THE S.A.R.A.H. INITIATIVE

A Citizen Science Movement in partnership with Florida International University to Solve the Marine Plastic Pollution Epidemic



Why do we care about plastic pollution and its impact on marine ecosystems?

Marine plastic pollution is a contemporary issue.

We have failed at balancing the convenience of plastic in daily life (particularly single-use plastics) against causing severe ecological harm through careless disposal. The tremendous increase in production of plastic materials has led to an accumulation of plastic pollution worldwide. Plastic pollution poses obvious threats to marine life through ingestion or entanglement, however there are more dangerous implications most are not aware of.

Plastic debris absorbs hazardous chemicals, because their physical and chemical properties allow them to accumulate a surface layer of chemicals from seawater, like



Dr. Mark Bond towing a water sampling net behind D/Y Shredder, making sure speed and depth are correct.



Dr. Mark Bond and Tony Gllbert rinsing the water sampling tow net to aggregate all that has been collected during the tow run.

sponges. Organic chemicals such as pesticides, flame-retardants and petroleum hydrocarbons and metals such as lead and copper are absorbed by plastic materials globally. A recent study discovered that the five most common types of mass-produced plastic have higher concentrations of pollutants absorbed. Fish consume these plastics in the water column, mistaking them for food sources, and the toxins within the plastics are bio-magnified up the food web, producing hazardous effects for those that ingest them.

S.A.R.A.H. Initiative Purpose & Implications

The collection of sample and data is the main focus of The S.A.R.A.H. Initiative using SeaKeeper vessels. When the S.A.R.A.H. lab receives the samples, they weigh each plastic fragment individually and then analyze the infrared spectroscopy determine plastic pieces using to their composition. Knowledge of the density and composition of plastics is valuable, specifically to understanding what types of plastics are present in the water column, and because each plastic type has its own individual chemical properties. Each variety of plastic absorbs different types of chemicals, and they have varying degradation rates in the marine environment. Therefore, identifying the composition and location of ocean plastics will help us predict their long-term effects and reveal their ultimate fates. Uncovering the prevalence and location of distinctive plastic types can help us pinpoint the major sources of ocean plastics, in order to legislate for decreases in production and ultimately diminish their use in everyday life. Plastics ending up in the water column are also being ingested by marine life, so the information from this study would be of interest to policy makers interested in cutting down on the most prevalent types of pollution that are ending up in the saltwater fish that we eat.

Plastic Pollution and Its Affects On The Marine Food Web



Photo Credit: Michael Northrop, Joseph Caspermeyer, and Rolf Halden/Biodesign Institute at Arizona State University



The International SeaKeepers Society's DISCOVERY Yachts Program now includes The S.A.R.A.H. Initiative, in an effort to:



Sample

Conduct net tows and collect samples with the kits provided.

Aggregate

After each net tow, rinse contents from the net into sample filters, label, and seal filters.



Return

After each voyage, package samples and ship back to the S.A.R.A.H. Initiative research team at FIU.



Analyze

Researchers will analyze the density, type, and size of plastic particles and archive the results in a database.



Help

By collecting this data, you will help researchers quantify and map marine plastic debris and help stakeholders end this current epidemic.



Arts, Sciences & Education