

# A comparison of microplastics in blue mussels in high and low traffic areas.

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## Introduction

It is not known how microplastics affect the human health. But, due to the effects microplastics have on other organisms, it is becoming a growing concern on how microplastics could possibly affect human health. For example, they cause decreased growth and filtration rate in blue mussels (Woods et al., 2018). Through our research, we observed that microplastics have been found in shellfish throughout the world (Ding et al. 2020). Microplastics within shellfish could indicate how clean the waters of a certain area are, since the shellfish obtain the microplastics by filtering the water. Not only that, but microplastics within shellfish are concerning because because we, along with other animals, eat them, thus consuming the microplastics that the shellfish have obtained over time. While we do know blue mussels contain microplastics, we are unsure if microplastics in one area of shellfish will have more or less compared to another area (specifically in Sitka). We are also unsure on how the amount of microplastics in the blue mussels we are eating will affect people.

## Hypothesis

Our hypothesis is that blue mussels collected from Starrigavan Beach will contain fewer microplastics than mussels collected from the floating work dock, because the Starrigavan area is further away from human activity, therefore having fewer opportunities to come into contact with microplastics. The work dock, on the other hand, is closer to the wastewater treatment center; not only that, but microplastics are more likely to be found because of the fibers that would come off of the docked boats and the nets. These sources, along with laundry facilities, are some of the more significant producers of microfibers.

## Methods



Figure 1.

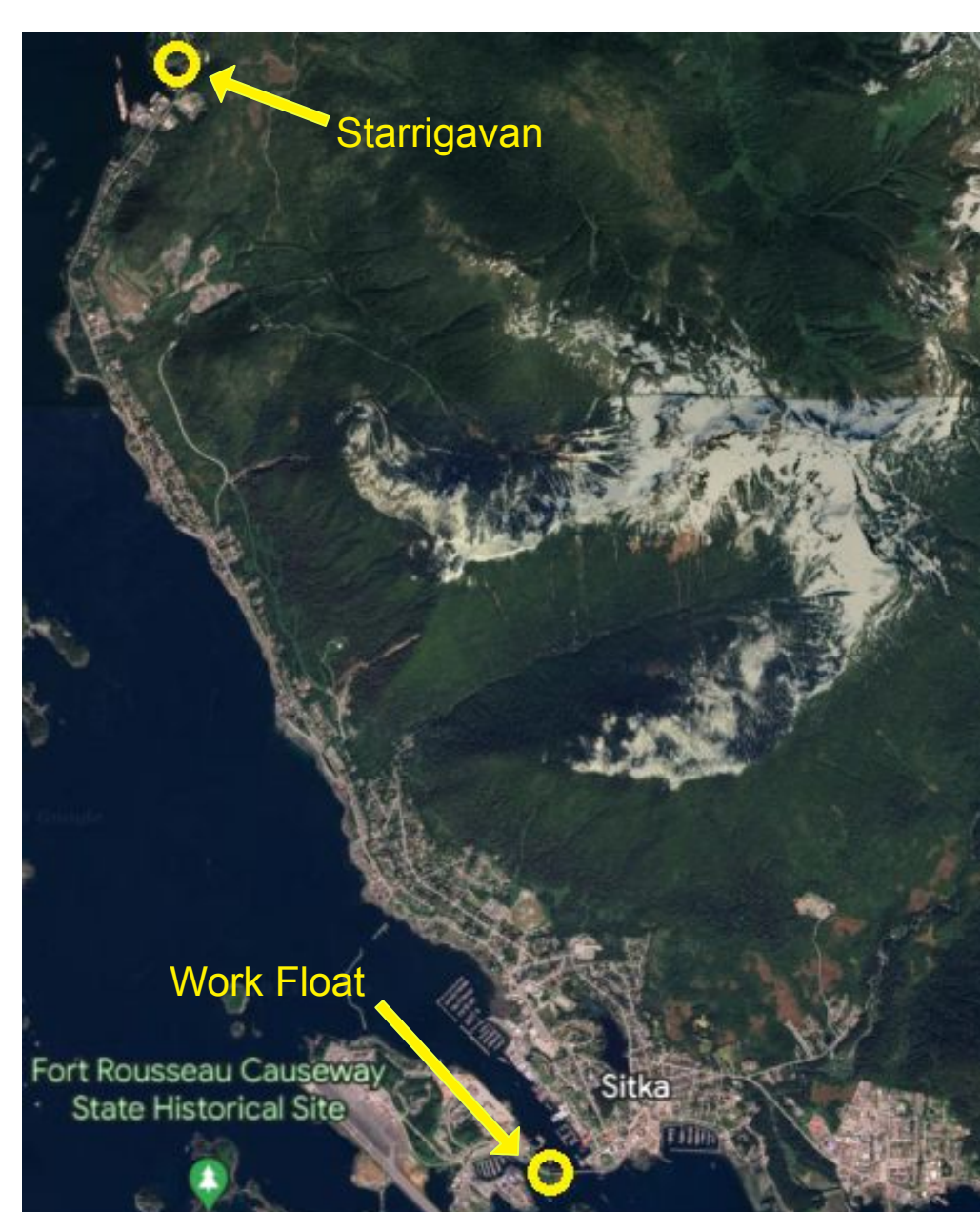


Figure 2.

Figure 1. photo of samples collected from work float  
Figure 2. photo of sampled sites where the mussels were collected from

Approximately 25 blue mussel samples were collected on the shoreline near a floating work dock just off the side of Harbor Drive on March 9th, 2023. Samples were also collected from Starrigavan beach; they were collected around October of 2022. The samples varied in shape and size. They were collected by pulling 3-5 mussels, and then wrapping them in tinfoil. This process was repeated until we reached an appropriate amount of samples. After being twice-wrapped in tinfoil, the samples were put into a plastic bag, labelled, and stored in a freezer. The samples were processed into data in a lab at the University of Alaska Southeast on March 5th, 2023. The process first started with weighing the samples as a whole. After being weighed, the samples were measured in height, width, and length. Once measured, they were then split open, and the soft body within was removed from the shell. The soft body was then weighed, transferred to a flask, and dissolved with potassium hydroxide; the resulting liquid contents are then poured over a filter. What remains atop the filter is examined for microplastics, where found microplastics are recorded on a data table. The controls, while also had filters had examined for microplastics, were slightly different. There were three separate types: a work bench, distilled water, and potassium hydroxide blanks. The distilled water and potassium hydroxide filters had gone through the same process as the dissolved blue mussels, only instead they were not mixed with anything. This was done to examine contamination in both the water and the acid. The work bench was simply a filter we put on the countertop to examine air contamination in our work area.

## Results

