

THE UCLUELET AQUARIUM'S MICROPLASTICS AND MARINE DEBRIS INITIATIVE



WHAT WE ARE DOING

Our communities are intrinsically tied to the local marine environment for food security, the economy, and cultural activities. Microplastics (fragments, nurdles and filaments smaller than 5mm) pose threats to the local economy and to the health of not only marine life, but people as well. Over 180 species are known to ingest plastic pollution, which has indirect impacts to human health through the food chain. Our study is one of the first to scientifically monitor microplastic pollution in beach sediment in British Columbia. By collecting valuable data with the help of citizen scientists, we are learning about the distribution, frequency and type of microplastic pollution affecting our coast. The results from this study are used to engage the public, and inspire change to reduce plastic consumption. Working together with visitors and community members we are raising awareness to protect the coastal ecosystem we are deeply connected to.

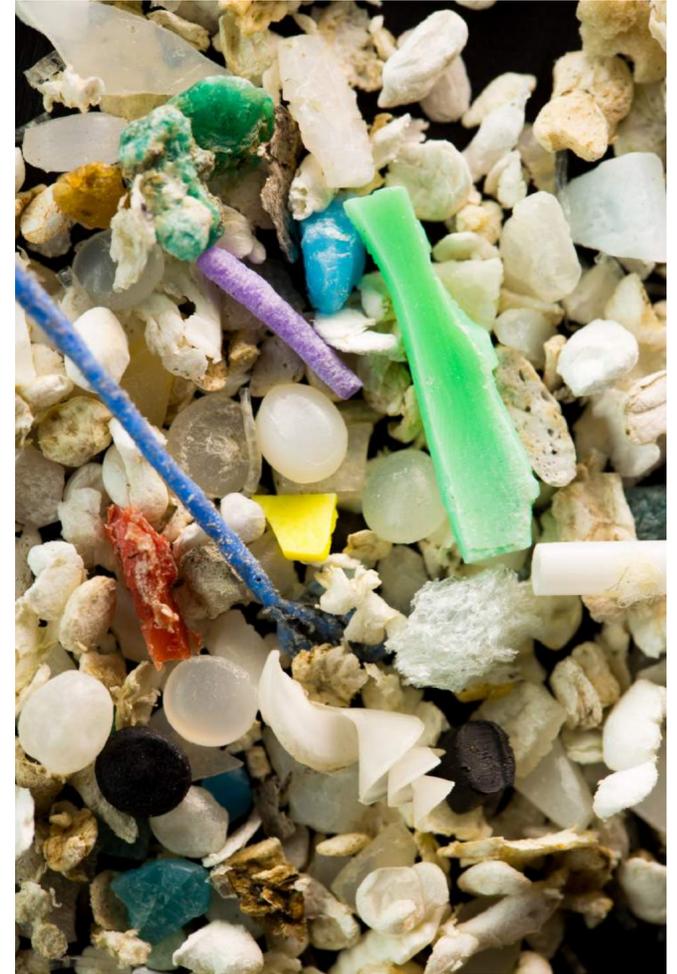


Photo: Adam Baus



Photo: Adam Baus



Photo: Mack Bartlett



Photo: Jessica Landsfield



Photo: Mack Bartlett

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WHAT WE ARE FINDING

Our study sites are located in Ucluelet, Pacific Rim National Park Reserve, and Tofino, BC (see map above). We have found microplastics in EVERY sample, at EVERY study site (Figure 1). As we collect more data we are finding potential patterns from our results (Figure 2). This research will help broaden our awareness of human impacts on the environment and strategies to protect the ocean we depend on.

The Microplastic and Marine Debris Initiative Sample Locations

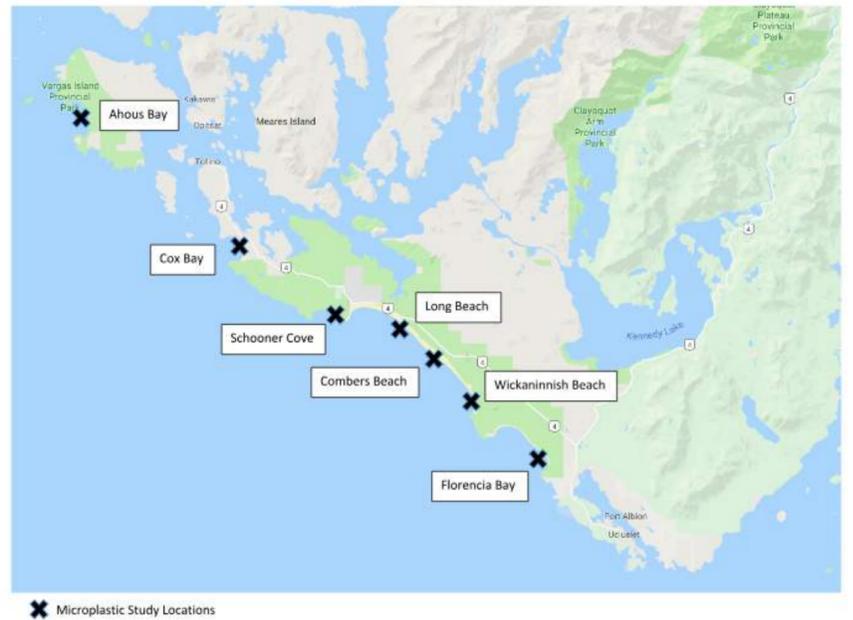


Figure 1. Microplastic sediment sampling locations, between Ucluelet and Tofino, B.C including

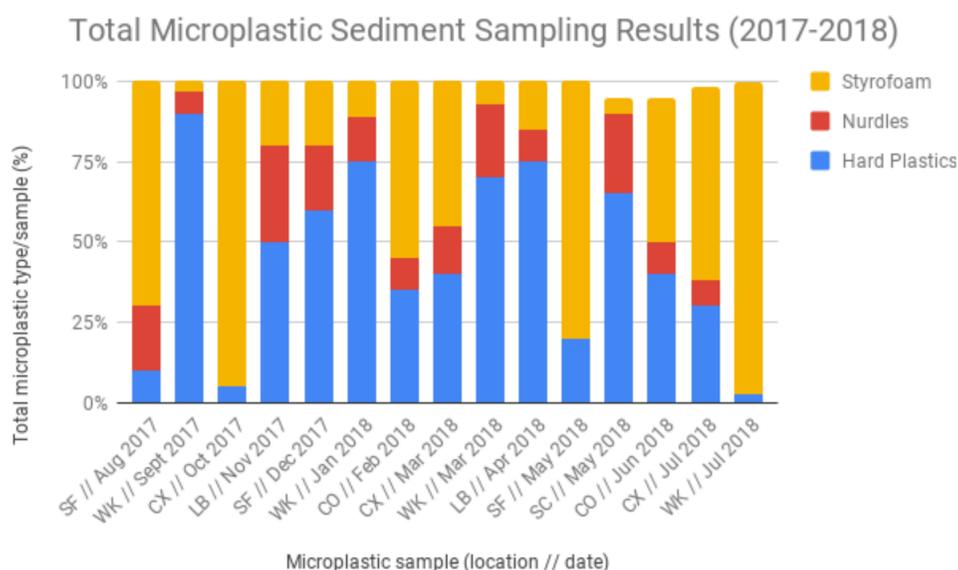


Figure 2. Total microplastic sediment sampling results by location, date and plastic type (August 2017 to July 2018). SF: South Florencia, WK: Wickaninnish Beach, CX: Cox Beach, LB: Long Beach, CO: Combers Beach, SC: Schooner Cove.

TOTAL MICROPLASTIC TYPE

Three major types of microplastics make up the majority of our sediment samples; hard plastics, styrofoam and nurdles. You can see in figure two (left) how the type of plastic changes over time and at different locations.

44.5% HARD PLASTICS
41.9% STYROFOAM
13.6% NURDLES

Seasonal Comparison of Microplastic Sediment Samples by Volume (mL)

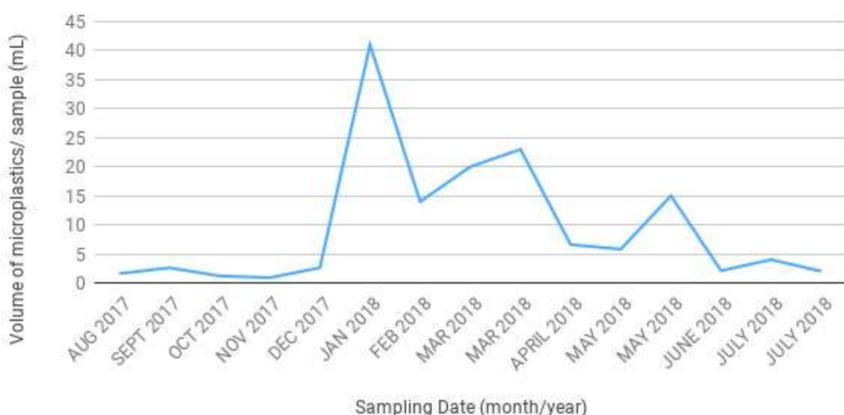


Figure 3. Comparison of microplastic volume from sediment samples during Aug. 2017 to July 2018 at multiple sites between Ucluelet and Tofino, B.C.

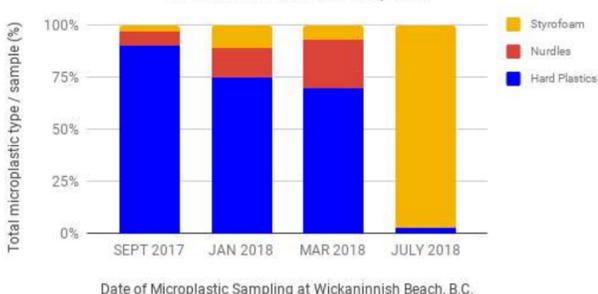
TOTAL MICROPLASTIC VOLUME

Abiotic factors like ocean currents and wind play a large factor in what type and amount of microplastic ends up on beaches.

6.3 mL AUG - NOV 2017
107.2 mL DEC. - APRIL 2018
28.9 mL MAY- JULY 2018

Increase in microplastic volume during 'winter months'

Seasonal Comparison of Microplastic Types at Wickaninnish Beach, B.C.

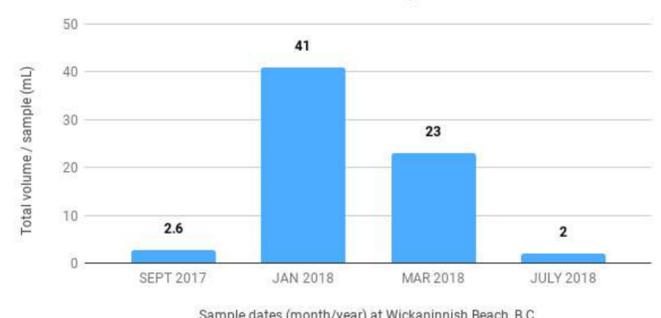


Comparison of Wickaninnish Beach by microplastic type

and volume (ml)

from four sediment samples, collected between Sept. 2017- July 2018

Comparison of Microplastic Sample Volume by Date at Wickaninnish Beach, B.C.

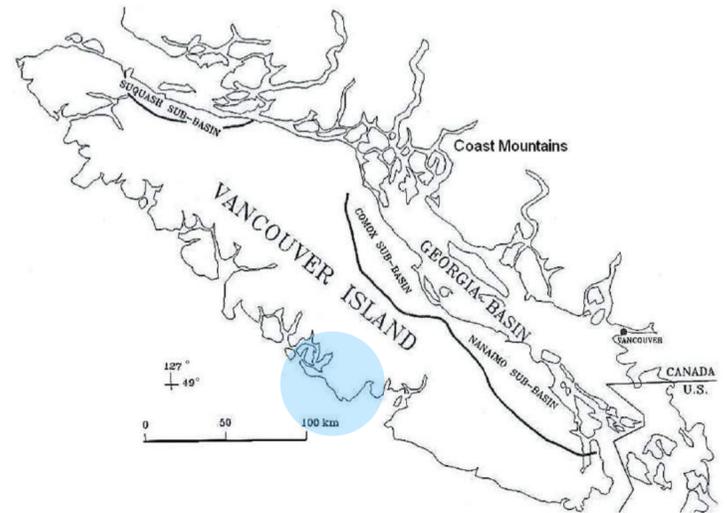


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MAJOR STUDY GOALS

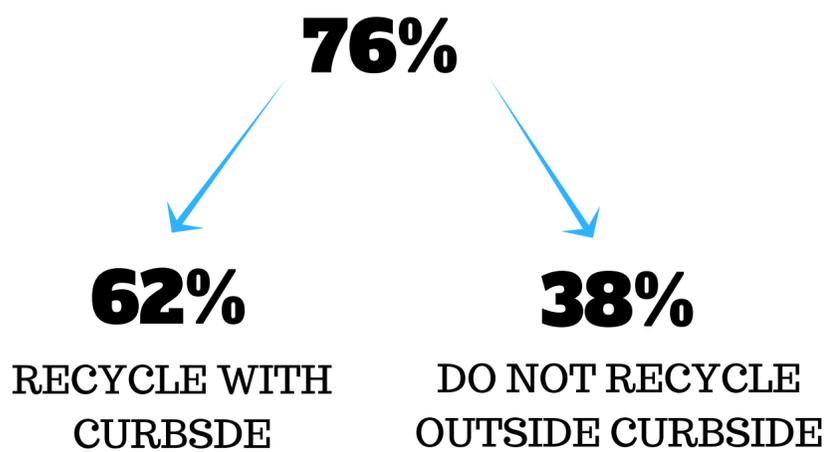
- 1) To collect valuable data to understand the type, distribution and frequency of microplastics on our coast with the help of citizen scientists.
- 2) To share our results with other marine debris and plastic pollution initiatives, the public, and government leaders to influence change and mitigate plastic pollution.
- 3) To provide educational materials and resources to engage our local community and visitors to limit single-use plastic items and find plastic alternatives.



Over 30,000 visitors come to see our displays each year. From the 490 visitors that participated in a feedback survey (between March and June 2018), 97% felt encouraged to reduce their plastic consumption after interacting with our plastic alternatives display.

PLASTIC INITIATIVE SURVEY RESULTS

CANADIAN RESPONSES



WHEN ASKED WHAT PLASTIC IS THE HARDEST TO REMOVE FROM THEIR LIVES:



THANK YOU TO OUR SPONSORS FOR
SUPPORTING THIS PROJECT !



Interested in supporting this project? You, your family, or your business can help us continue this work. If you are interested in sponsorship, please contact the Ucluelet Aquarium!

Want to get involved? We are looking for more citizen scientist volunteers to assist our efforts. Please contact us for more info!

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