

Using Marine Debris Surveys to Engage and Educate the General Public about Tidal System Vulnerability in the Southeast

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Abstract

The accumulation of marine debris along beaches, in estuaries and the open ocean, is recognized as a 21st century global challenge, in concert with sea level rise and ocean acidification. Man-made debris affects marine organisms and threatens human health and safety and the economy. Articles about oceanic ‘garbage patches’ have galvanized public interest in mitigating these anthropogenic impacts, but we need to bring that interest and passion home – many thousands of kilograms of plastic blemish the Georgia coast, including salt marshes, and marine debris clean-up efforts remove only a fraction. Citizens in general have a weak understanding of the importance of coastal ecosystems, and the important interconnections of water with land and their influence on living natural resources, and yet this is where debris coming from both terrestrial and oceanic sources ends up. The University of Georgia Marine Extension Service (UGA MAREX) uses marine debris surveys as a tool to educate the general public about tidal vulnerability in the Southeast.

Purpose

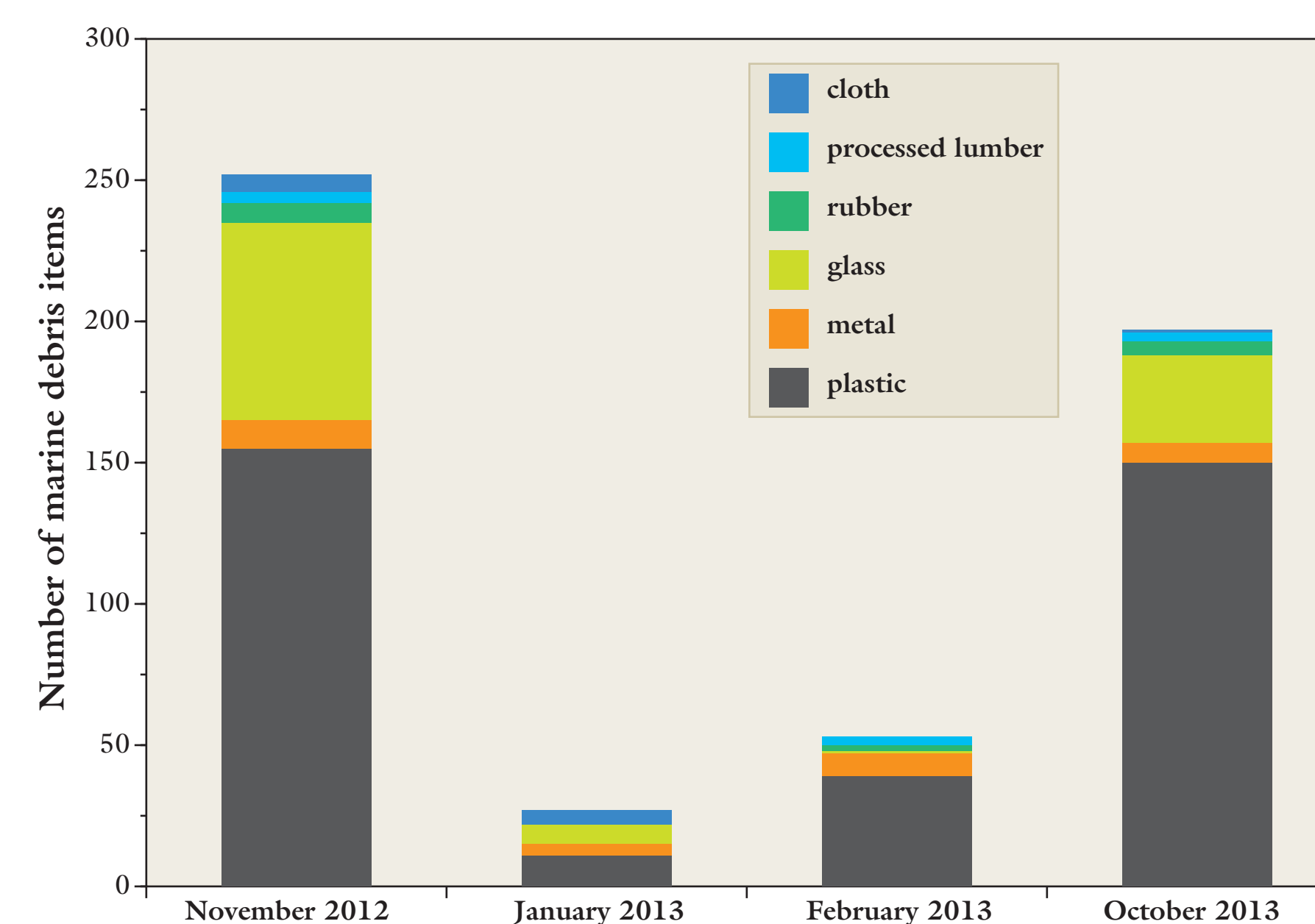
Marine debris surveys conducted in salt marsh systems provide a mechanism to reduce the amount of marine debris by actively removing the items and serve as a tool to educate target audiences (general public, students, educators) on the issues of marine debris. More importantly, these outreach efforts encourage participants to take a stewardship role in preventing the amount of debris entering tidal systems, thereby alleviating future impacts (ecological, economic and social) of marine debris.

Materials and Methods

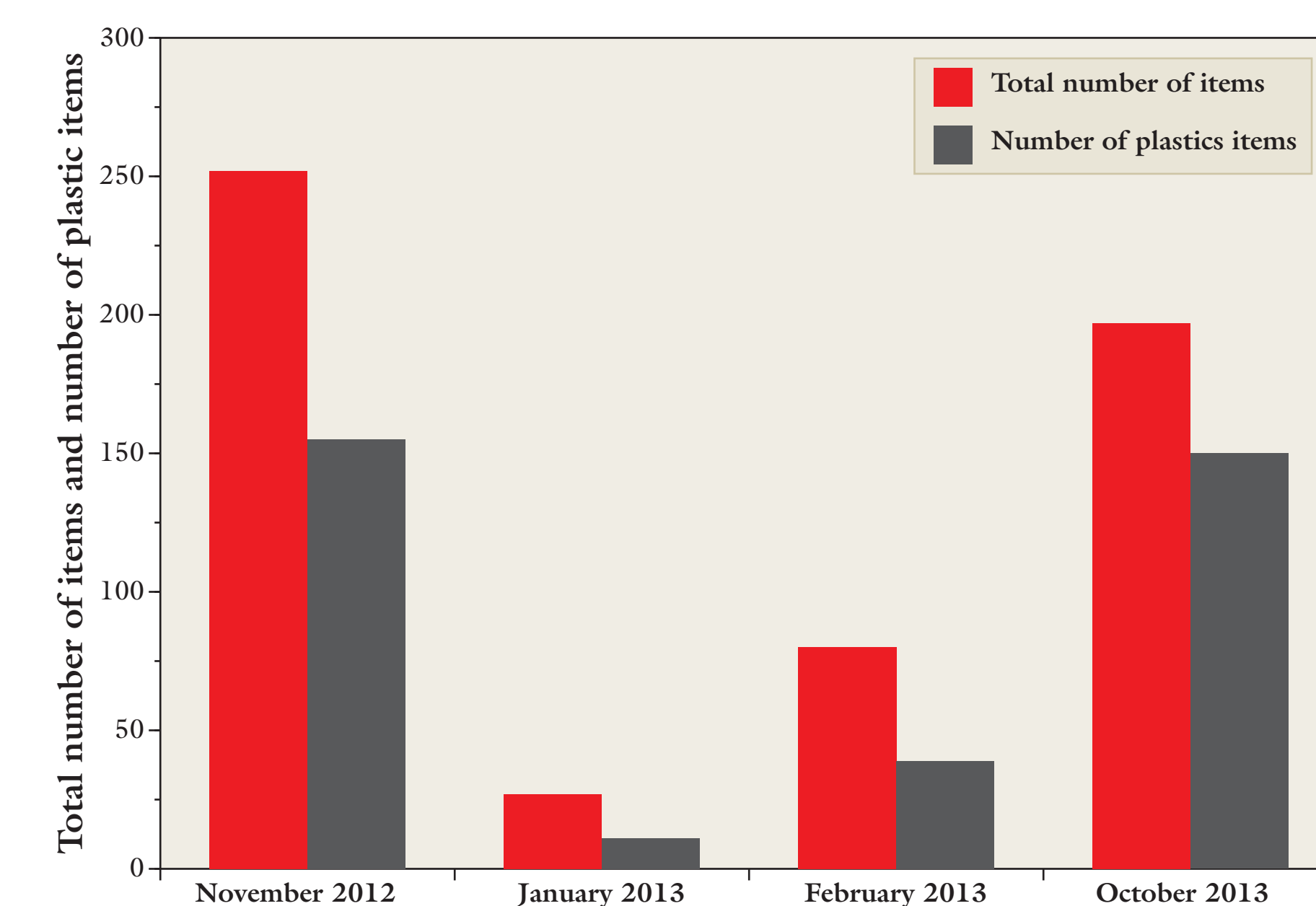
Program participants are provided an introductory class that focuses on the types, sources, impacts, and movement of marine debris and more importantly what citizens can actively do to alleviate the issue of marine debris. As a stewardship activity, the marine debris shoreline survey field experience takes participants to coastal locations that have established marine debris shoreline survey sites. The accumulation survey protocol as outlined in the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Shoreline Survey Field Guide, 2102 is used. Participants use GPS devices to locate the established survey site, collect marine debris within the survey site, sort the debris by type (i.e. glass, rubber, plastic, wood), tally numbers of items, and weigh the plastic items (Figures 1, 2, 3). The data are recorded on data sheets or uploaded using the mobile phone app Marine DebrisTracker®, designed by NOAA’s Southeast Marine Debris Initiative. As extension activities, participants use the data to create graphs from existing spreadsheets to compare types and quantities of marine debris collected, accumulation rates of plastics, and seasonality of marine debris encountered at the sites.



Quantity of marine debris by type
Priest Landing south 2012-2013



Comparison of total marine debris items and plastic marine debris items
Priest Landing south 2012-2013

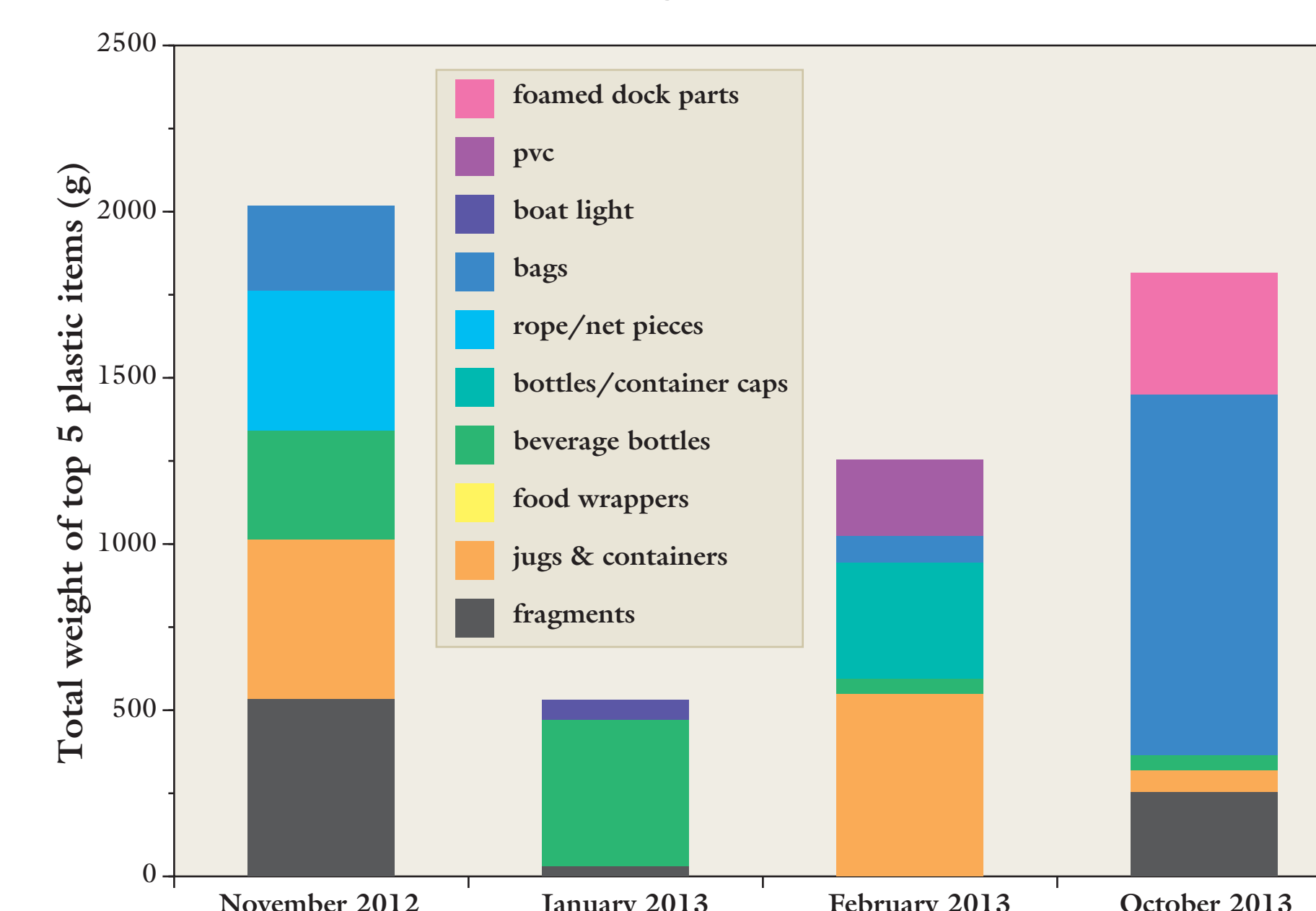


Results

We have educated hundreds of participants on the topic of marine debris since April 2012.

We have collected data regarding the types, quantity and weights of items collected at several marine debris survey sites.

Top 5 plastic items by weight
Priest Landing south 2012-2013



Testimonial of participant when asked about first impressions of the salt marsh marine debris survey:

“I never thought there would be this much marine debris in the salt marsh”.



Contact Info

To learn more about our marine debris programs, call the UGA Marine Extension Service at (912) 598-2496 or visit our website at www.uga.edu/marex. The University of Georgia Marine Extension Service conducts outreach, education and research to enhance coastal environmental, social and economic sustainability.

Funding

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Conclusions

Marine debris surveys reduce the amount of debris in salt marsh systems while educating citizens on the issues and impacts of marine debris.

The surveys provide unique learning experiences that help participants to gain knowledge and better understand salt marsh systems, opportunities to learn the ecological, economic and social impacts of marine debris and the fostering of stewardship activities. Since inquiry-based and hands-on learning continues to be at the forefront of advances in education, we believe that this “hands-on, feet-in” approach provides the ultimate tool for getting citizens energized, excited, and engaged in learning about salt marsh systems and how current environmental issues relate to their everyday lives.

The data collected provide an important contribution to better understanding the issues of marine debris (e.g. types, sources, distribution, impacts) and help to assess the effectiveness of management strategies and legislation regarding marine debris issues.