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Sources of Small Plastics Delineated on Florida Beaches

Alanna L. Lecher[1*], Gaylen Martin[1], Elizabeth Harris[1]
[1]Lynn University
*alecher@ lynn.edu

Introduction

Previous research has shown concentrations of plastic particles >1 mm in diameter may be higher in the Atlantic Ocean than the Gulf Mexico (Figure 1, Law, et al., 2010). This study aims to determine how the concentration of plastics in ocean water affects the flux into coastal sediment. 10L sand samples were collected in triplicate from the strandline of the east and west coasts of Florida (Figure 1), separated by size using sieving and from sand via density separation, and the plastic content >1 mm compared.

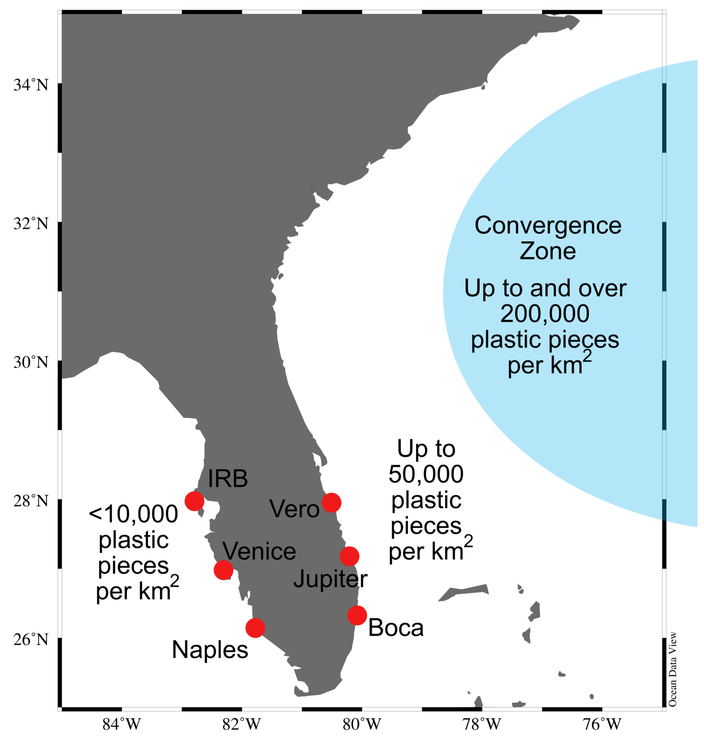
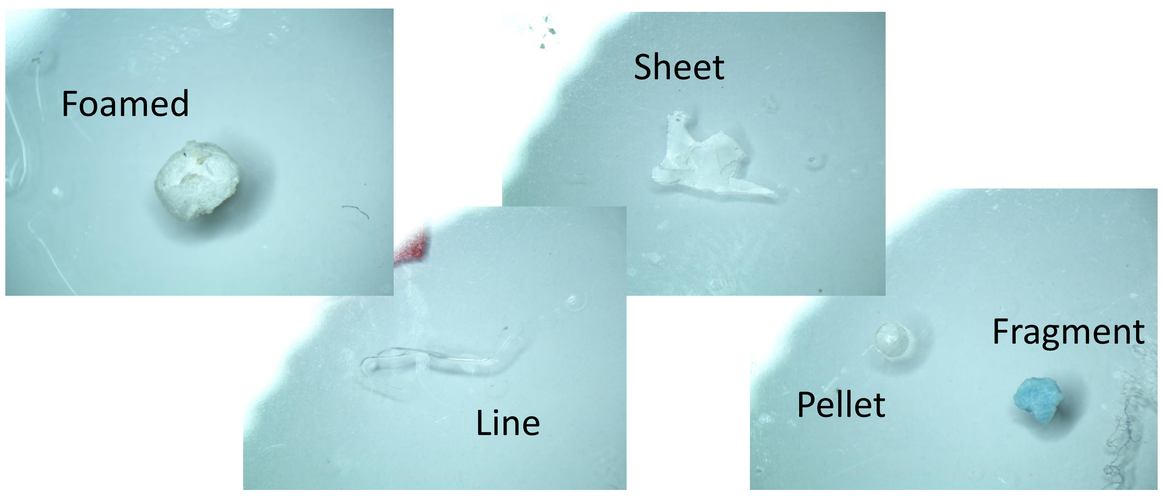


Figure 1: Plastic concentration data from Law et al., 2010 with sample collection locations from this study. Only results from completed locations (Boca and IRB) are presented here.

Types of Plastics Observed

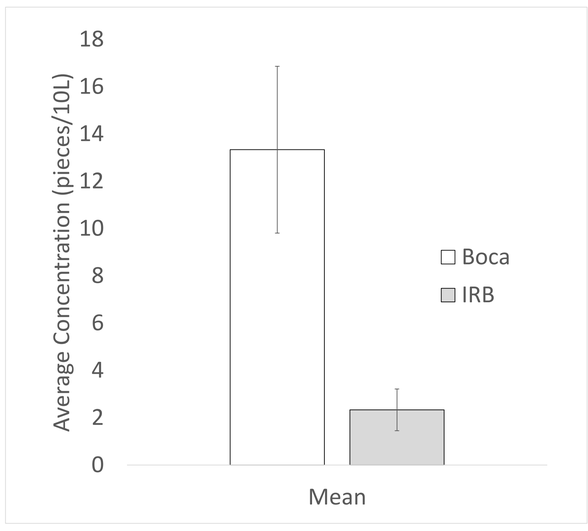
The five types of marine plastic in literature described in previous research were all found in these samples. Photographs are from the site Eastern Coast of Florida.



Results

Preliminary results of the Boca and IRB sites indicate there are statistically higher concentrations of plastic pieces on the east coast than the west coast, with pellets only present on the east coast. The most abundant size fraction was 1-3mm (47 pieces total) compared to all other fractions combined (3 pieces).

Figure 2: Plastic concentrations were significantly higher (t-test, $p < 0.05$) on the east coast.



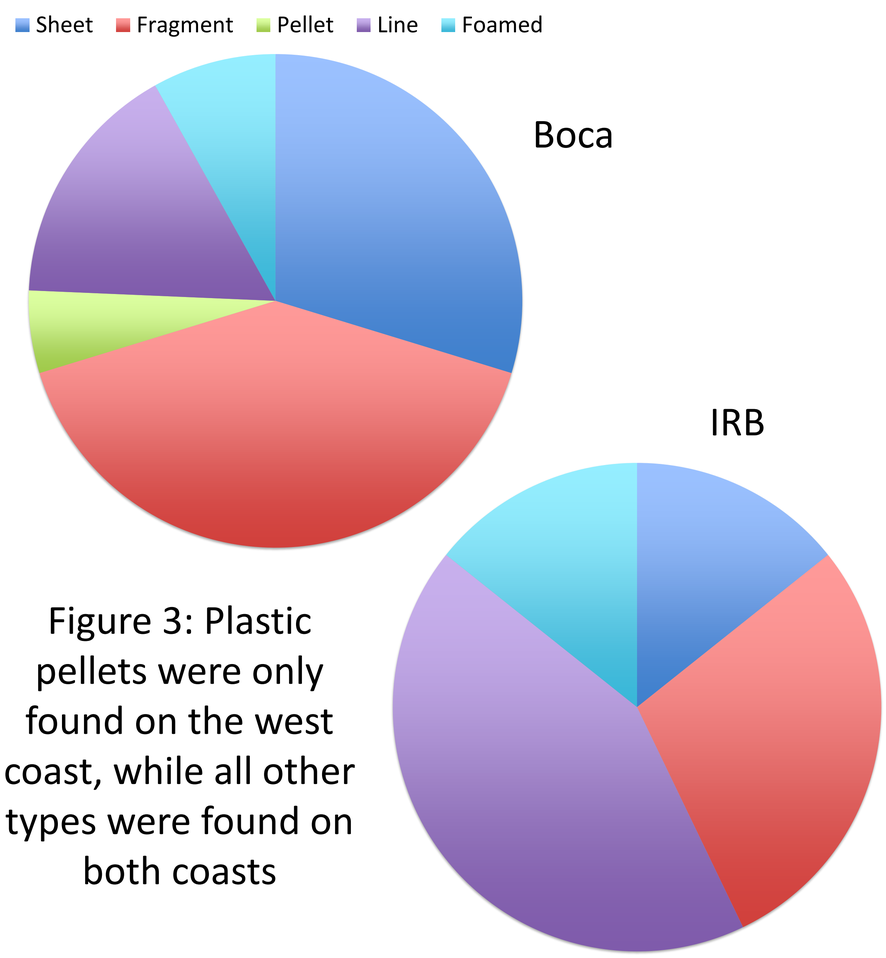


Figure 3: Plastic pellets were only found on the west coast, while all other types were found on both coasts

Works Cited

Law, K. L., Morét-Ferguson, S., Maximenko, N. A., Proskurowski, G., Peacock, E. E., Hafner, J., & Reddy, C. M. (2010). Plastic accumulation in the North Atlantic subtropical gyre. *Science*, *329*(5996), 1185-1188.