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2021 Mapping of Microplastics in Surface Sediments of Elliot Bay near Seattle, WA to Determine Impacts on Benthic Communities

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2021 MAPPING OF MICROPLASTICS IN SURFACE SEDIMENTS OF ELLIOT BAY NEAR SEATTLE, WA TO DETERMINE IMPACTS ON BENTHIC COMMUNITIES

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MICROPLASTICS PROBLEM

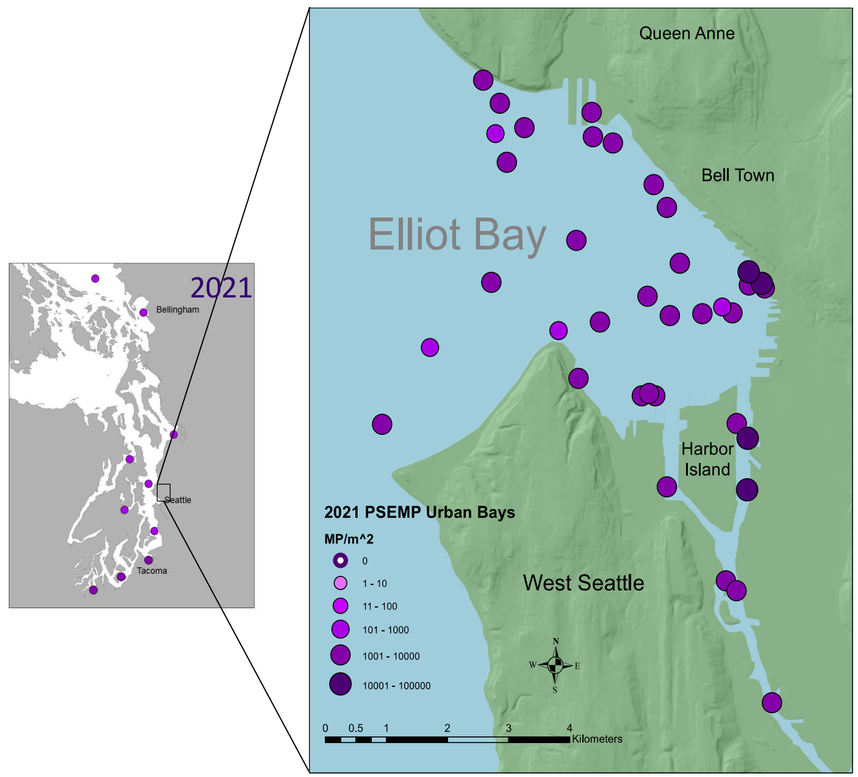
In 2018, 359 million tonnes of plastics were produced worldwide, with 59% being common polymers (i.e., polyethylene, polypropylene, polyvinyl chloride; PlasticsEurope 2019). The rate of input of ocean plastic is estimated to be approximately 9.5 million tonnes per year. Primary plastics are those manufactured at size for making larger plastics, and secondary plastics are those that have broken down in the environment. Size-categories for plastics are macroplastics (> 5 mm) and microplastics (< 5 mm).

RESEARCH PARTNERSHIP

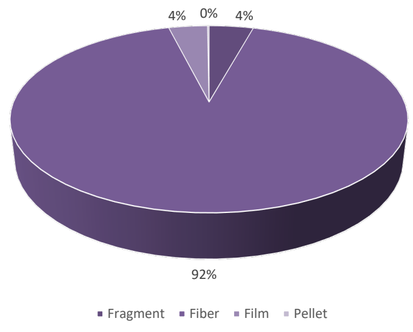
This project explores microplastics in sediments collected from a fine resolution sampling project in 2021 of Elliot Bay near Seattle, WA to create baseline observations and determine if plastic pollution in sediments have changed over time. Washington State Department of Ecology's Marine Sediment Monitoring Group has provided sediment samples to analyze for microplastics since 2014. Thirty-seven stations were sampled using a 0.1 m^2 stainless steel Van Veen grab sampler to recover 2-3 cm of the top sediment from the seabed.

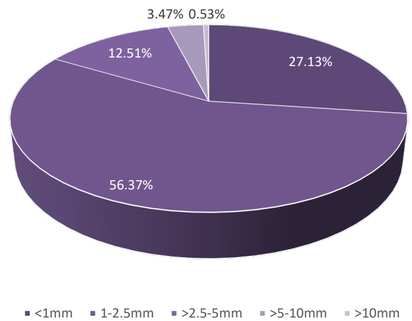
DEPARTMENT OF State of Washington ECOLOGY

https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Sound-science/Marine-sediments



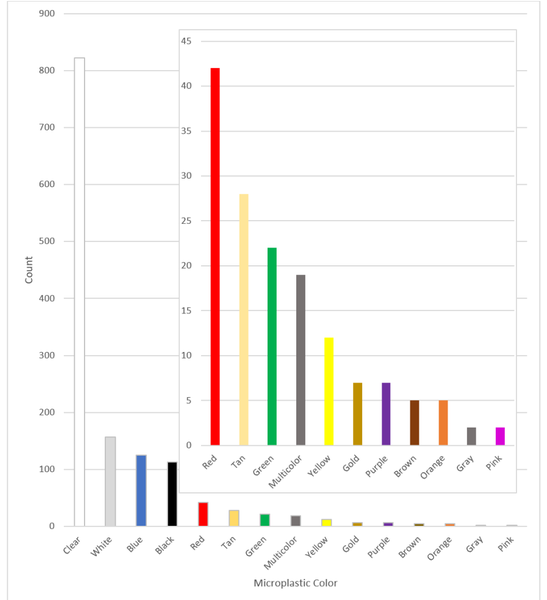
2021 microplastics concentration for Puget Sound and Elliot Bay.





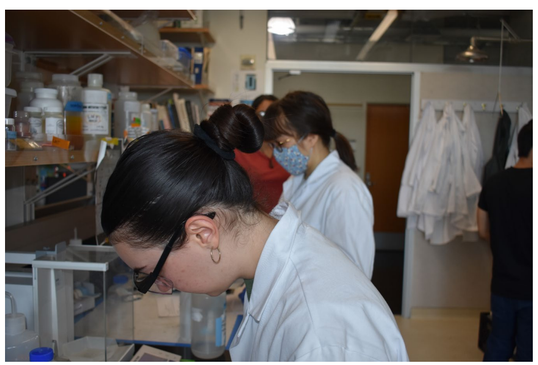
UWT MICROPLASTICS QUICK FACTS

- > Every station contained microplastic
- > 92% of the micro-debris are fibers
- > 56% of the micro-debris are 1-2.5 mm
- > Over 800 micro-debris were clear followed by ~300 blue



UNDERGRADUATE RESEARCH

Each year the sediment samples are processed by undergraduate researchers for grain-size distribution, total organic content percentage, harmful algae abundance, and microplastic concentration as part of a summer research experience. Microplastics were processed and analyzed through a series of density separations, sieving, and manual extractions. Each piece was characterized by type, color, and size.



STUDENT TEAM

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