

Microplastics: 2021 Salish Sea Research

Erin Campion, Celine Jolibois, and Julie Masura



Introduction

- This research is a part of the Puget Sound Ecosystem Monitoring Program (PSEMP)'s long-term research to help give a better understanding as to how much plastic that we have in the Salish Sea (Apple et al 2021).
- The importance of continuing this research is for awareness and potential harmful impacts of microplastics on the environment

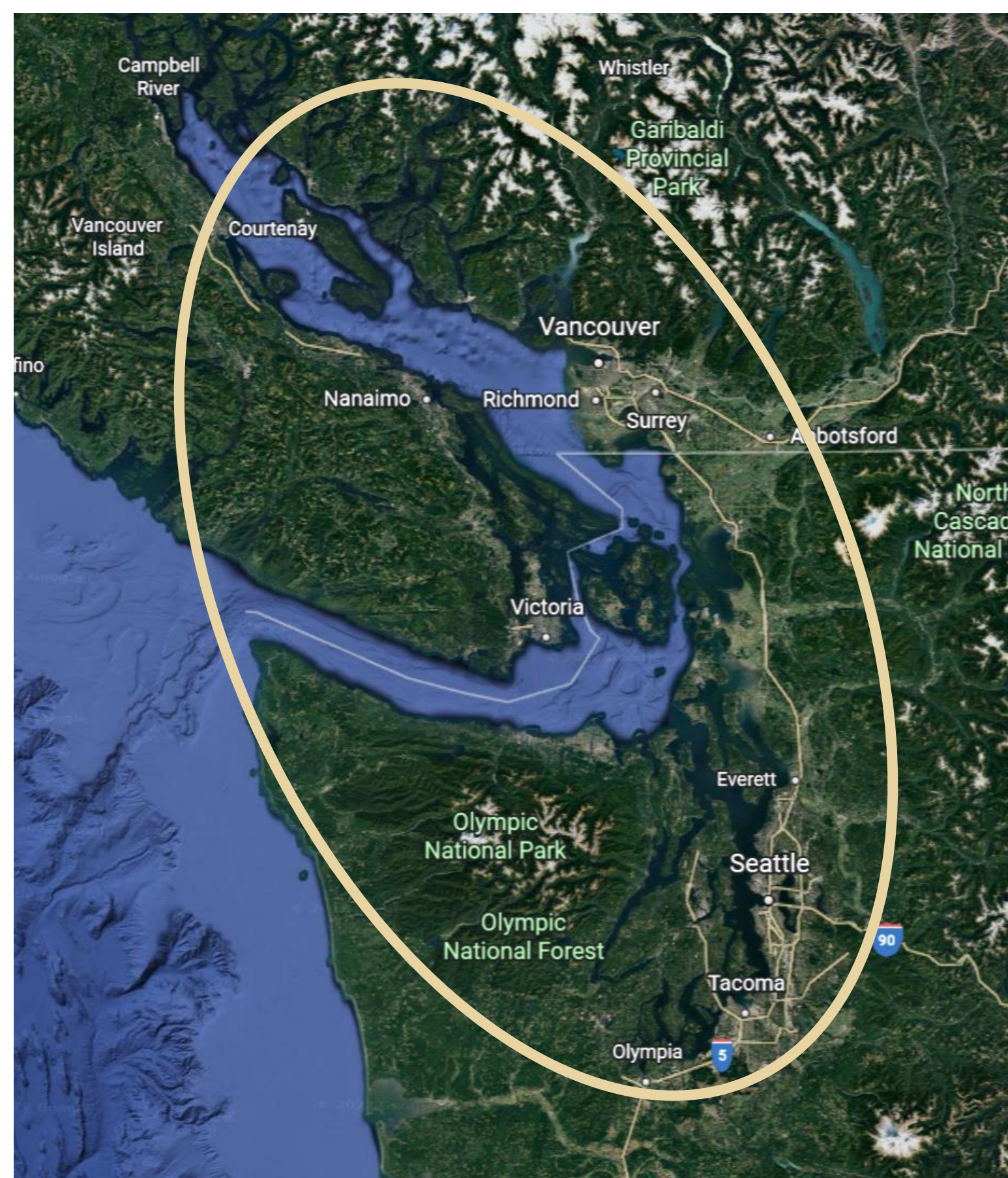


Figure 1: Salish Sea Location for PSEMP, Washington. Google Earth 2022

GIS Salish Sea map of stations
2021 PSEMP Long Term Microplastics Concentrations

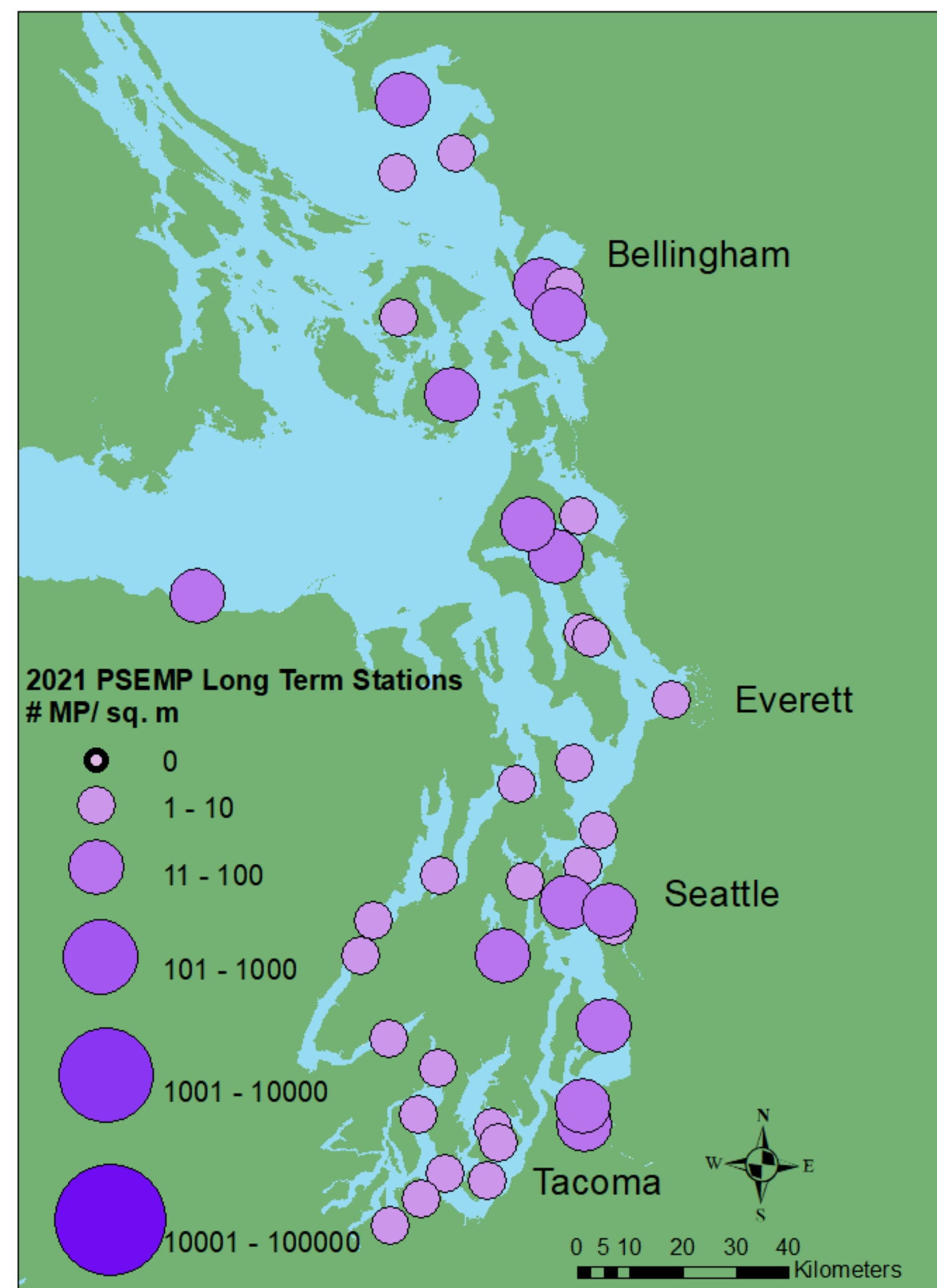


Figure 2: Map of stations used in 2021 PSEMP Long-Term Research created through ArcMap version 10.8.1

Methods

- Weighed 200 grams of sediment.
- Mixed with potassium metaphosphate for an hour.
- Rinsed and passed through a sieve then set to dry overnight.
- Mixed with lithium metatungstate for density separation
- Rinsed through a sieve and dried overnight.
- Added peroxide to remove organic material.
- Added salt for density separation.
- Funneled through a sieve and dried overnight.
- Picked and sorted microplastics by size type and color.

Discussion

- All samples had microplastics
- More microplastics at metropolitan areas (Figure 2)

Errors

- Two samples spilled that affected weight measurements

Final Analysis

- A total of 411 microplastics particles identified
- 2 particles were plastic films

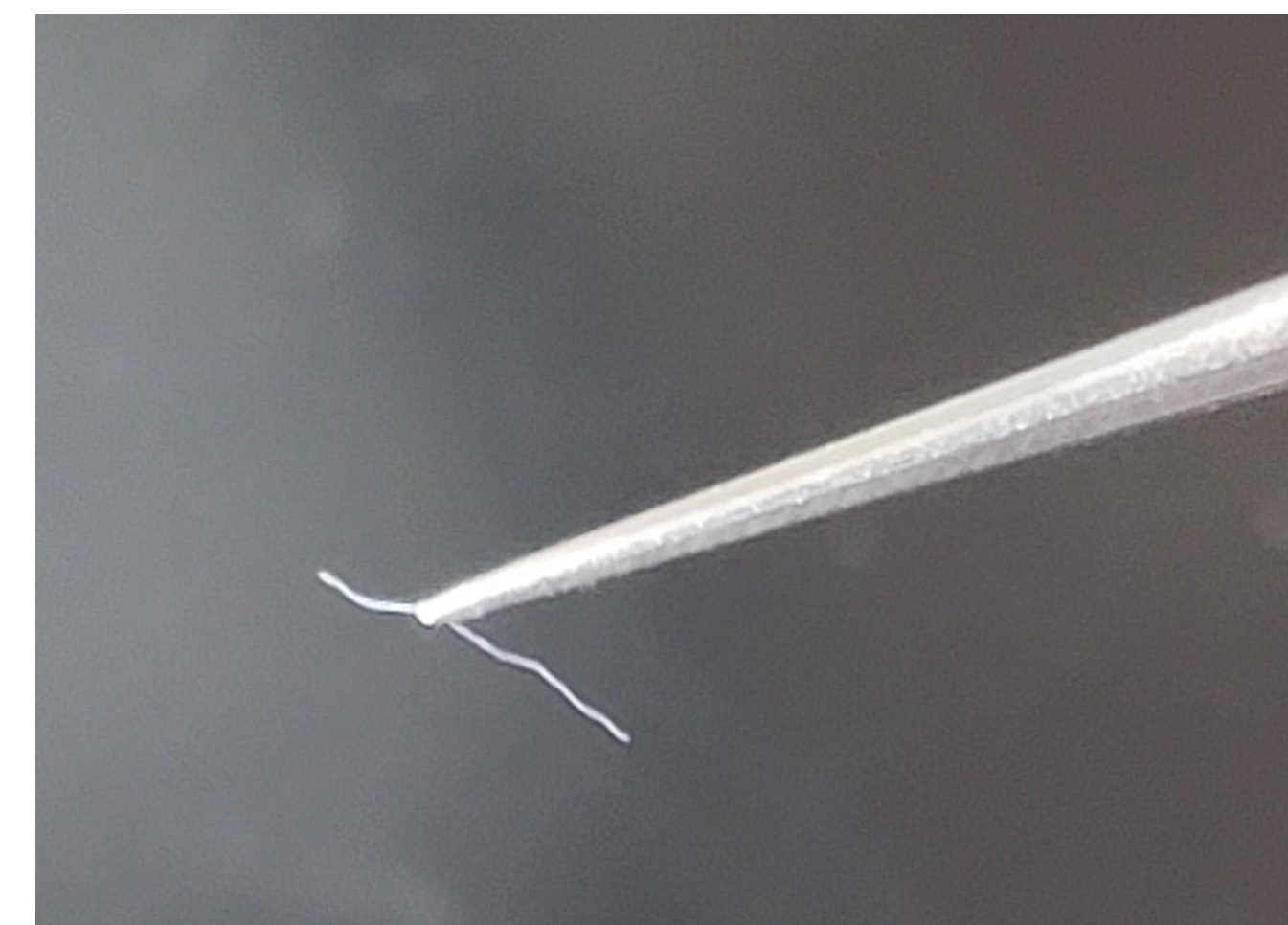


Figure 3: Microplastic fiber held by tweezers (above)
Photo credit: Erin Campion



Figure 4: Microscope set up for analysis for microplastic picking
Photo credit: Sade Duplis

Results

Microplastics characteristics that were most abundant:

- Microplastic type
 - 99.51% fiber particles
 - 0.4866% non-fiber particles
- Color
 - 62% clear color
- Length
 - 46% 1-2.5mm
- Total of 411 microplastics found
 - 409 plastic fibers
 - 2 plastic films

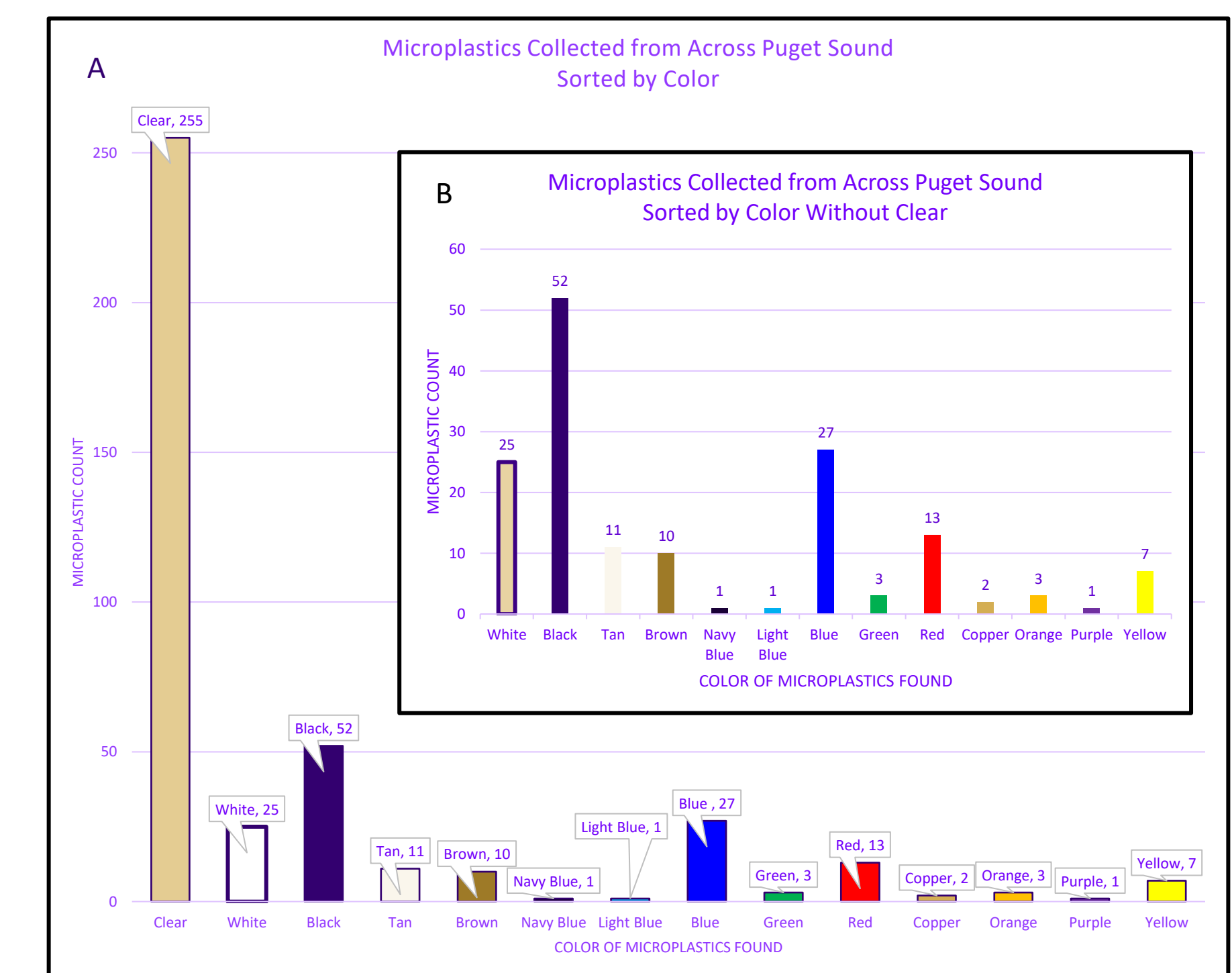


Figure 5: Microplastics count by color (A); Microplastics count without clear (B)

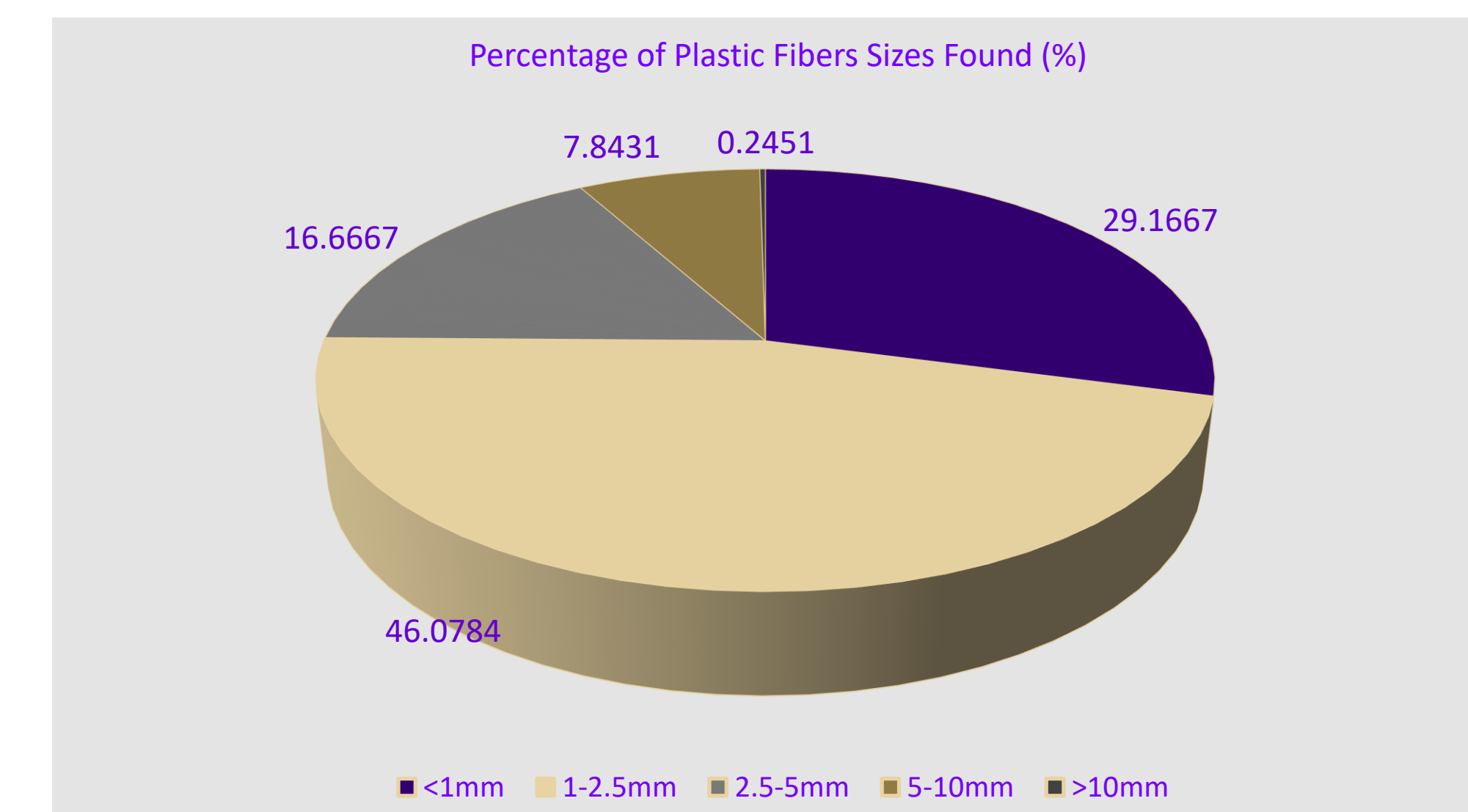


Figure 6: Microplastics size by fiber type

Objectives

- Isolating Salish Sea sample
- Separating particles by density
- Analyzing microplastics
- Sorting
 - Size
 - Shape
 - Color

Reference

Apple J., et al. 2021. Puget Sound Marine Waters 2020 Overview. <https://www.eopugetsound.org/articles/puget-sound-marine-waters-2020-overview>