

aqua-notes

150 Sawgrass Road
Bunnell, FL 32110
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November 2015

Mark your calendars...

- Nov 2: 2-4 pm. Microplastics training (Marine Discovery Center, Volusia Co). Contact Chad@marinediscoverycenter.org
- Nov 3: 5:30—7:30 pm. Microplastics training (Marine Discovery Center, Volusia Co). Contact Chad@marinediscoverycenter.org
- More on back page!

Florida Microplastic Awareness Project

The last two months have been incredibly busy. Interest in the statewide microplastic water sampling project has been incredible.



I've been running (OK, driving) all over the place training groups that want to learn more about the program. The good news is that many of my regional coordinators are conducting volunteer trainings (see several listed in this newsletter) and some regions are already starting to collect and process samples. You can learn much more about the project (funded by NOAA's Marine Debris Program) throughout this newsletter. It's not too late to get involved! If you want to learn more, feel free to contact me (mpmcg@ufl.edu).

Florida Microplastic
AWARENESS PROJECT

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[PlasticAware.org](http://plasticaware.org)

The website for the Florida Microplastic Awareness Project (FMAP) can be reached through <http://plasticaware.org>. There are four sections to the website. The main page has some basic information about microplastics and the FMAP, as well as links to the project map (showing where microplastics have been found in coastal water samples) and the pledge that people can take to reduce their contribution to the microplastic problem. The *Get Involved* page contains links relevant to the sampling effort, including protocols and links to use to report data or volunteer time. The *K-12 Resources* page contains curriculum materials related to marine debris and microplastics. Presentations/videos, resources about microplastics (including the link to use to find out if your deodorant contains microplastics), and photographs of microplastics and plankton can be found on the *Multimedia & Outreach Materials* page. Check it out!

What happens to all the plastic in the ocean?

Plastics in the ocean are getting quite a bit of press coverage in recent years. Although concern about plastic ingestion by marine fishes was first raised in the early 1970's, it was not until about ten years ago, that the "Great Pacific Garbage Patch" captured public attention. The 5 Gyres group has since conducted investigations in all of the major ocean basins as well as the Great Lakes, and has found that these garbage patches occur in all of these large water bodies, not just in the eastern Pacific.

Birds and sea turtles are probably the two best-known groups of animals where plastic ingestion has been documented. The Laysan albatross in the Pacific commonly eats plastic items that it finds floating in the ocean and then regurgitates them for its chicks. More than 70% of the world's Laysan albatrosses nest on Midway Atoll. A report from the US Fish & Wildlife Service in 2012 estimated that over 90% of the Laysan albatross chicks on Midway Island had been fed plastic. Many of these chicks are able to cough up a pellet (called a bolus) of plastic before they fledge. However, many dead chicks are found to have large amounts of plastic in their stomachs. While the plastic itself may not be the primary cause of death for many of these birds, the fact that the chicks were fed plastic rather than natural foods could have contributed to the dehydration and even lead poisoning that are implicated in most Laysan albatross chick deaths.



Dead Laysan albatross chick with plastic in its gut

A study published in September 2015 in the journal *Marine Biology* provides data about plastic ingestion by sea turtles in the Pacific. This study looked at the stomach contents of 71 sea turtles (4 species) that were captured during longline fishing activities between 1993 and 2011. On average, 83% of the sea turtles had human debris in their guts. Of this human debris, 95% by weight was plastic. Even very young sea turtles (neonates--less than 2 months old) have been found to have eaten plastics. One Florida study found plastic in the guts of over 80% of the 87 green sea turtle neonates and 100% of the 94 loggerhead neonates studied.

There are fewer studies that have investigated the consumption of plastics by fishes, but between eight and 40 percent of the individual fish that have been studied were found to have plastic items in their guts.

As awareness increases about the potential impacts of plastics in general (and small, or micro-plastics in particular), so does concern about ways to reduce these risks. In June, 2014, the state of Illinois became the first to pass legislation that will ban the sale of personal care products containing plastic "microbeads." This ban will take effect by the end of 2018. Since then, seven other states have followed suit (Maine, New Jersey, Colorado, Indiana, Maryland, Wisconsin and California) and several others have pending legislation. A scientific opinion piece published in the journal *Environmental Science and Technology* in September 2015 calls for a total ban on microbeads. This (non-peer-reviewed) paper estimates that eight trillion microbeads per day enter aquatic habitats in the United States. It then equates this number to the amount needed to cover 300 tennis courts.

With this type of visualization, it does not seem unreasonable that individual choices can and are needed to make a difference. You can learn what products contain polyethylene (plastic) "microbeads," pledge to avoid these products (and to reduce or eliminate single-use plastics), and learn how to volunteer with the Florida Microplastic Awareness Project at www.plasticaware.org.

Shrimp

Shrimping in the St. Johns River is tapering off. Many people are curious about the life cycle of the shrimp, and would like to be able to predict when and where they can catch these tasty animals. Unfortunately, we cannot predict exact locations where shrimp will be plentiful, but season is a bit more reliable.

There are three main commercially-harvested marine shrimp species in Florida. These are the brown, pink and white shrimp. The large shrimp that are found in the inshore waters are white shrimp. There is another common type of shrimp that can be found in marsh grasses and on floating docks. The glass shrimp is sometimes mistaken for a small white shrimp, but it does not get large enough to be considered for human consumption. If you look closely at the glass shrimp and compare it to a white shrimp, you will notice that the antennae are not as long as those of a white shrimp. Also, the glass shrimp does not have a spiky protrusion sticking forward on its head. This “rostrum” is found on all three commercially harvested shrimp species.



White shrimp

White shrimp spawn offshore between April and October or November each year. The spawning is triggered by an increase in bottom water temperatures. Decreasing water temperatures in the fall will result in the end of the spawning. Shrimp eggs are released into the water, where they sink to the bottom. The eggs hatch within about 10-12 days of fertilization and larvae will live in the water column for about ten days. At this point, the larvae will morph into a planktonic postlarval stage, which still stays offshore for about another 10 days. At this point, they will ride tidal currents into the estuaries. In northeast Florida, this movement into the estuary typically happens starting in June.

Once in the estuary, the postlarvae settle on the bottom and become juvenile shrimp. These young shrimp may move well upstream into the river. They burrow in muddy bottoms in waters that have low to moderate salinity. Starting in about August, the juvenile shrimp will start to move out towards the ocean. This emigration will continue through about April. When a shrimp migrates to the ocean is determined by many factors, but primarily by the shrimp's body size and age, as well as environmental conditions. Low water temperatures and spring tides at full moon will stimulate emigration. The shrimp tend to school and migrate near the surface at night during ebb tides. Emigration may be delayed during periods of low rainfall, when salinities in the estuary tend to be higher. Once in the ocean, the adult shrimp migrate northward in spring and southward in fall. In drought years, when emigration from the estuaries is delayed and juvenile mortality is high, commercial catches of shrimp offshore will be poor.

The young shrimp in the estuary grow fastest in the spring and summer months. At this time, they may grow up to an inch in length per month. Females grow faster and reach larger sizes than males. On average, most white shrimp survive to be less than one year old, although some can live longer. White shrimp are not very tolerant of cold temperatures, so severe winters can cause high mortalities. They are, however, quite tolerant of high temperatures—more so than pink or brown shrimp.

If you are interested in catching your own shrimp, you need to know that the recreational shrimp season is closed in April and May in some Florida counties. During the rest of the year, recreational anglers are allowed to catch and keep 5 gallons of heads-on shrimp per person per day. A saltwater fishing license is required, unless the fisherman is exempt. For full rules, see <http://myfwc.com/fishing/saltwater/recreational/shrimp/>.

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”

- Nov 9: 2-4 pm. Microplastics training (Brevard County). Contact Holly at habeels@ufl.edu or reserve a spot at <http://brevardmicroplastictraining.eventbrite.com>
- Nov 9: 5:30—7:30 pm. Microplastics training (Brevard County). Contact Holly at habeels@ufl.edu or reserve a spot at <http://brevardmicroplastictraining.eventbrite.com>
- Nov 16: 10 am—noon. Microplastics training (Flagler County). Contact Maia at mpmcg@ufl.edu or reserve a spot at <http://flaglermicroplastictraining.eventbrite.com>
- Nov 18: 3—5 pm. Microplastics training (Flagler County). Contact Maia at mpmcg@ufl.edu or reserve a spot at <http://flaglermicroplastictraining2.eventbrite.com>
- January 1-25, 2016—Coastal Master Naturalist class, St Johns/Flagler County. See www.masternaturalist.org for more information or to register.
- January 15-February 19, 2016—Upland Systems Master Naturalist class, Volusia County. See www.masternaturalist.org for more information or to register.
- February 19-March 25, 2016—Coastal Master Naturalist class, Volusia County. See www.masternaturalist.org for more information or to register.
- March 4—April 15, 2016—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.

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