

# Identification and Quantification of Microplastics in the Sediment of Puget Sound



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## Introduction

Plastics in marine ecosystems have an impact not only on marine life but also on humanity as a whole. This project looks at microplastics in sediments collected across Puget Sound since 2014 to establish a baseline and examine if plastic contamination in sediments has changed over time. This work focuses on preliminary information on microplastics while analyzing 2017 Puget Sound Ecosystem Monitoring Program (PSEMP) samples.

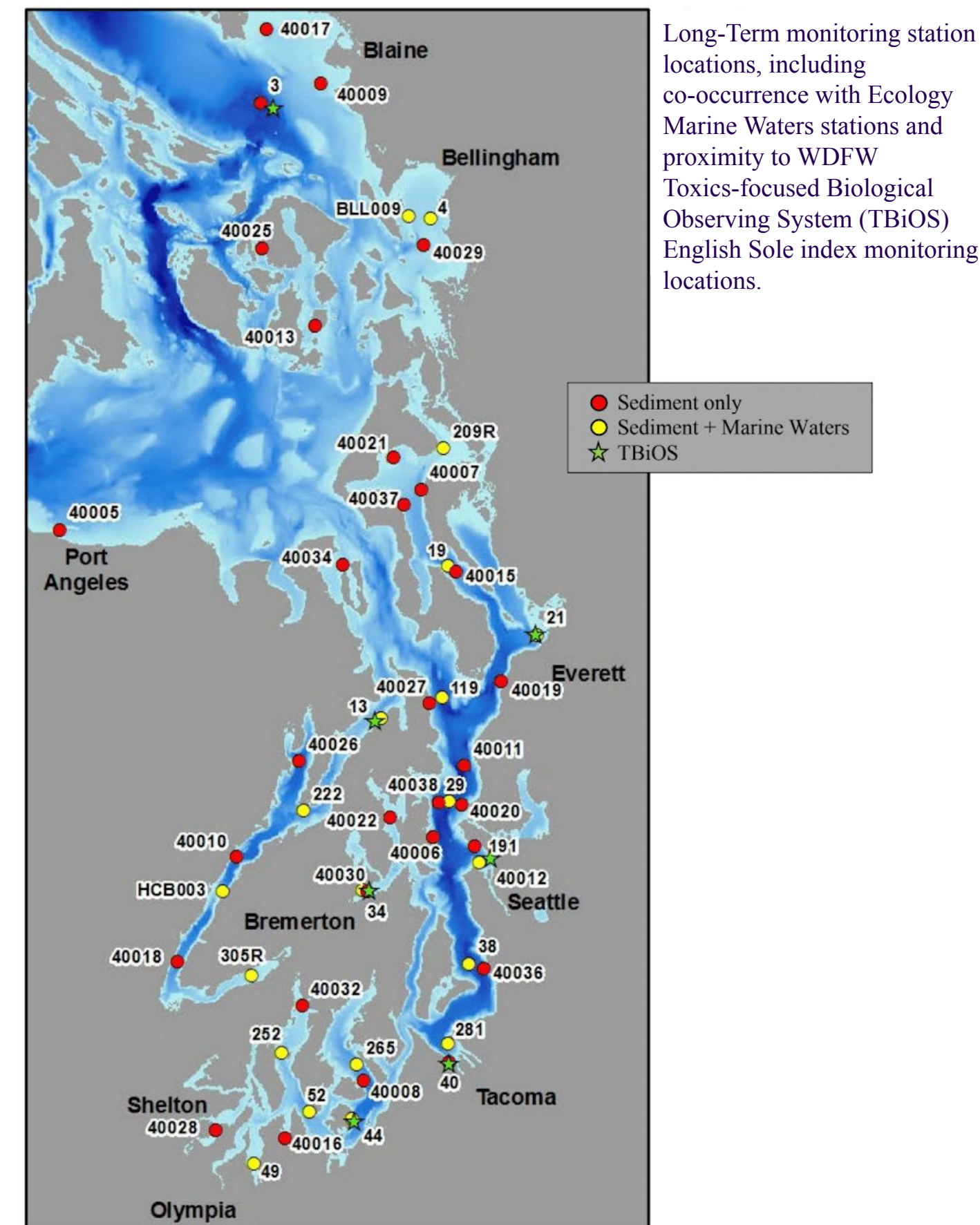


NOAA 2015

Plastic debris found by the NOAA Marine Debris Program can be seen above. This acts as a guiding image for this program's laboratory methods in connection with the University of Washington Tacoma, for analyzing microplastics found in the environment.

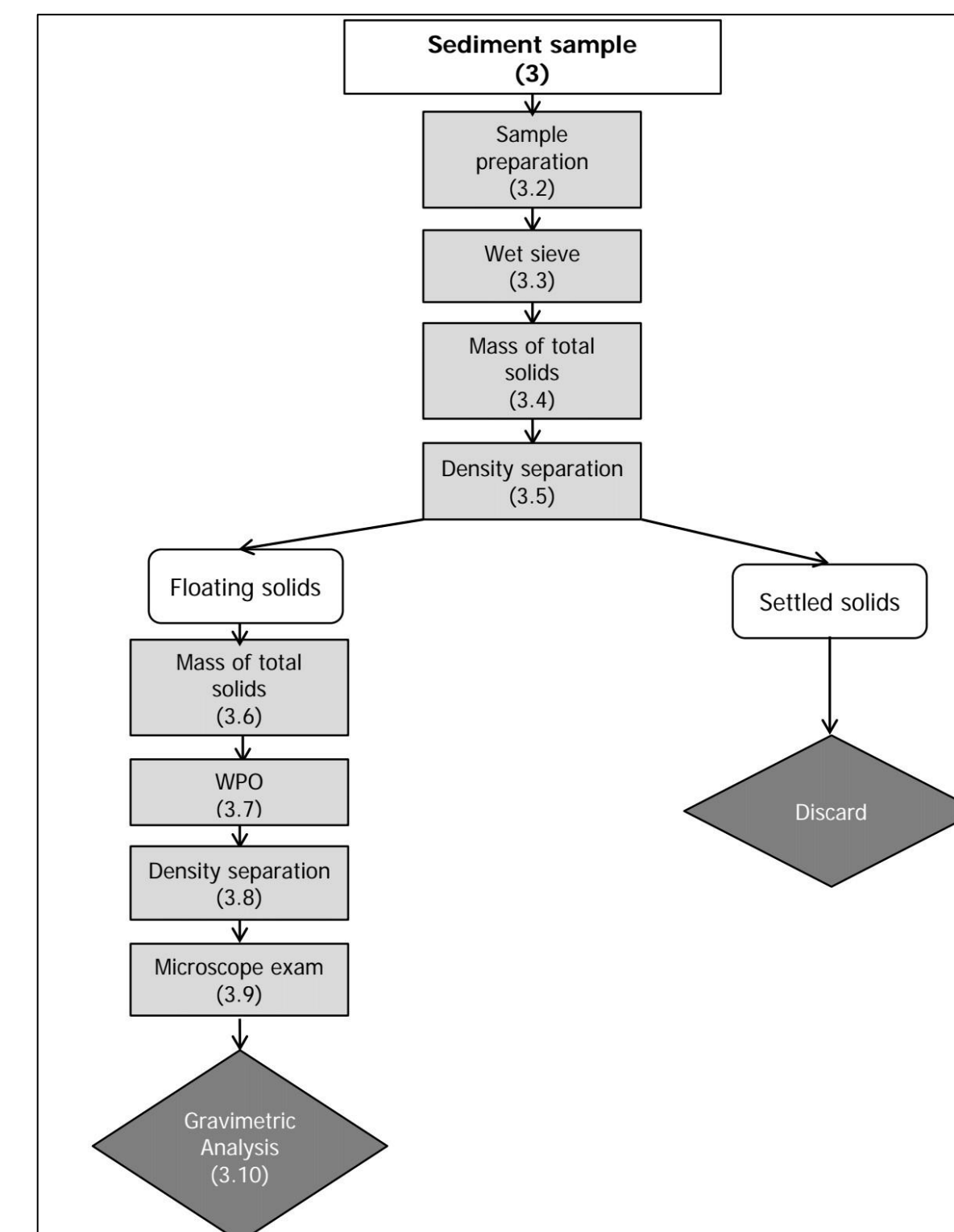
## Objectives

- We expect to find a relationship between urbanization, suburbanization, and levels of microplastics.
- Quantify microplastic particles in marine bed sediments
- Streamline the methodologies used to assess microplastic concentrations.
- Compare how the data found has changed over time for both past and future samples.



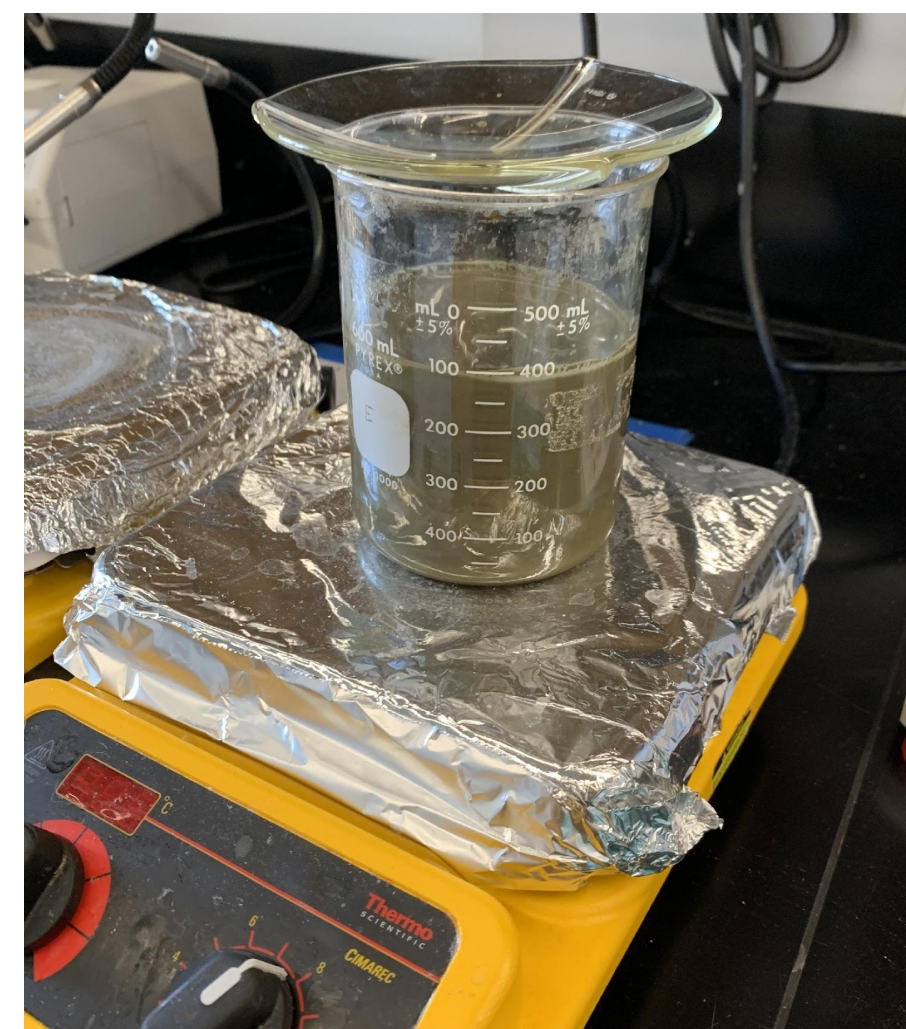
Dutch, M., et al. 2018

## Methods



Masura, J., et al. 2015

This study's methods were determined after careful study and laboratory work conducted through an NOAA Marine Debris Program grant to the University of Washington, Tacoma.



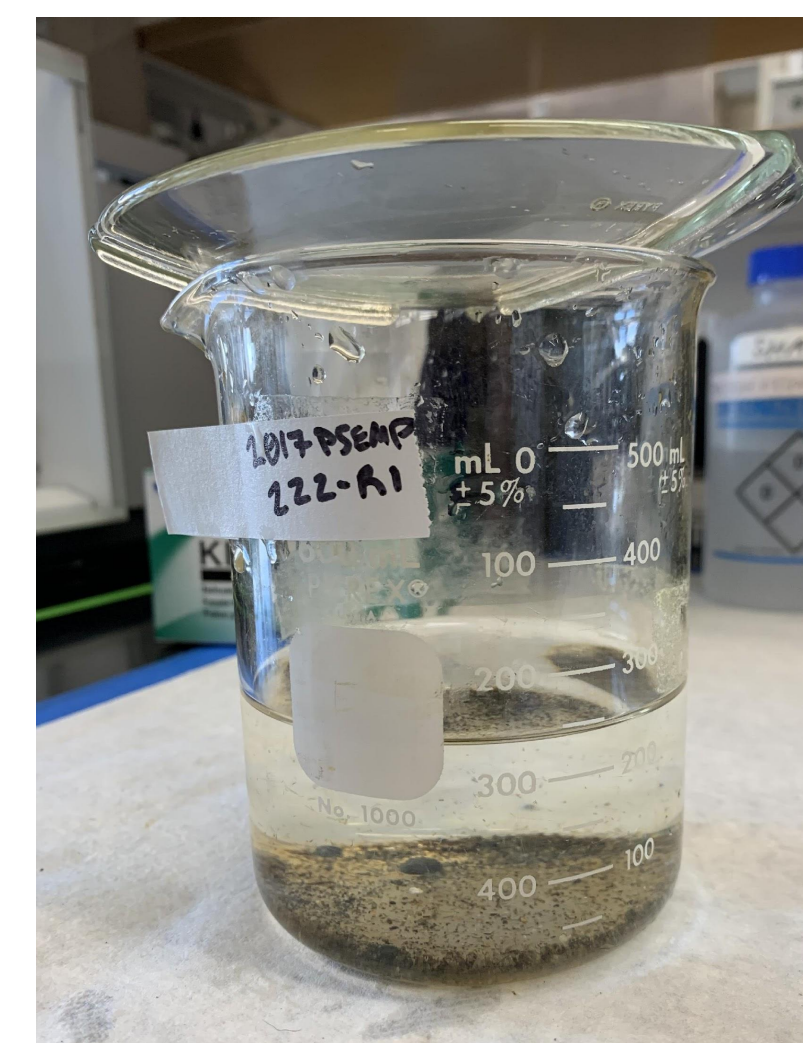
- Sediment sample stirring with potassium metaphosphate (3.2)
- Sample stirs for one hour
- The first round of sieving the sample comes directly after (3.3)



- Sediment sample after being stirred and sieved (3.3)
- Sample will be placed in drying oven at 90°C for at least 24 hours after being transferred into dry beaker to then weigh the dry sediment mass (3.4)



- Sediment samples about to dry in drying oven at 90°C for 24 hours at two different stages
- Left sample has just been sieved with lithium metaphosphate and replaced into beaker with minimal distilled water (3.5)
- Right sample has just been stirred and sieved for the first time (3.3)



- Sediment sample placed back into beaker with distilled water after being sieved (3.3)
- Sample will dry another 24 hours in drying oven at 90°C to then have its dry mass weighed (3.4)

## Future Work

To understand the sources of this growing pollutant, continuous monitoring of microplastics in sediments across Puget Sound is required. As we continue this work, it is expected to still find significant levels of microplastics in samples taken from more populated areas. We can use this information to facilitate future impacts and help keep marine environments clean.

## Special Thanks

I would like to thank the Washington State Department of Ecology for sharing their samples from Puget Sound with our lab so we could research and process microplastic pollution.



References:

