

The Effects of Location and Species on Microplastics Content in Subsistence Foods

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Background

There has been a large amount of research regarding microplastics (thin threads that come off of synthetic clothes during washes). This has led to revelations that microplastics can be found in most sea life (Nicole 2021). Shellfish have been shown to have effects from microplastics. Microplastics can also have effects on other organisms such as humans (Li et al.) This makes it very important to understand the amount of microplastics in sea life, and the locations of high microplastic zones.

Hypotheses

- 1.) We expect that blue mussels and kelp harvested at Japonski Island will contain more microplastics than blue mussels harvested at Starrigavan beach. We expect this because Japonski Island has more human traffic, which we think will increase the amount of microplastics in the water.
- 2.) We also expect organisms below the sediment (cockles, littlenecks and butter clams) will have more microplastics than organisms above the sediment (seaweed and mussels), because organisms above the sediment will have water continuously washing over them washing the microplastics away.

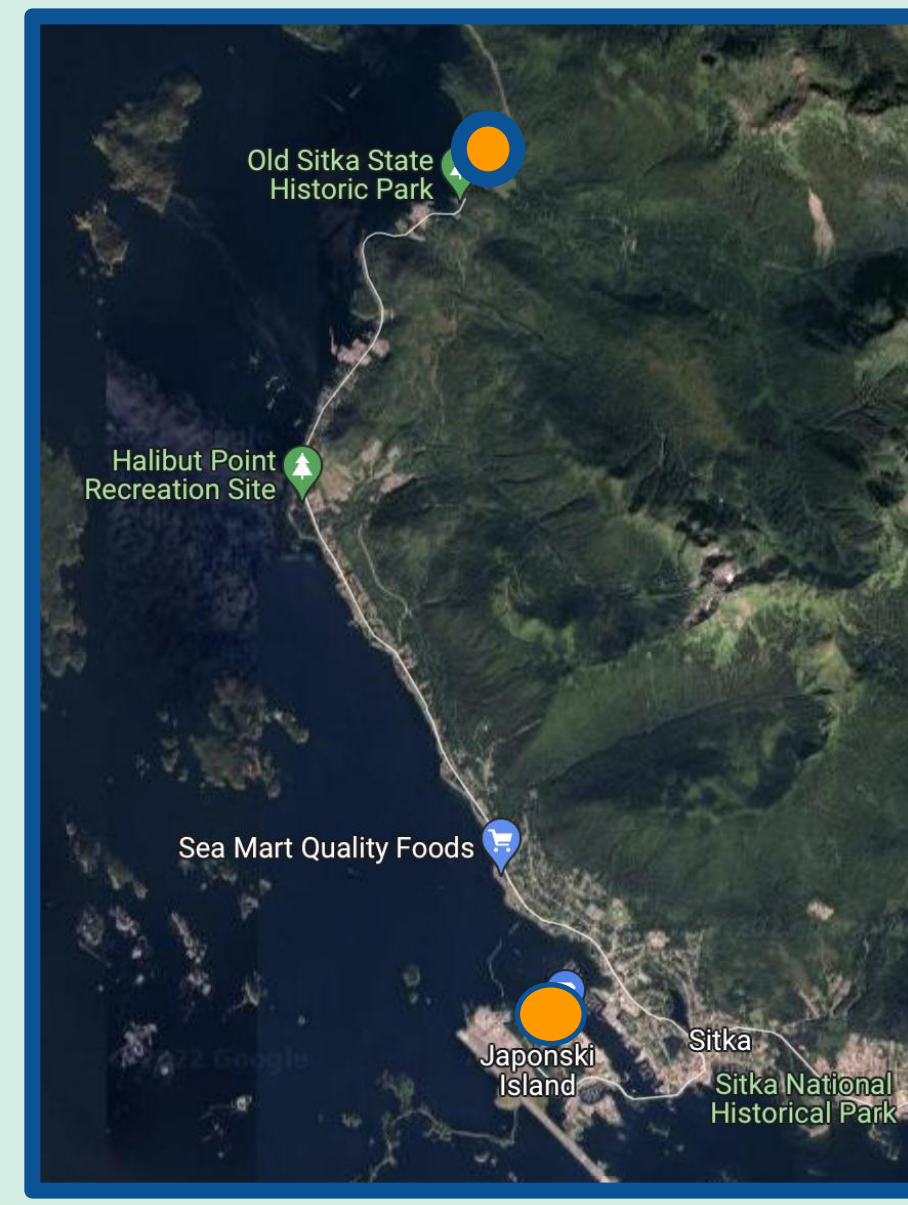
Methods



Clam Shells Being Measured



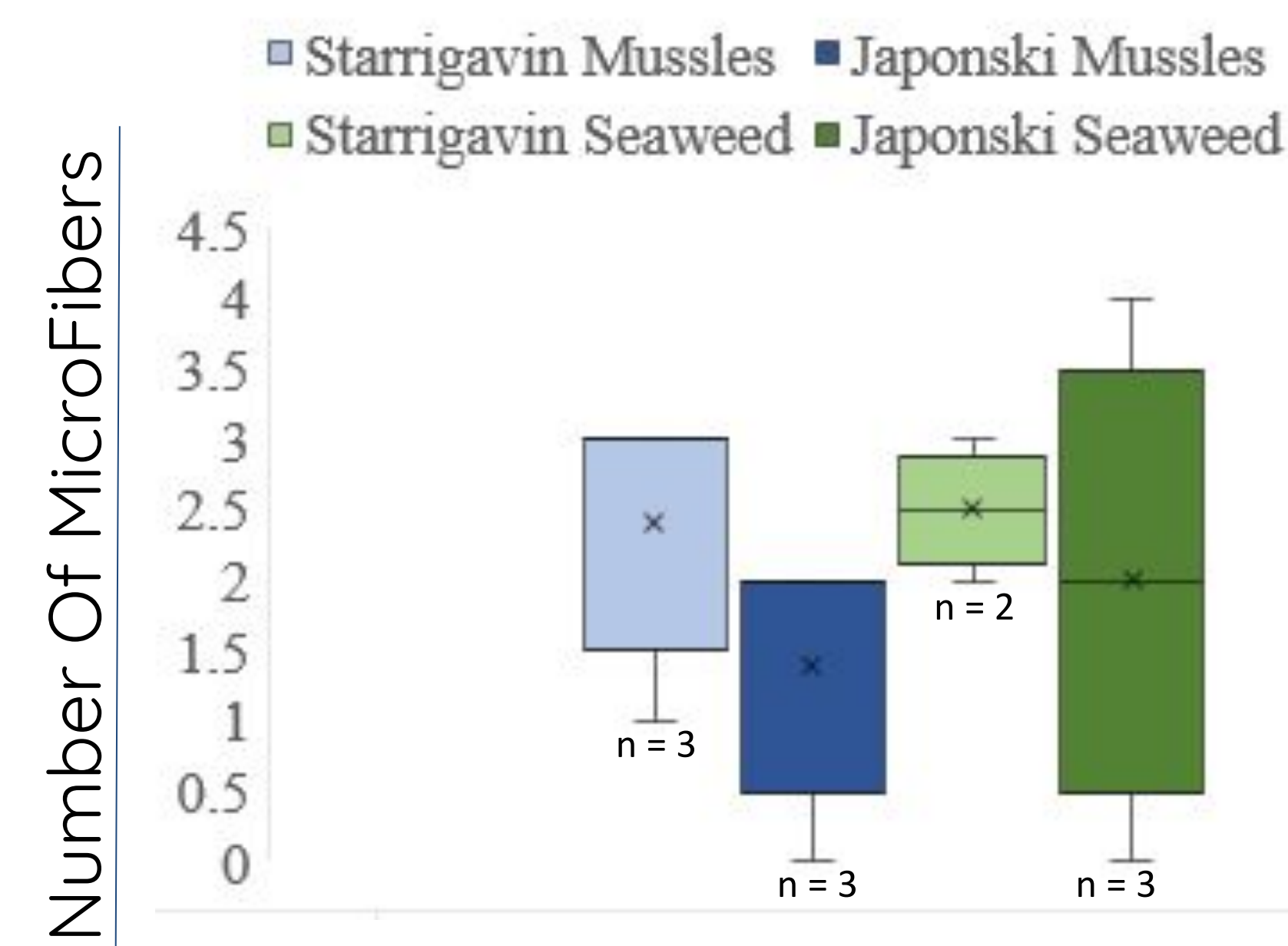
KOH Being Measured



Location of Sample Collection

- On February 19, 2022 four littlenecks, three butter clams, and one cockle were collected by digging them up next to the water at starrigavan a Beach in Sitka, AK. The samples were wrapped in tinfoil and frozen for four days.
- Four days later, the samples were measured and weighed with their shells. Then the samples were shucked and weighed again without their shells.
- The KOH needed was determined by multiplying the weight of the shucked sample by three.
- Each sample then got its own beaker with its specified amount of KOH.
- The beakers with the samples were covered with tin foil, and will sit for two weeks.
- The samples were drained and their contents were examined under a microscope for microplastics. Microplastics were identified as small threads that melt when touched with heat.

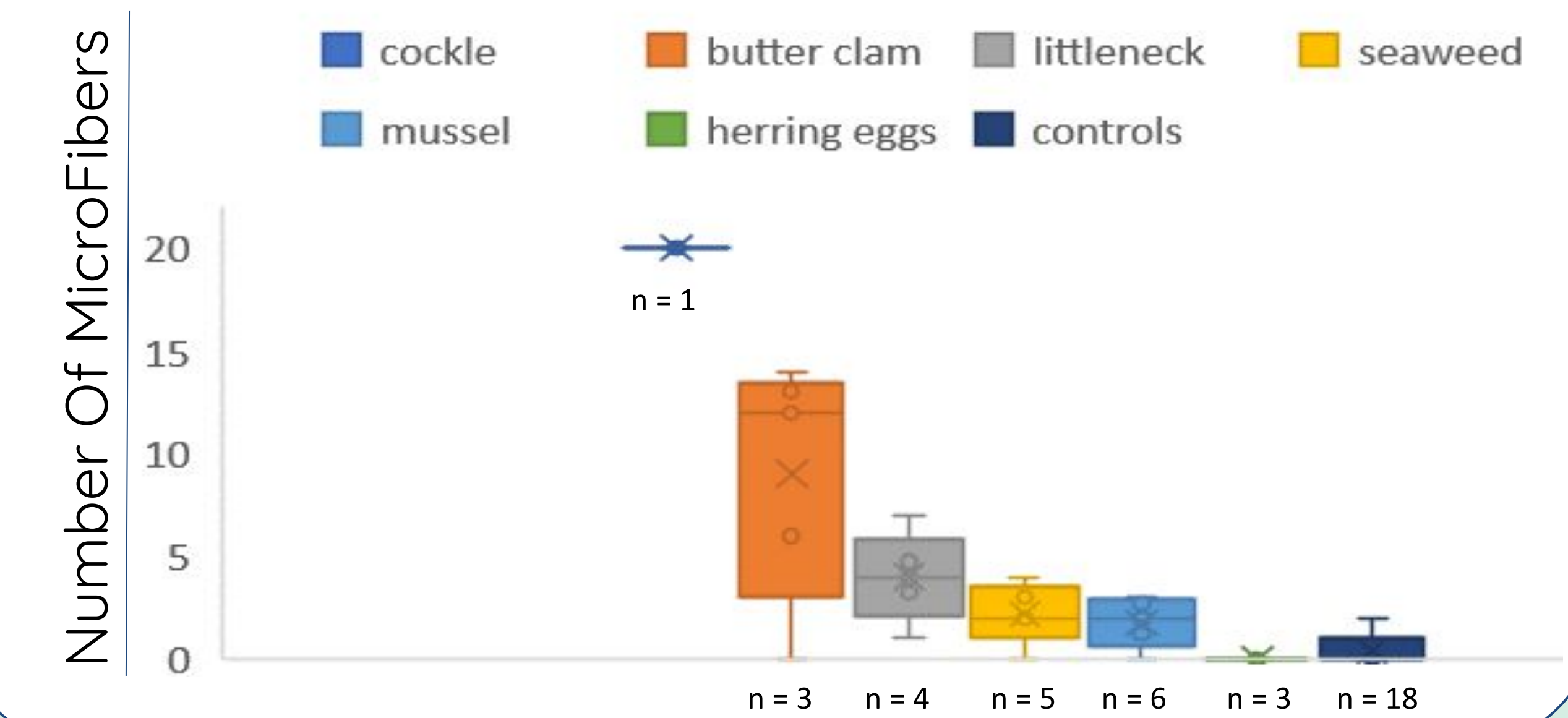
Figure 1: Site Comparison



Blue mussels and seaweed from Starrigavan have more microplastics than the ones collected at Japonski

Results

Figure 2: Species Comparison



The organisms in the soil had more microfibers than the organism above the soil

Microplastic Under a Microscope



Discussion

- 1.) The data we gathered does not support our first hypothesis. The mussels and seaweed collected from Japonski did NOT have more microplastics than the seaweed and mussels collected at Japonski.
- 2.) For the second hypothesis, the data shows that organisms under the sediment did indeed contain more microplastics than organisms above the sediment. This supports our hypothesis that organisms above the sediment will have water washing away microplastics.

References

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