

Introduction

Department of Ecology's Marine Sediment Monitoring Team collected bed sediment samples from Elliott Bay, throughout Spring 2021. Our goal was to successfully isolate and catalog any microplastics found within each sample and determine any fluctuations in microplastic accumulation from previous documented years.

Methods

Microplastics were chemically isolated from organic material using potassium metaphosphate. Lithium metatungstate was used to allow the lightweight plastics to float to the surface for easy collection. While iron oxide and 30% hydrogen peroxide were used to eliminate any natural organic material from the sample. A 330µm sieve was used to screen out smaller solids, and plastics were then hand-picked and collected by various lab attendees.



Abdullah Alammar carefully picking out microplastics
(Photo: Masura, J)

Results

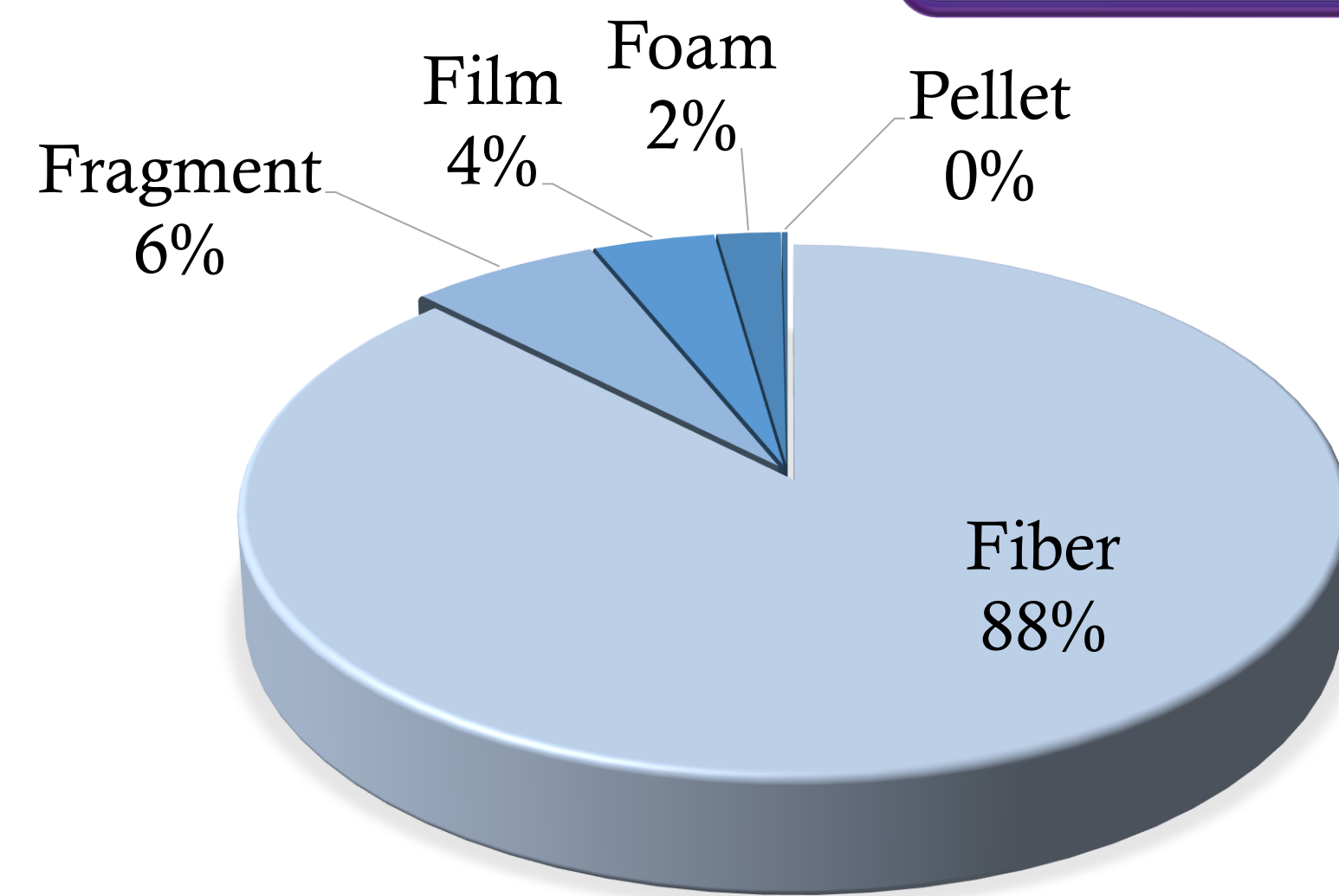


Figure A: Total microplastic percentages by type

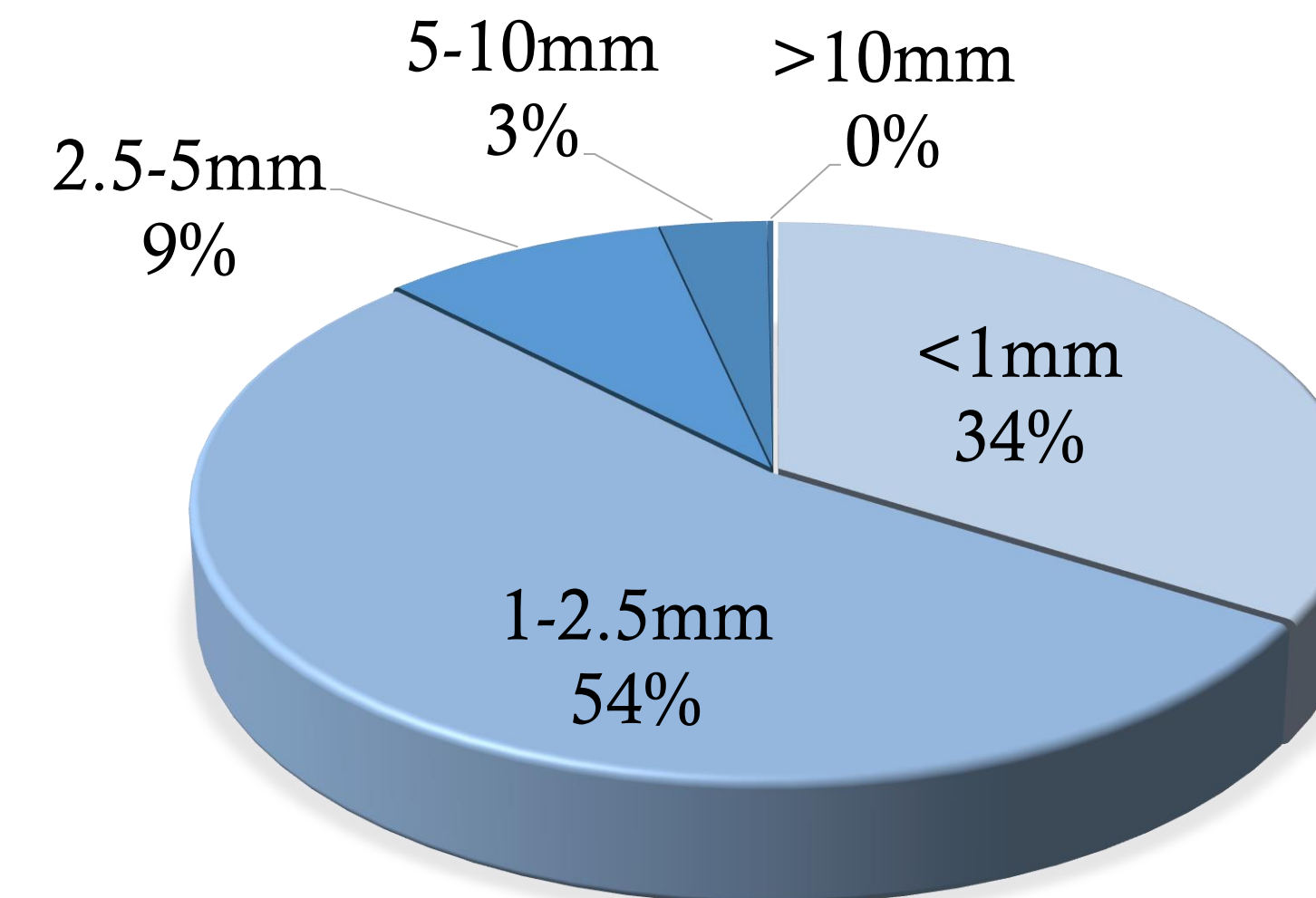


Figure B: Total microplastic percentages by length

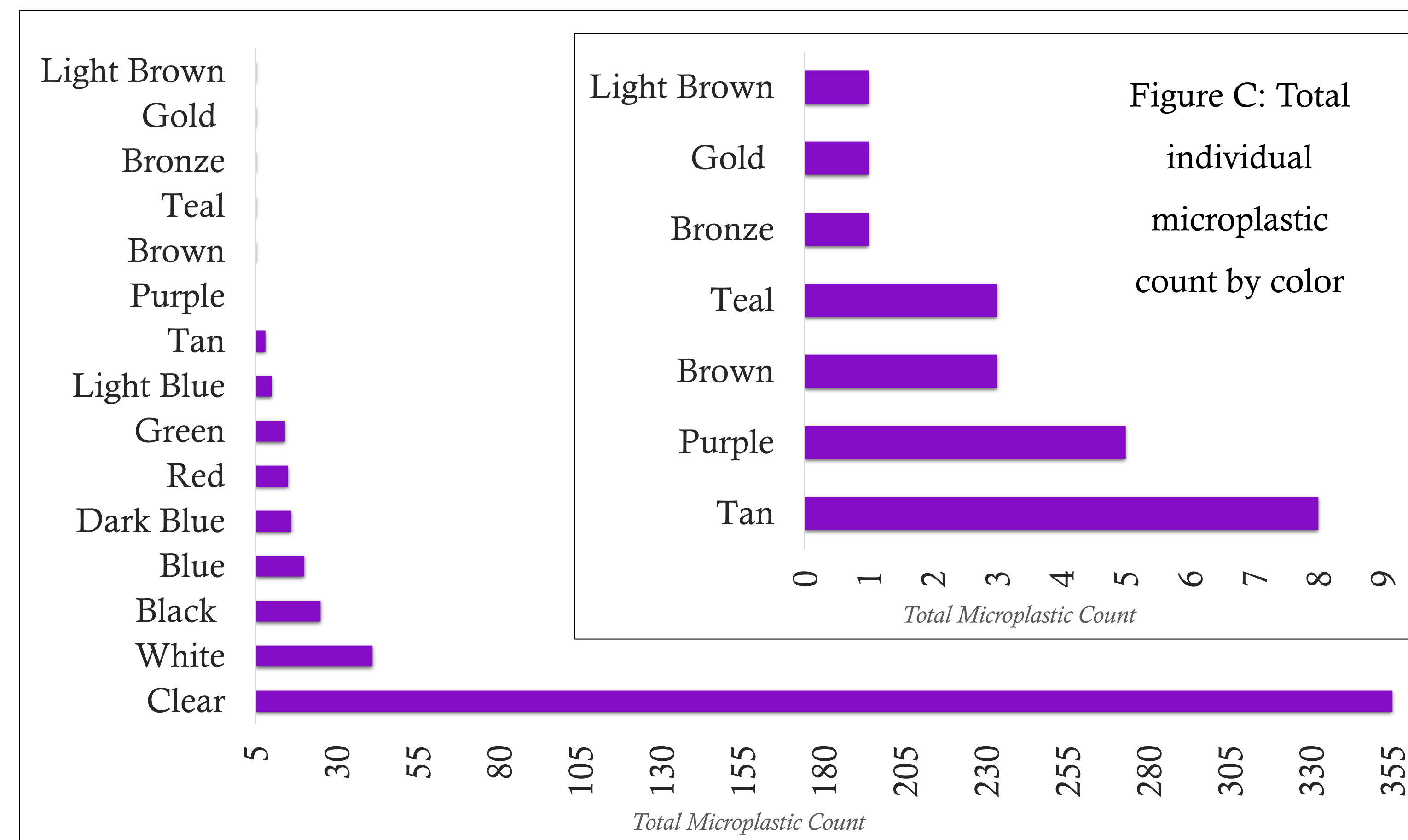


Figure C: Total individual microplastic count by color

Conclusion

Our results show a correlation to that of the surrounding Salish Sea, as similar studies have also experienced a high volume of clear fibrous microplastics between 1-2.5 mm in length. This suggests that the parent material in the surrounding area is of similar characteristics.

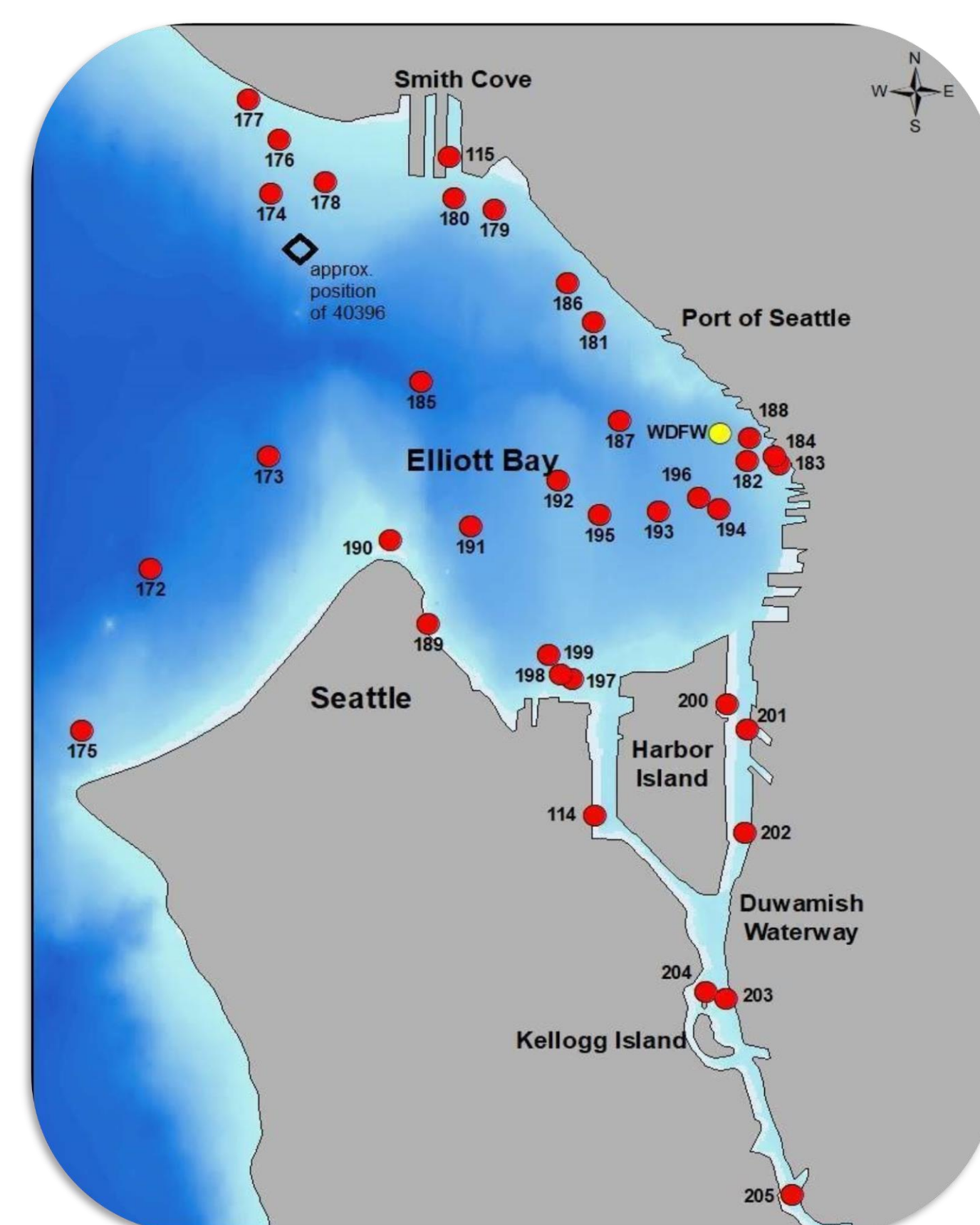
Acknowledgments

A huge thank you to the lab partners who helped process the samples; Olivia Kirby, Abdullah Alammar, Anna Finch, and Erin Campion, and a big thanks to the Washington State Department of Ecology's Marine Sediment Monitoring Team.

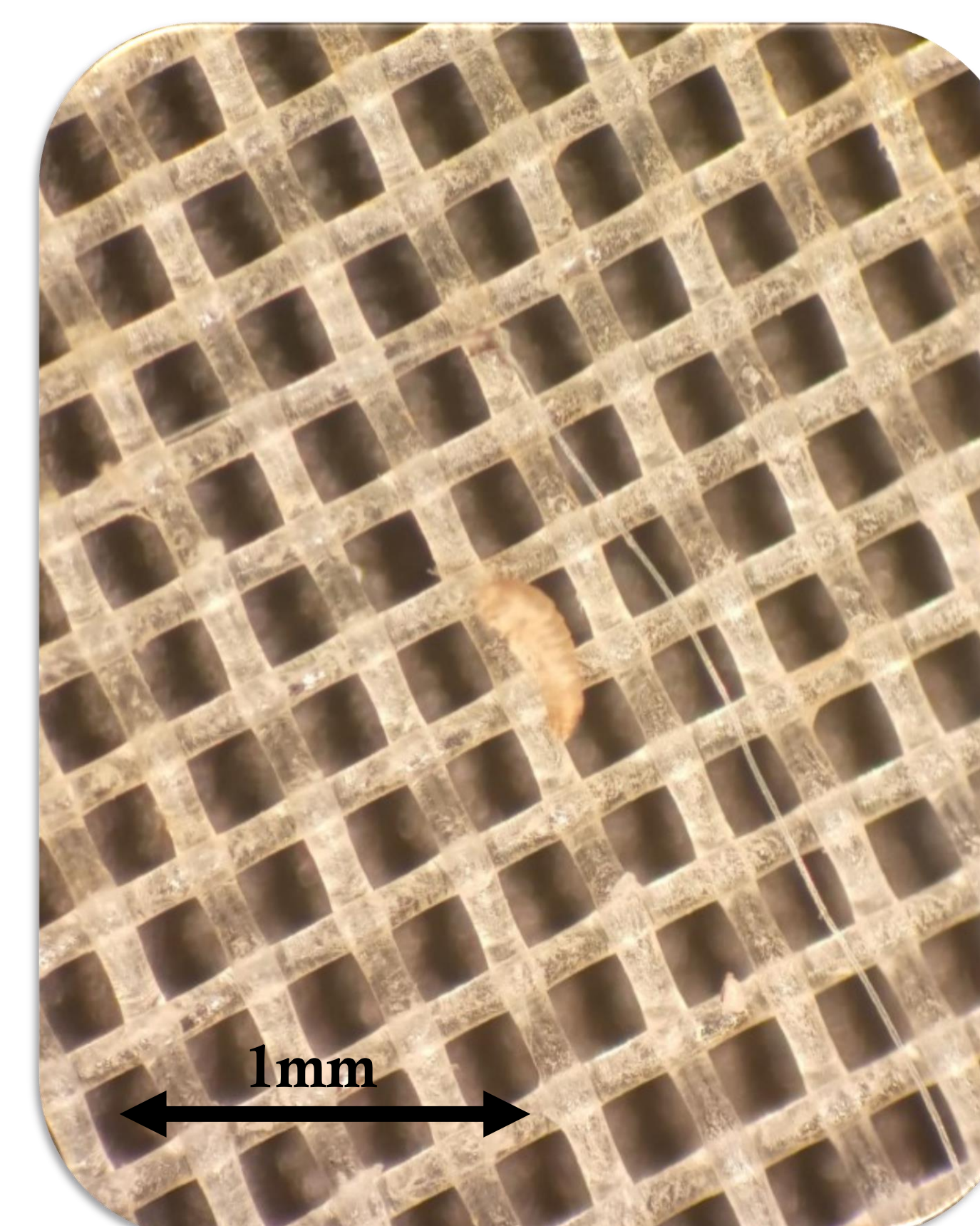
References

PSEMP Marine Waters Workgroup. 2020. Puget Sound marine waters: 2019 overview., J. Apple, R. Wold, K. Stark, J. Bos, P. Williams, N. Hamel, S. Yang, J. Selleck, S. K. Moore, J. Rice, S. Kantor, C. Krembs, G. Hannach, and J. Newton (Eds).

Masura, J., et al. 2015. Laboratory methods for the analysis of microplastics in the marine environment: recommendations for quantifying synthetic particles in waters and sediments. NOAA Technical Memorandum NOS-OR&R-48.



Elliott Bay, Washington Sample Site Locations
(PSEMP. 2020)



Microplastics are extremely small and difficult to detect. Can you spot the plastic fiber next to the arthropod?