beach and Fernandina Beach.



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More “Mark your calendars”

- September 18: International Coastal Cleanup. To help out with the 2004 coastal cleanup in Jacksonville, contact Clean It Up, Green It Up at 904-630-3420. In St. Johns County, call Chris Benjamin at 904-824-9720. In Flagler County, contact Janet Zimmerman at 904-461-4054 or Dennis Bayer at 386-439-2332. For more information, see www.coastalcleanup.org.
- September 24: “Make a Splash” at Fort Clinch State Park.
- October 7-30: Florida Master Naturalist Class (Freshwater module) at Trout Creek Park. See www.masternaturalist.org for information and to register.
- October 14-16: Florida Association of Science Teachers conference in Orlando. See www.fastscience.org for details.
- October 15-16: 9th Annual International Sea Bean Symposium (Cocoa Beach, FL). See www.seabean.com for details.
- October 30: 4-H Marine Ecology Judging Event at Camp Ocala (note that this is a change of date). Contact your county 4-H agent for more information.
- November 3-14: Greater Jacksonville Agricultural Fair
- November 16-21: St. Johns County Fair

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