

aqua-notes

An Equal Opportunity Institution

SOLUTIONS

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150 Sawgrass Road
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May, 2015

Mark your calendars...

- May 3—St Johns County 4-H Youth Expo (St Johns Co Fairgrounds) 10 am—3 pm. Free admission. Call 904-209-2430 for more information.
- More on back page!

Thank you sea turtle license plate purchasers!

I am happy to report that we have been awarded \$4,600 to use for the 5th grade sea turtle curriculum that colleagues and I are currently writing. We will be using the funds to purchase artwork from Dawn Witherington. If you are not familiar with Dawn's work, you can see samples at Drawn-byDawn.com. Dawn's fabulous sea turtle illustrations will be a critical component of the book and lesson plans that we are compiling. We anticipate having the curriculum completed by April, 2016. Funds from sale of the sea turtle specialty license plate are made available through a competitive grant program every year and support sea turtle research, conservation and education.



Maia McGuire, PhD
Marine Extension Agent

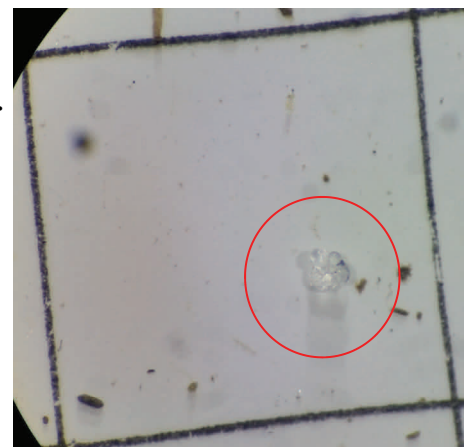
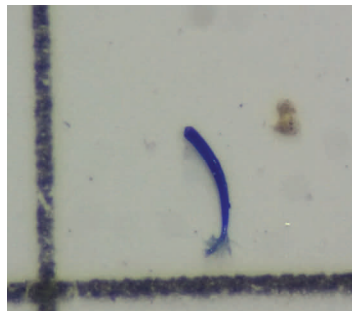
M.P. McGuire

Inside this issue:

Horseshoe crabs 2-3

Investigating microplastics

A few samples of microplastics isolated from coastal water samples in our area...The gridlines on the filter paper are 3mm x 3mm, so these are quite tiny.



Horseshoe crabs

Horseshoe crabs are often referred to as “living fossils,” since their ancestors existed over 450 million years ago. There is only one species of horseshoe crab found in North American waters today—it is found from Maine to Mexico. Although we call it a crab, the horseshoe crab is actually more closely-related to spiders and scorpions. However, horseshoe crabs are harmless to people. While their tails do have a few spiky spines on them, they cannot sting (unlike a scorpion) and do not contain venom (unlike a stingray). The tail is simply used for steering and for flipping itself over if a wave should roll the horseshoe crab on its back.



Horseshoe crabs lay their eggs at the water's edge, so they can sometimes be seen crawling up into shallow water. Often a single female will have a (smaller) male clinging to her back, and there may be other males gathered around her as she lays her pastel green eggs in shallow nests in the sand. A single nest will contain about 4,000 eggs, and a female may fill 5-7 nests at different positions up the beach (she will change position as the tide moves). Baby horseshoe crabs will hatch out of the eggs after about two weeks. Like crabs and spiders, horseshoe crabs must shed their exoskeletons in order to grow. Over the course of about 10 years (after 17 or 18 molts), they reach their adult size of about 11 inches in width. Females are generally larger than males—the largest horseshoe crab ever measured was 17 inches wide. Horseshoe crabs may live up to 20 years. In addition to size, adult males differ from the females in the appearance of the first of their five pairs of walking legs, which have tips that look a bit like boxing gloves (rather than pincers). These “pedipalps” are used to grab onto the female's shell. A sixth, smaller pair of legs at the very front of the horseshoe crab (male and female) is used to push sediment out of the way as the crab moves along.



Mating horseshoe crabs

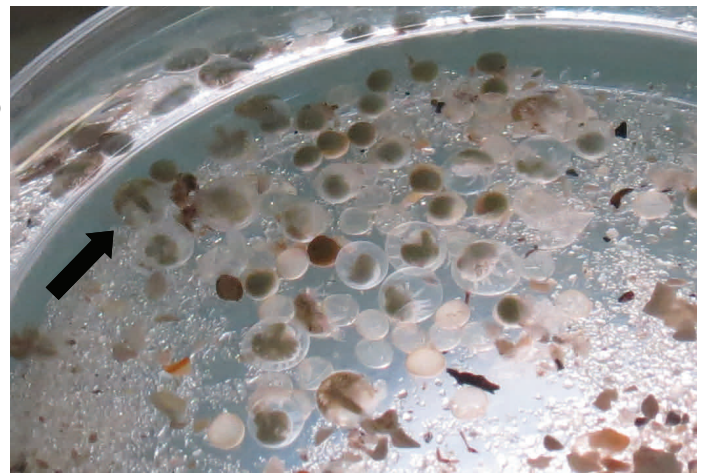
Horseshoe crabs (cont.)

Horseshoe crabs have many different eyes. The most obvious are the two large compound eyes, which have optic nerves that function in much the same way as humans' optic nerves. There are eight smaller eyes primarily function as light sensors. Some of these are located on the upper shell, the others are underneath the body and on the tail. Horseshoe crabs breathe using "book gills," so named because they overlay each other like pages of a book. The horseshoe crab has a heart, which is a long tube running down the length of the body. Horseshoe crabs are used by people for their blue (copper-based) blood. This blood contains a chemical called lysate, which is used in the medical industry for testing for bacterial contamination in drugs, and for the diagnosis of certain diseases, including spinal meningitis. People have learned to harvest some of the blood and then release the horseshoe crabs.

Unfortunately, the horseshoe crab population seems to be shrinking. In addition to being tapped for blood, horseshoe crabs are also used as bait by eel and whelk fishermen. The horseshoe crab eggs are an important food source for many migrating shore birds, particularly the threatened red knot, which gorges on these eggs in the Delaware Bay region before entering its Arctic nesting grounds. Because it is difficult to know how many horseshoe crabs exist, the Florida Fish and Wildlife Conservation Commission is asking people to be citizen scientists and report sightings of live horseshoe crabs along the Florida coastline. Although they can mate year-round, spring is the peak season for horseshoe crab mating. The best time to spot them is around high tide within three days of a new or full moon. People can e-mail sightings to horseshoe@MyFWC.com or online at <http://MyFWC.com/contact> (look for the Horseshoe crab nesting activity heading). FWC is interested in knowing roughly how many adult and juvenile (less than 4" width) horseshoe crabs are seen, and the date, time and location of the sighting. They would also like to know what type of habitat the animals were in when sighted.



The underside of a female horseshoe crab. The book gills are at the bottom of the photo.



Horseshoe crab eggs (with several getting ready to hatch. The arrow points to a newly-hatched baby).

We're now on Facebook—check out [facebook.com/NEFLSeaGrant](https://www.facebook.com/NEFLSeaGrant) and “like” it to keep informed about coastal topics in the region. Don't have a Facebook account? That's OK—you can view the page without one :)

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<http://stjohns.ifas.ufl.edu/sea/seagrant.htm>

More “Mark your calendars”

- May 16—8-10 am, St. Johns Co. STEM Fair, Palencia Elementary School. Contact Brian Morgan (brian.morgan@stjohns.k12.fl.us) for details.
- June 22-24—Aquatic Robotics 4-H Camp (St. Johns Co). Contact Kellie at 904-209-0430 to see if space is available.
- July 13-17—Marine STEM 4-H Camp (Flagler Co). Contact Martha at 386-437-7464 to see if space is available.
- June 28-July 2—National Marine Educators Association conference (Newport, RI). See http://www.marine-ed.org/general/custom.asp?page=NMEA_2015 for more information.
- Aug 4-20—Freshwater Wetlands Master Naturalist class, St. Johns County. See www.masternaturalist.org for more information or to register.
- Oct 16 – Nov 20—Coastal Master Naturalist class, Volusia County. See www.masternaturalist.org for more information or to register.

Please check the calendar at <http://calendar.ifas.ufl.edu> for other environmental education programs around the state.

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>. 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 Flagler County Extension Service at 386-437-7464.

The Foundation for The Gator Nation

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