

# NY-NJ HARBOR MICROPLASTIC PILOT STUDY



Jim Nickels  
Urban Coast Institute  
Monmouth University  
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## **NY/NJ BAYKEEPER PLASTIC REDUCTION PARTNERS**

David Conover, Hudson River Sloop Clearwater, Inc

Dr. Keith Cooper, Department of Microbiology and Biochemistry, Rutgers University

Dr. Marcus Eriksen, Five Gyres Institute

Dr. Sam Mason, Chemistry and Environmental Sciences, SUNY Fredonia

James Nickels, Monmouth University's Urban Coast Institute

Dr. Beth Ravit, Department of Environmental Sciences, Rutgers University

USEPA Region 2 Trash Free Waters Partnership

## **NY/NJ BAYKEEPER PLASTIC REDUCTION TEAM**

Debbie Mans, Executive Director

Sandra Meola, Communications and Outreach Associate

Mitchell Mickley, Field Technician

Justin Procopio, Field Technician

Meredith Comi, Oyster Restoration Program Director

Frank Steimle, Advisor

Shirin Pillai , Intern

Daniel Kukuyev, Intern



# Gear Types: Neuston Net

**Definition.** (Zoology) the ecosystem of the surface film of open water in which such organisms as copepods graze on tiny flagellates, bacteria, etc



Mouth openings of  $\frac{1}{2}$  and 1 meter square in lengths of 3, 4, 5, 6, and 8 meters (mouth-to-cod end). They are available in a wide range of mesh openings



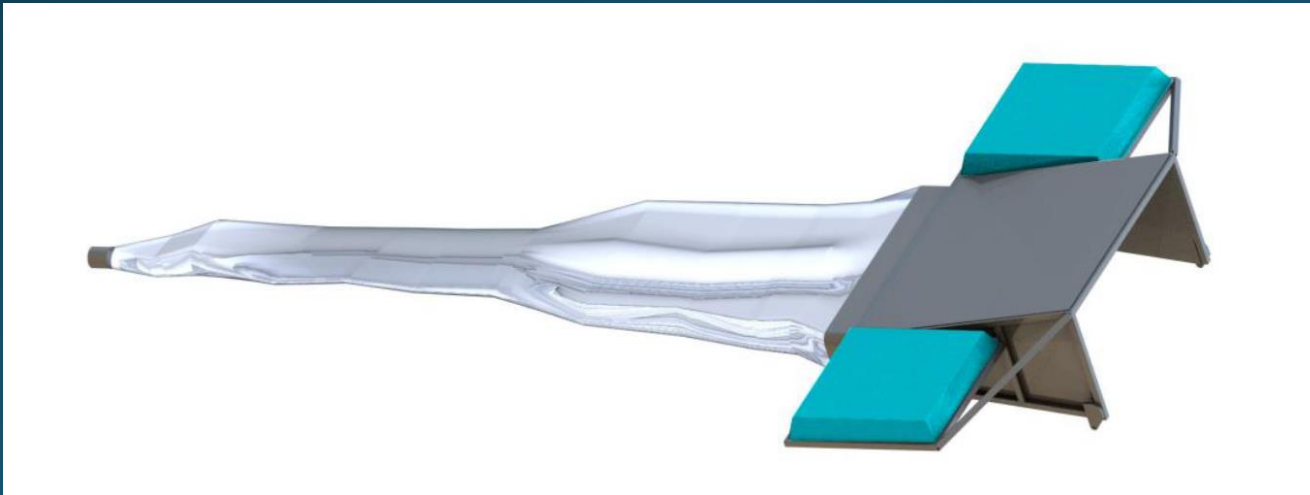
# Gear Types: Manta Trawl

The Manta Trawl has a 60cm wide mouth that dips 25cm into the sea surface. Tow it to the side of your vessel for a few miles at 2-3 knots. The removable sock at the end of the net captures what we're looking for. For shipping, the wings are removed, and the entire trawl is packaged in a medium-size suitcase



# Gear Types: Manta Trawl

MANTA Trawl is available in 60 cm or 70 cm net diameter sizes. Rigid frame construction and buoyant aquaplanes maintain a continuous rectangular net opening at the surface with a maximum depth of 15 cm. Paravane design, coupled with an unbalanced yoke bridle make it possible to steer the net outside of the disturbing influences of the towing vessel, completely free of the effluent and wake





# Gear Types: Avanti Trawl

The AVANI Trawl has a 15cm wide mouth that is designed to skim the sea surface up to 8 knots in calm seas. This trawl can fold like a book with the removal of a single pin. It is easy to transport and store on a sailboat. It can be deployed from the side or rear of the boat, as long as it remains outside of the boat's wake



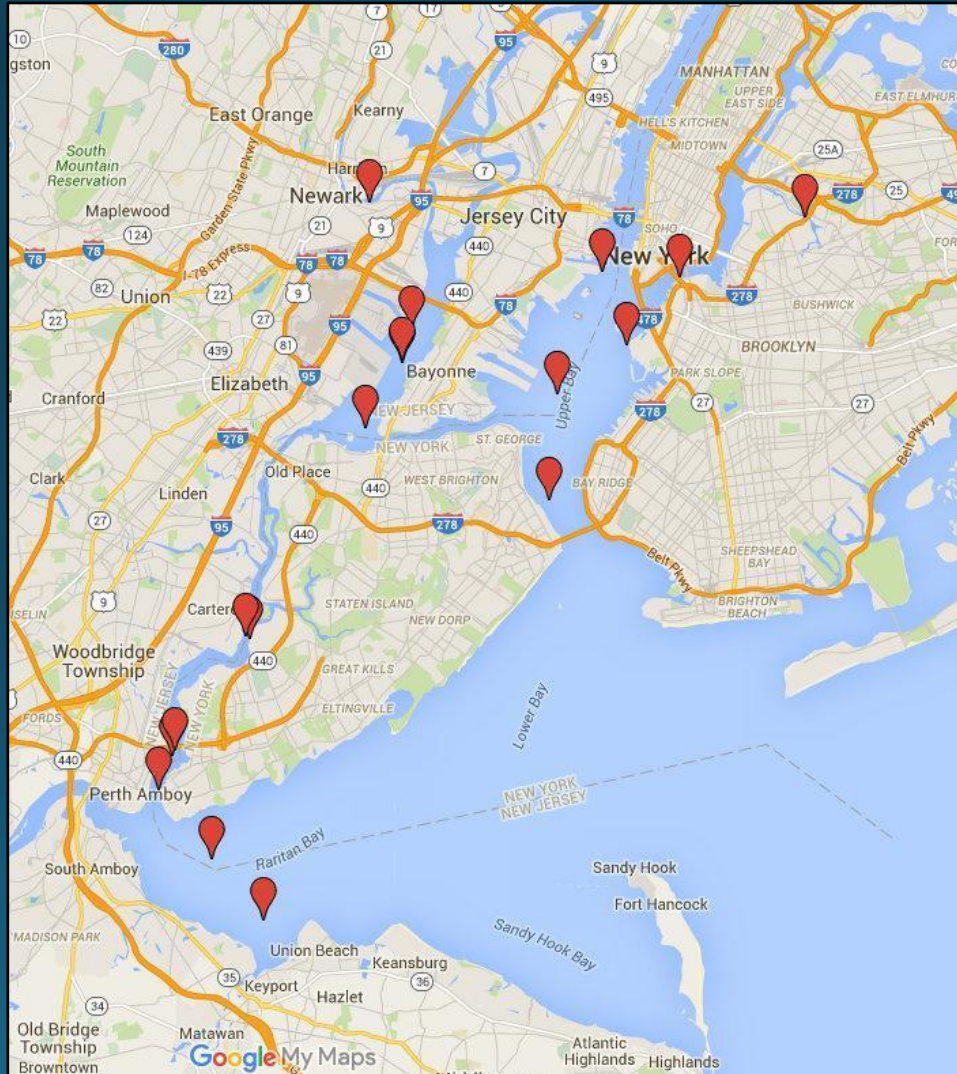
# Sampling Plan

The goals of the study were to:

- Measure the concentration of microplastics in NY-NJ Harbor waters
- Document the sizes of types of plastics found including pellets, polystyrene, and others

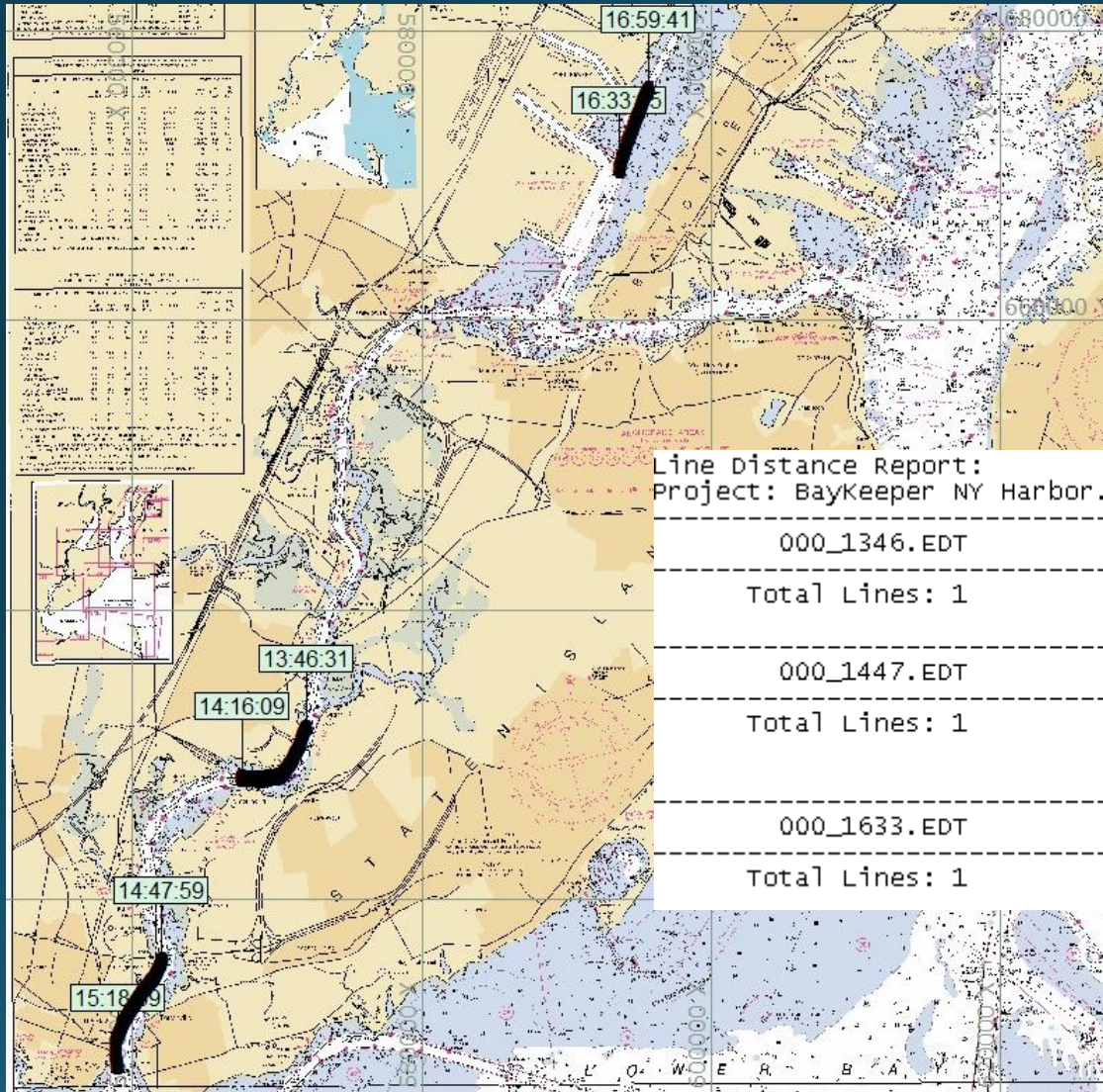
Eighteen samples were collected between March to August 2015 in various locations in the NY-NJ Harbor Estuary using a 333 micron ( $\mu\text{m}$ ) (0.33 mm) manta trawl. The trawl has a rectangular opening of 16 cm high by 61 cm wide. The net is 3 m long with a 30 x 10 cm<sup>2</sup> collection net made of a 0.33 mm mesh size, with a rectangular opening 16 cm high by 61 cm wide.

# Sampling Area





# Sampling Area



Line Distance Report:  
Project: BayKeeper NY Harbor.ini

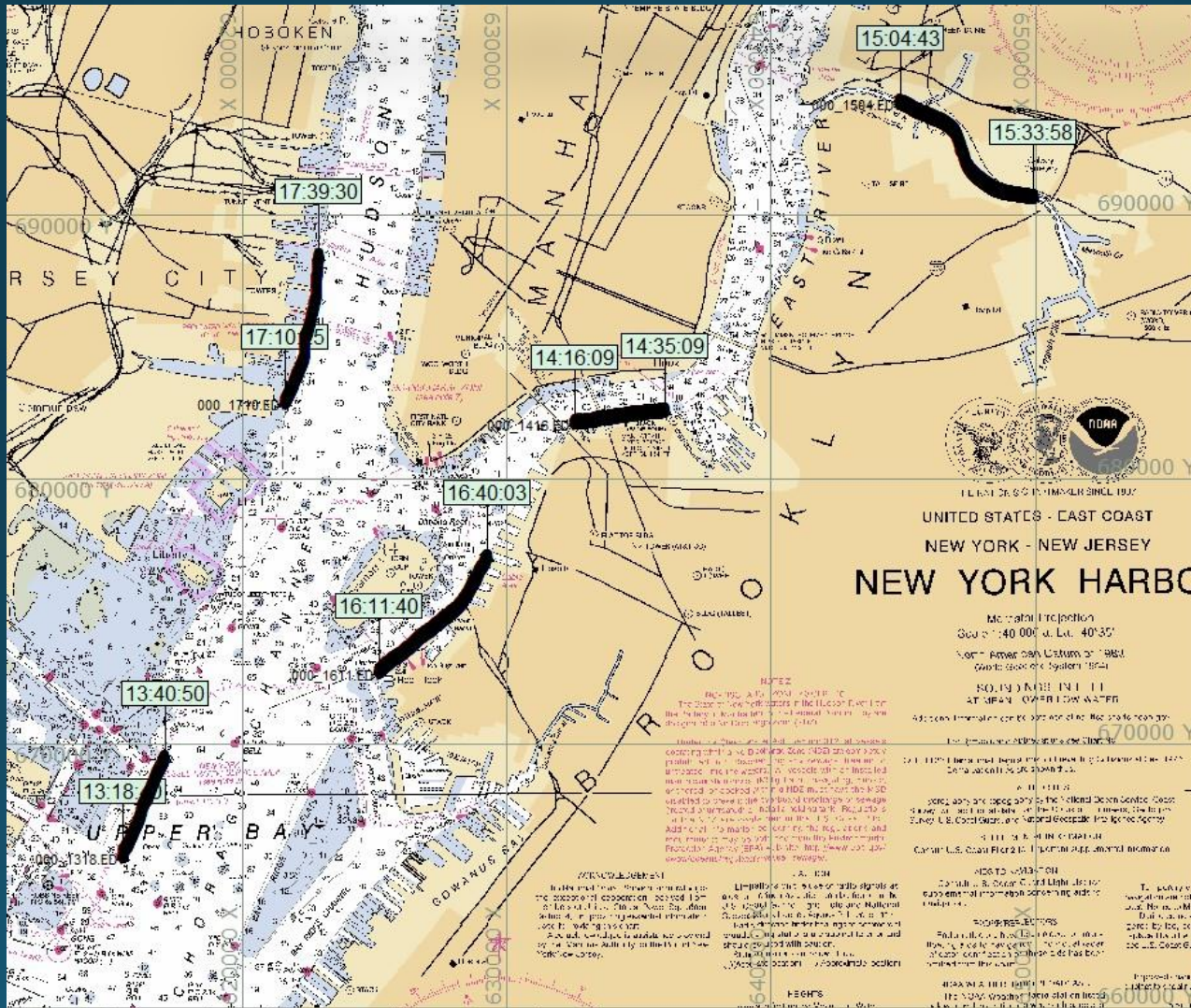
000_1346.EDT	6727 Feet
Total Lines: 1	6727 Feet
000_1447.EDT	8245 Feet
Total Lines: 1	8245 Feet
000_1633.EDT	6016 Feet
Total Lines: 1	6016 Feet

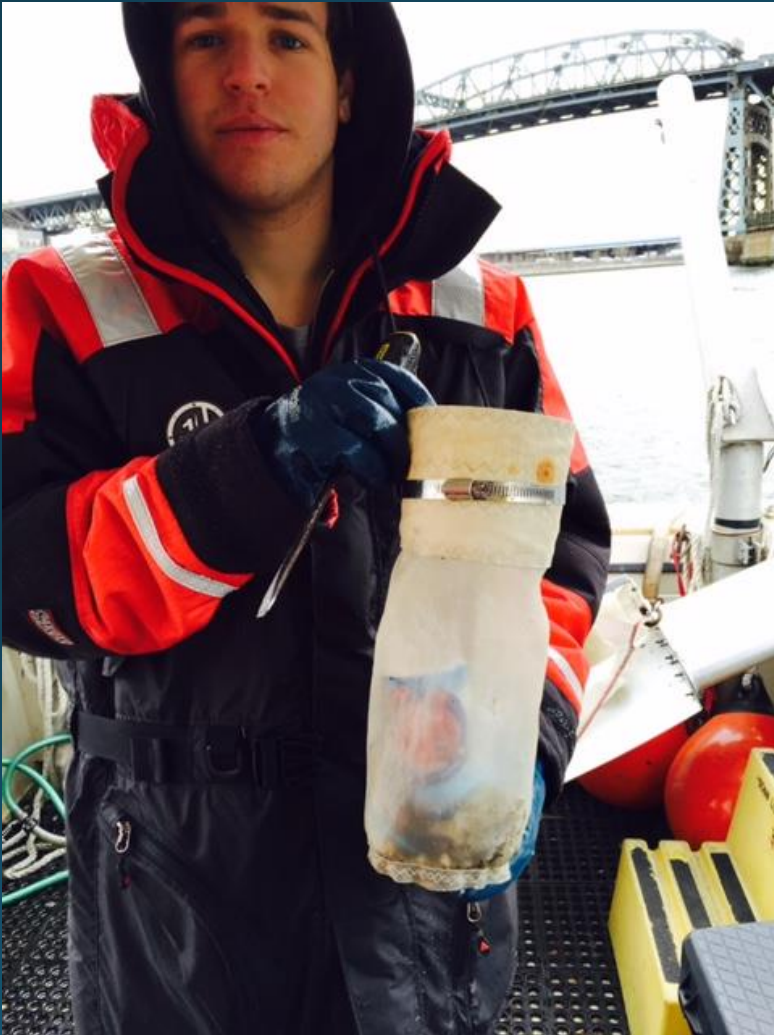
**MONMOUTH  
UNIVERSITY**

URBAN COAST INSTITUTE

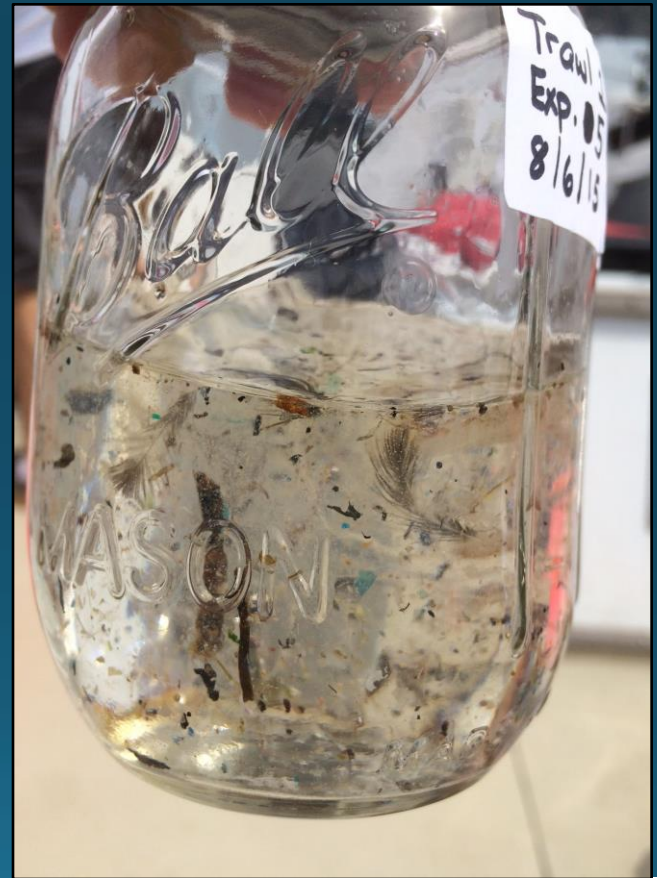


# Sampling Area





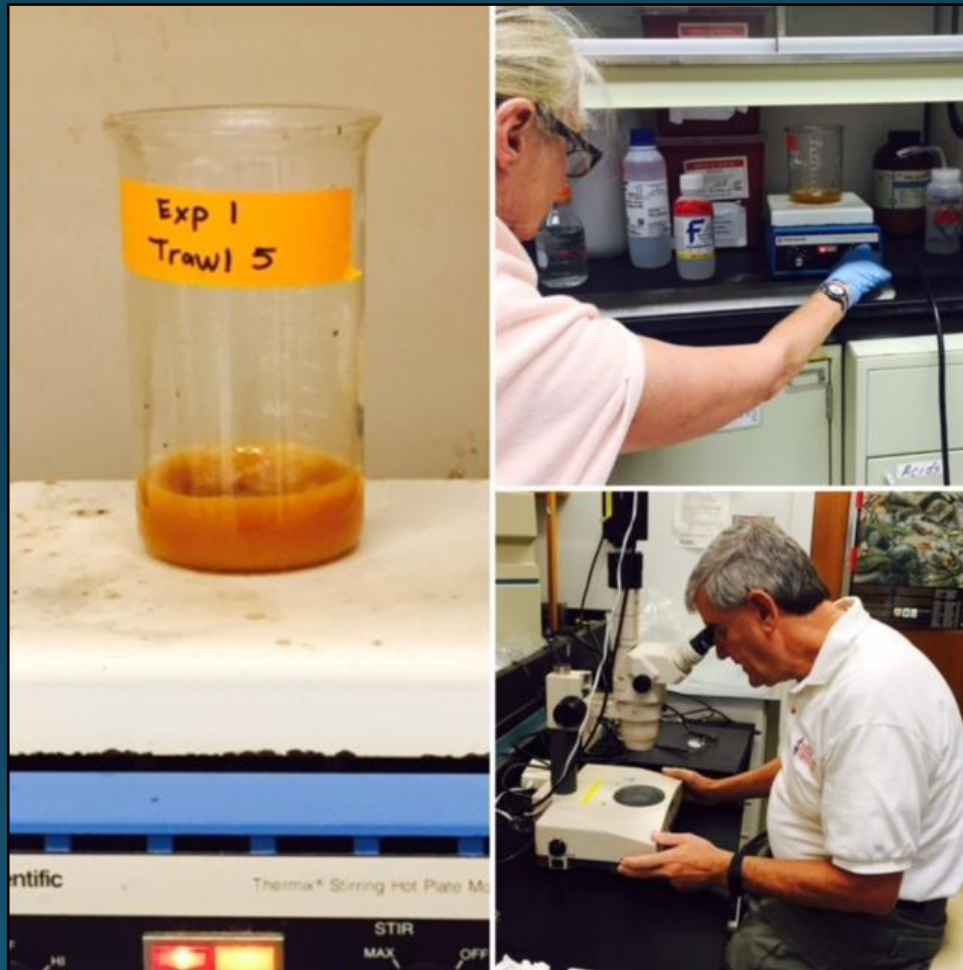




# Sample Processing

Analysis methodology was adopted from Dr. Sherri Mason's Great Lakes laboratory protocol and the National Oceanic and Atmospheric Administration's (NOAA) recommendations for quantifying synthetic particles in waters and sediments

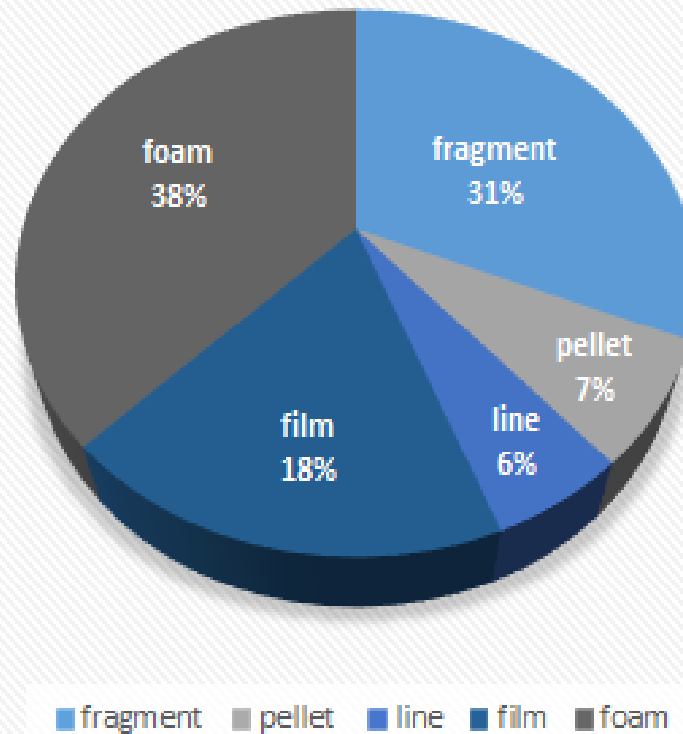
- Samples were dried and subject to a wet peroxide oxidation process (WPO) in the presence of an iron (Fe II) catalyst to digest organic material such as twigs and leaves (The plastic remains unaltered)
- Using sieves and a dissecting microscope, plastic was categorized into three size classes (0.355-0.999 mm, 1.00-4.749 mm, and >4.75 mm) and then counted.
- Plastic particles are then categorized into the following: fragment, foamed polystyrene, line, pellet, film, other, and then counted. A buoyancy test was used to confirm if questionable material was plastic.





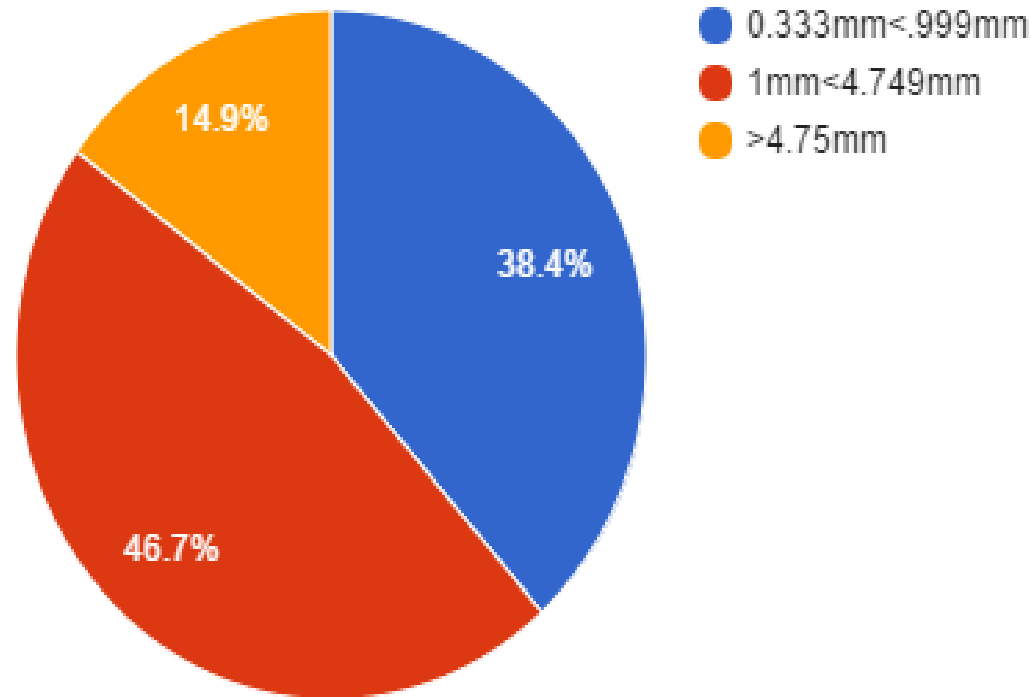


## Comparative Abundance of Plastic Categories



The most abundant type of plastic within NY-NJ Harbor waters is foam  
(A total of 6,932 plastic particles were recovered)

## Size Distribution for All Samples



Approximately 85% of all particles counted are categorized as microplastics (smaller than 5mm)



## Percentage of Plastic used in different fields

