

aqua-notes

3125 Agricultural Center Drive
St. Augustine, FL 32092
904-824-4564

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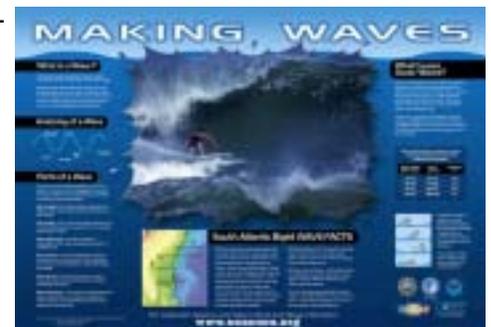
February, 2005

Mark your calendars...

- February 12: Water Education Festival at MOSH (FREE!). 10 am—4 pm.
- February 12: SEAS teacher workshop at Florida Museum of Natural History. Contact Heather Lane at 813-949-9096.
- February 23: NE Florida Regional Envirothon
- February 24: Duval Environmental Educator Network meeting. 3pm at Jacksonville Zoo Education Building.
- More on back page!

Starting a fifth year of aqua-notes!

It's difficult to believe that I'm getting ready to start my fifth year as the Sea Grant extension agent for NE Florida. How time flies when you are having fun! I had no difficulty in choosing the topic for the main article in this month's newsletter—I'm sure we all followed the media coverage of the devastating tsunami in the Indian Ocean. My goal in the article is to give some general information about tsunamis and to provide some resources for those of you who may wish to further research the topic. For anyone interested in learning more about wind-generated waves, I have a supply of "Making Waves" posters in my office—give me a call or stop by if you'd like one.



M. P. McGuire

Maia McGuire, PhD
Marine Extension Agent

"Making Waves" poster—designed and distributed by members of the SouthEast Atlantic Coastal Ocean Observing Systems Education working group.

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Welcome, Cathy!

You may hear a new voice answering the phone when you call the St. John's County Extension Office. Cathy Williams joined the NE Florida Sea Grant Extension Program last month and will be working 20 hours a week as my new secretary. Cathy is not your "typical" secretary—she hails from England and has a PhD in oceanography. Her research area has included work in the deep sea (hydrothermal vents). Please join me in welcoming Cathy on board!

“Cool creatures” —Portuguese Man-o-War

Many of you have probably seen the Portuguese Man-o-War (*Physalia physalis*)—it’s the “jellyfish” that looks like a blue/purple plastic bag with blue and purple tentacles. Did you know that this is not just a single animal, but is actually a colony of individuals which serve specialized functions for the colony? Some individuals are responsible for capturing food (stinging!), some for feeding and others for reproducing. There are male and female Portuguese Man-o-War. Portuguese Man-o-War actually belong to a group of animals called siphonophores which taxonomically fall into a different class of animals (Hydrozoa) than the jellyfish (Scyphozoa). However, they are all in the same phylum, Cnidaria.



The tentacles of the Portuguese Man-o-War can be over 60 feet in length, and the float (the inflated “bag”) can get to be about a foot long. Because the tentacles contain very powerful stinging cells, it is important that swimmers and beachgoers avoid coming into contact with them, even if the Portuguese Man-o-War is washed up on the beach. The tentacles will stick to your skin—if you do get stung, try and remove as much of the tentacles as possible using a knife or tweezers (not your fingers!) and treat the stings with meat tenderizer, alcohol or sunscreen. For severe stings, see a doctor as the toxin produced by the stinging cells can affect muscle function, including that of the heart.

There is a host of animals that lives associated with Portuguese Man-o-War. Occasionally these will also wash up on the beach. None of the associated animals has powerful enough stinging cells to penetrate human skin. One that is sometimes found on NE Florida beaches is *Porpita porpita*, commonly called “blue buttons.” As its name implies, it is a small, round, flat animal that looks like a disk of clear plastic with very short purple or blue tentacles on the bottom side. It can get up to about an inch in diameter. Another hydrozoan that is sometimes seen is the “By the wind sailor” (*Velella velella*). There are at least three species of purple sea slug which have the ability to generate a bubble raft which allows them to float upside down at the water’s surface where they feed on floating hydrozoans like *Velella*. The Blue Sea Slug (*Glaucus atlanticus*) swallows air in order to be able to float just below the sea surface. It feeds on Man-o-War, Porpita and Velella tentacles and incorporates the stinging cells from these hydrozoans into its tissues as a defense mechanism. The last member of this unusual community is the Man-o-War fish (*Nomeus gronovii*), which is mottled deep blue and silver so that it is camouflaged when it hides in the tentacles of the Man-o-War. It feeds on zooplankton (small drifting animals) and the tentacles of the Man-o-War. It appears to be immune to the stinging cells in the tentacles. It may help the Man-o-War by luring predatory fish into its tentacles where they become food.

For images of these animals, check out www.imagequest3d.com/catalogue/surfacedrifters/index1.htm

Boaters—free bilge socks available

Thanks to the state’s Clean Marina Program, I have a supply of bilge socks available for distribution to interested boaters. The socks contain a material that binds to petroleum and actually changes it chemically so that it will not separate from the filler material. The socks are designed to be placed in a boat’s bilge where they will absorb oils. When the sock becomes black in color, it should be removed from the bilge and is safe to discard in the landfill. It should then be replaced with a new bilge sock. Boaters can obtain a free bilge sock by filling out a clean boating pledge card at the St. Johns County Ag Center (call first to make sure that Maia or Cathy are in). The address is 3125 Ag Center Drive, St. Augustine and the phone number is 904-824-4564.



Tsunamis



Tsunami is a Japanese word represented by two characters, tsu (harbor) and nami (wave). Tsunamis are a series of waves with extremely long wavelengths (the distance between two wave crests). Wavelengths in the open ocean may exceed 100 miles. The time between one tsunami wave and the next (wave period) is long—usually 5 minutes to an hour. They are generated by events that result in a rapid, large-scale disturbance of the ocean, such as earthquakes, volcanic eruptions and landslides. Tsunamis can travel at speeds exceeding 500 miles per hour in the open (deep) ocean. A tsunami can cross the entire Pacific Ocean in less than 24 hours. Most tsunamis (about 80%) occur in the Pacific Ocean, as this is an area with frequent underwater earthquakes.

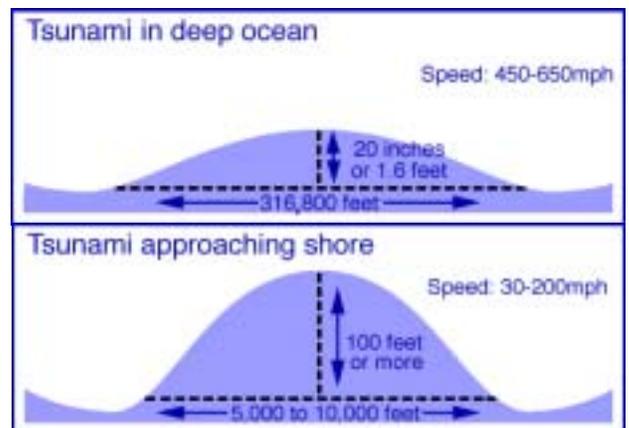
Tsunamis are sometimes called “seismic sea waves” because they are generated when sections of the sea floor rise or fall (as a result of movement of sections/plates of the earth’s crust). Usually this happens when one plate pushes underneath another plate. Scientists use several pieces of information to try and determine when a tsunami has been generated, how large it is, and when and where it will impact land. Seismographs are used to determine the location and strength of underwater earthquakes. If there are tide (pressure) gauges near the location of the earthquake, these are used to estimate the size (height and period) of the wave that has been generated. Computer models, based on data from previous events, are then used to try and predict the timing of the waves’ landfall.

Not all underwater activity will generate tsunamis. In the deep ocean, tsunamis are barely noticeable, as they cause a gentle rising and falling of the sea surface. As these waves approach shallow water, however, they slow down and the wavelength becomes shorter, resulting in much higher waves. Unlike wind waves, tsunami waves do not usually appear as cresting waves that break on the shore, but rather as a rapidly-approaching tidal surge, although the appearance of approaching tsunamis can vary. The first wave of a tsunami may not be the largest, and subsequent waves may take up to an hour to arrive. Prior to the first wave crest, the wave trough may cause what appears to be a sudden, unusually low, low-tide.

Between 1990 and 2001, 796 tsunamis were observed or recorded in the Pacific Ocean alone. Nine of these caused widespread destruction. There was at least one tsunami every year during this time period.

For more information about tsunamis, here are some suggested starting points:

- www.nws.noaa.gov/om/brochures.shtml (scroll down to tsunami and click on link)
- www.pmel.noaa.gov/tsunami/tsu_links.html
- ioc.unesco.org/itsu (International Coordination Group for the Tsunami Warning System in the Pacific)
- www.vims.edu/bridge (See tsunamis in the Data Tips/Classroom Activities box)





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

Phone: 904-824-4564
Fax: 904-829-5157
E-mail: mpmcguire@ifas.ufl.edu
<http://stjohns.ifas.ufl.edu>

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More “Mark your calendars”

- March 17-April 21—Florida Master Naturalist Program (Coastal Module)—Volusia County. See www.masternaturalist.ifas.ufl.edu for details and to register.
- April 2—SEAS workshop at GTM Reserve (NE Florida). For information, contact Heather Lane at 813 949-9096 or hlane@flaquarium.org.
- April 9—Family Fest at UNF (Jacksonville). Contact Ryan Meyer (rmeyer@unf.edu) for information.
- April 15-17—Florida Marine Science Educators Association annual conference, St. Augustine. See www.fmsea.org for details.
- April 23-24—Washington Oaks Gardens State Park Earth Day (Flagler Co.)
- April 25-29—Exploring our Environment—from the river to the ocean (class is full).
- May 12-15—First Coast Birding and Nature Festival, St. Augustine. See <http://www.visitoldcity.com/interests/nature/festival/> for information
- June 13-19—Exploring our Environment—from the river to the ocean. Marineland. Follow Education link at <http://stjohns.ifas.ufl.edu/sea/seagrant.htm> or call Maia at 904-824-4564.
- June 19-24—COSEE teacher workshop at Cedar Key. Contact Karen Blyler at 352-846-0996 ext 246.

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