

Microplastics: What's the BIG deal?



Florida Microplastic
AWARENESS PROJECT

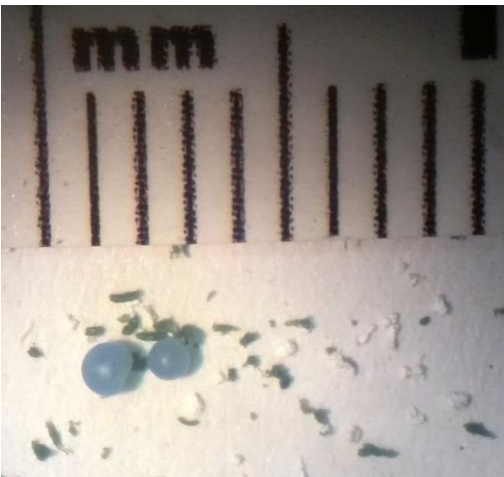
Maia McGuire, PhD

UF | **IFAS Extension**
UNIVERSITY of FLORIDA

Sea Grant
Florida

What are microplastics?

- Plastic items less than 5 mm in size
 - Deliberately made as small plastics (“primary microplastics”)
 - Resulting from degradation/fragmentation of larger plastic items (“secondary microplastics”)



How abundant are they?

- VERY
- Throughout the water column and sediments (including deep sea sediments)
- In the digestive systems of most marine organisms studied
- Found in sea salts (in China--not yet studied elsewhere)

So what?

TOXINS ARE IN THE OCEAN

PLASTICS ARE IN THE OCEAN

TOXINS REALLY LIKE TO STICK TO PLASTIC...

ANIMALS EAT PLASTIC

TOXINS GET INTO ANIMALS

www.plasticaware.org
#plasticaware

The infographic is set against a background of blue ocean water with light reflections. It features several text boxes in teal and orange, along with icons of red dots representing toxins and a black cartoon fish with red dots on its body representing a contaminated animal.

Plastic-related toxins found in plankton and baleen whales

- Phthalates measured in plankton and fin whale blubber (5 stranded animals) in the Mediterranean



Potential impacts of consuming/exposure to microplastics

- Pacific oysters had decreased egg production and sperm motility. Fewer larvae survived; those that did grew slowly compared to controls.
- European perch eggs had lower hatch rates; juvenile perch grew more slowly and were more prone to being eaten by predators.

Florida Microplastic Awareness Project



Florida Microplastic
AWARENESS PROJECT



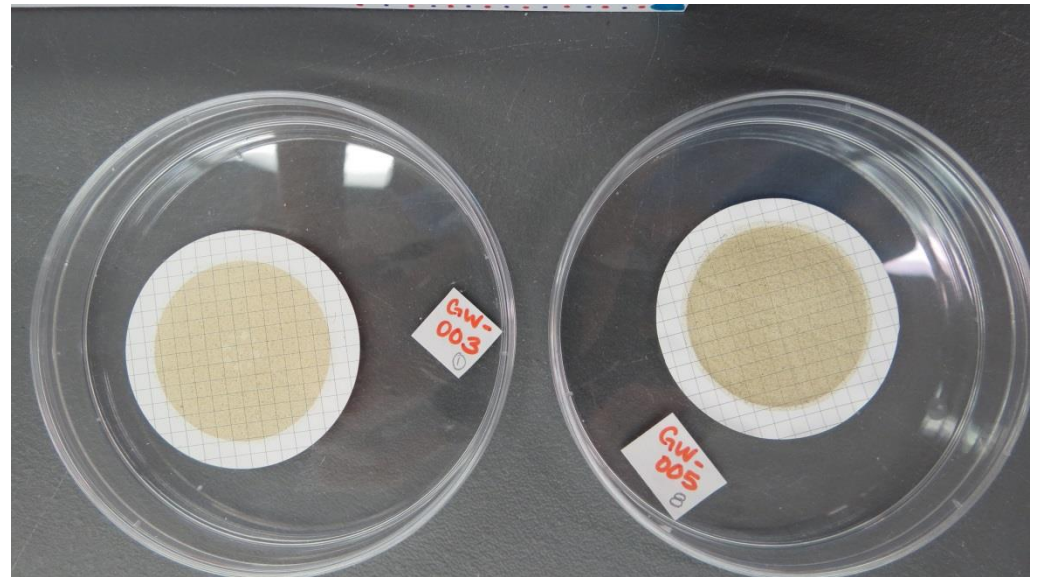
- Funded by a 2015 NOAA Marine Debris Outreach and Education grant
- 16 “regional coordinators” around Florida
- Volunteers are collecting 1-liter water samples and filtering them, then observing the filters for microplastics
- Tied to larger outreach effort

Sampling protocol (check out our YouTube channel!)

- Volunteers choose their sampling site
- On a calm day (preferably), they collect their sample.



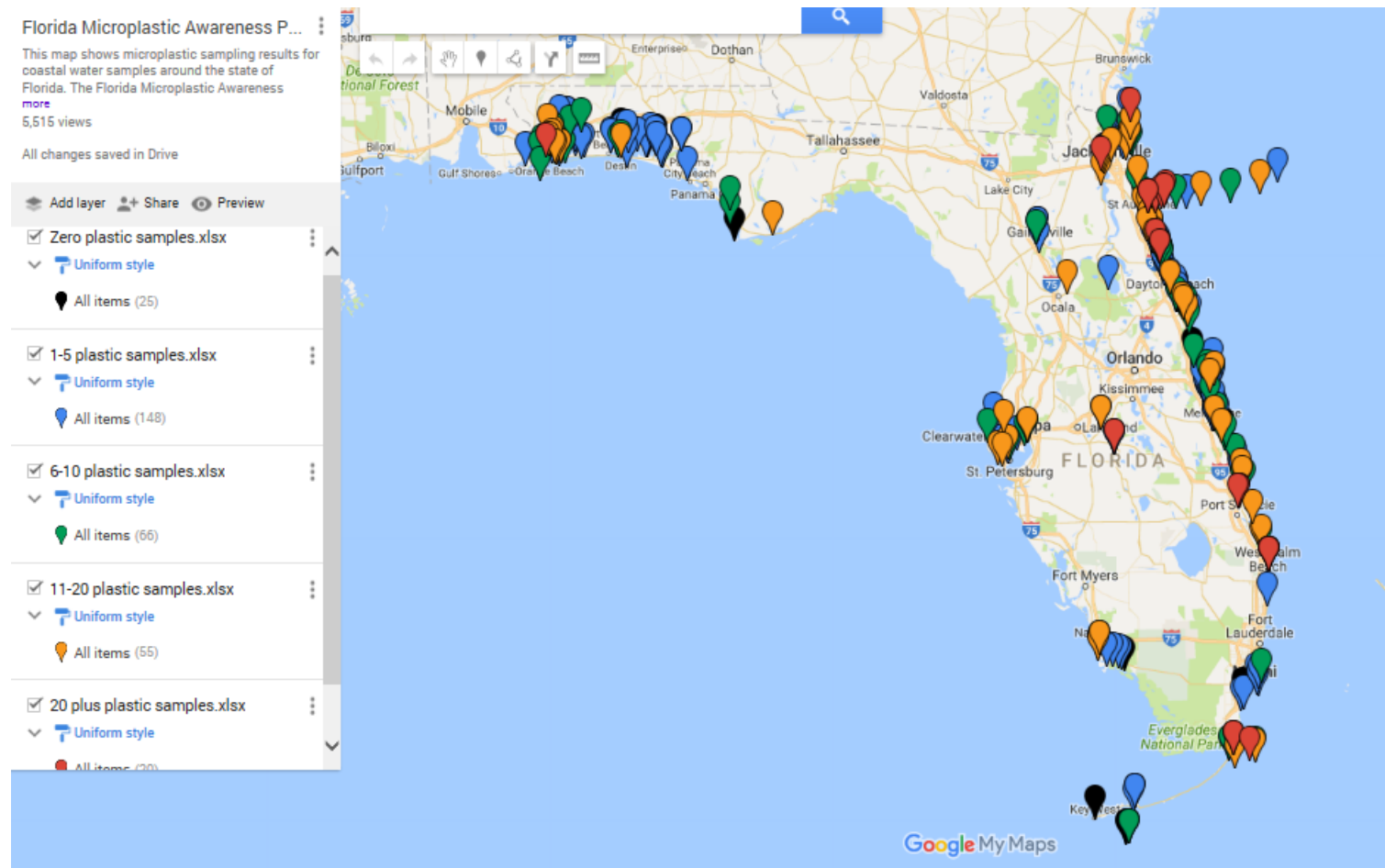
- The samples can sit (and preferably should sit for at least a few days) before being filtered.
- Samples are filtered through 0.45 micron gridded 47-mm filters.



- Filters are placed in petri dishes for observation through a dissecting microscope (30-40 X).
- Plastic fibers can be confirmed using a hot needle.



- Data and volunteer time are entered online.
- Data are entered into a spreadsheet and uploaded into Google Maps.



The geeky data part...

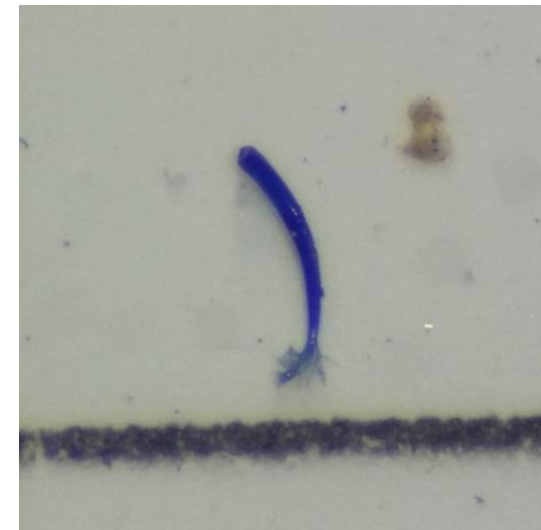
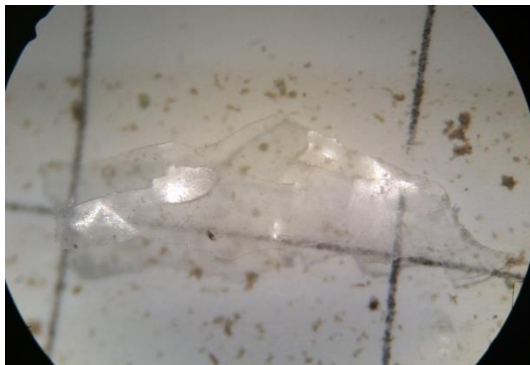


Florida Microplastic
AWARENESS PROJECT



www.MarineDebris.noaa.gov
Keep the sea free of debris

- Over 890 one-liter samples collected/analyzed (315 locations); 88% contained plastic
- Average of 7.8 pieces of plastic/liter
 - 84% of plastic is fibers
 - 9% is fragments
 - 6% is microbeads
 - 2% is film



FMAP website

www.plasticaware.org

UF UNIVERSITY of FLORIDA
IFAS Extension

SOLUTIONS
for *your* LIFE

Sea Grant
Florida

Home About Sea Grant

GO
Search

- ▶ Clean Marina
- ▶ Climate Change
- ▶ Education
- ▶ Horseshoe Crabs
- ▶ Manatees
- ▶ Marine Debris
 - ▶ Microplastics
- ▶ Marine Invasives
- ▶ Newsletters
- ▶ Right Whales
- ▶ Sea Oats
- ▶ Volunteering
- ▶ Watersheds

Be Plastic Aware!

Microplastics Home || Get Involved ||
K-12 Resources || Multimedia & Outreach Materials

[The Pledge](#)



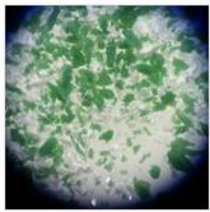
“The Pledge” so far...

- Sept 2015 through November 2016
 - 957 pledges (average 3.4 behavior changes pledged)
 - 377 e-mail addresses provided for follow-up
 - 93 follow-up surveys completed
 - Average of 3 behavior changes reported



Find us on Facebook

- Facebook group and FB page (Florida Microplastic Awareness Project)



Florida
Microplastic
Awareness
Project

@MicroplasticAwarenessPr
oject



Like Message Save More

Questions?

Maia McGuire
UF/IFAS Extension Flagler County
150 Sawgrass Road
Bunnell, FL 32110

386-437-7464

mpmcg@ufl.edu

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

www.plasticaware.org