

Testing PST levels in littleneck clams near a landfill site on False Island Beach in Craig, Alaska

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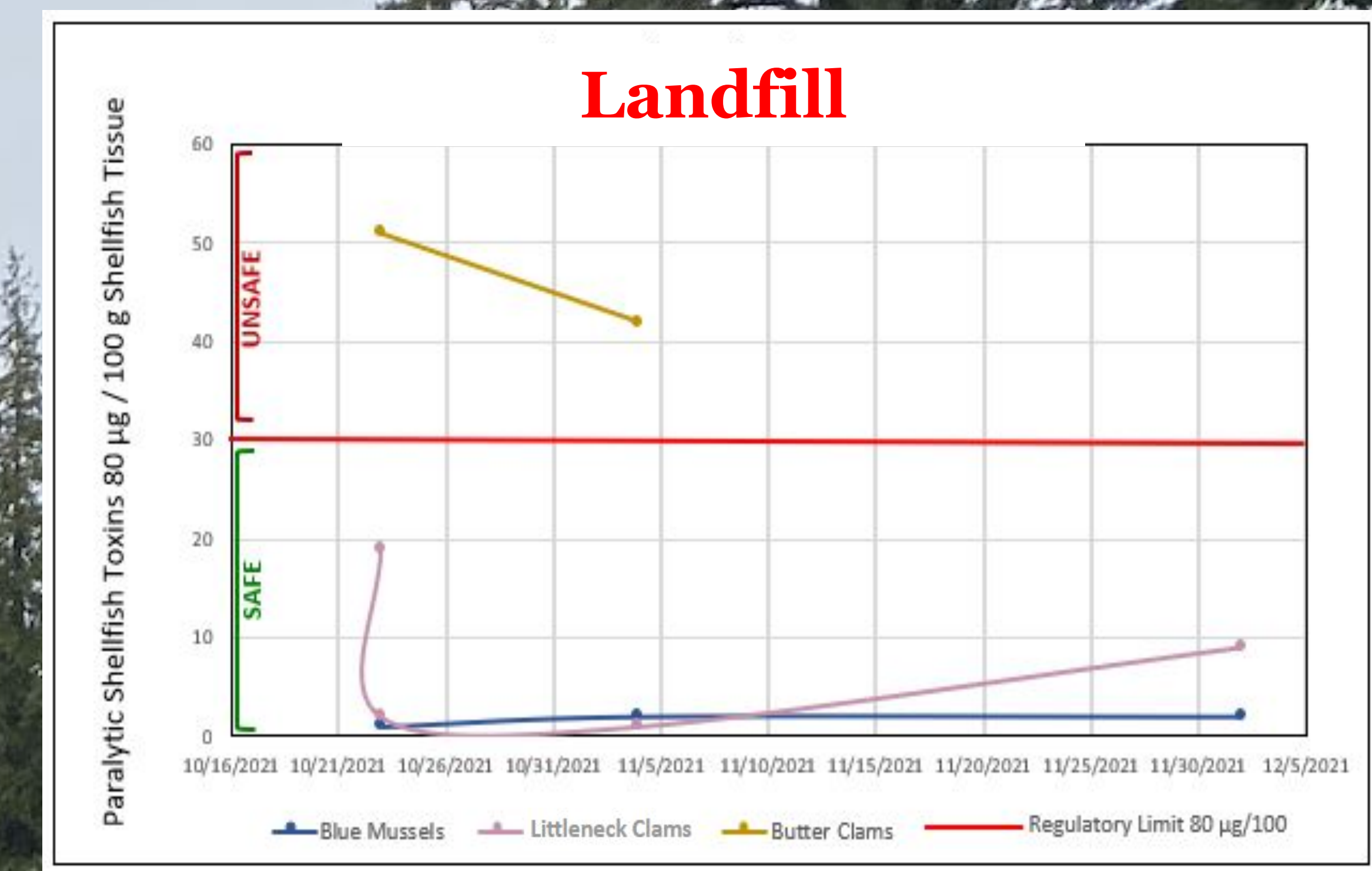
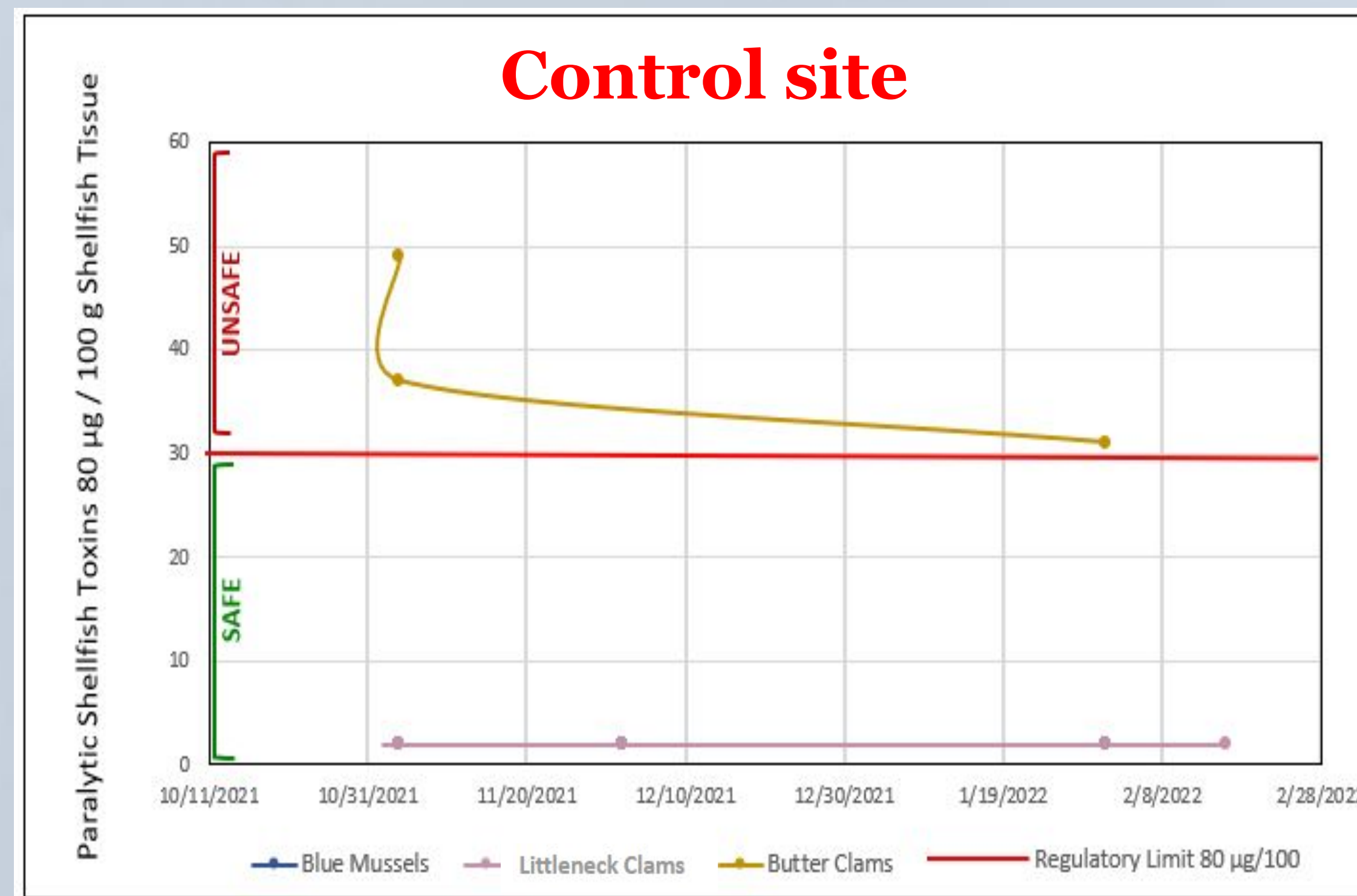
Results

Hypothesis

We predict that littleneck clams will have different PST levels on two different sites within a one mile radius because of the the landfill runoff that streams down to the second site.

Introduction

Clams of all varieties have been a part of traditional harvest since time immemorial to the native population of Southeast Alaska. There have been cases listed of possible Paralytic Shellfish Poisoning (PSP) in the state regarding subsistence consumption (Porter et al. 2011), but there isn't a significant amount of completed research regarding whether Paralytic Shellfish Toxins (PST) levels vary on a single beach (Harley et al. 2020). We decided to compare Paralytic Shellfish Toxins (PST) levels from the same stretch of the beach in two different areas. Our site was chosen specifically in an area, near a landfill with impacting environmental elements that could contribute to harmful algal blooms (McPartlin et al. 2017). The goal of this project is to be able to inform the community of Craig about the risks of Paralytic Shellfish Toxins (PST) in particularly littleneck but also in Blue Mussels and butter clams, and factors that may affect toxin levels on a local scale.



- The two littleneck clams with the highest PSTs levels were both found at the landfill site
 - The only species above the regulatory limit are the butter clams
 - the highest PST level was the butter clam found at the landfill
 - none of the blue mussels had PSP detected

Methods



Figure 1
Littleneck clam samples

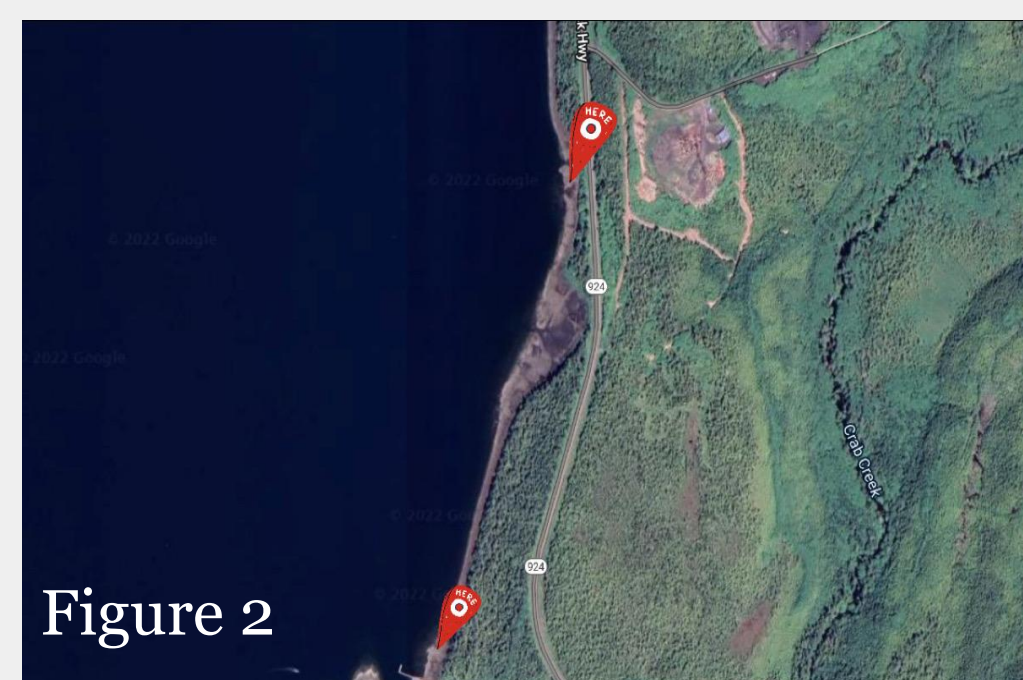


Figure 2
Satellite image of the False Island Boat Launch and the Landfill beach.

- Littleneck clam samples were gathered at False Island Boat Launch and the Landfill beach.
- Around 10-12 littleneck were gathered during low tide.
- Littleneck clam samples were gathered at low tide each month at 5:30 from January through March.
- Samples were brought back to the lab to be prepared to send off to the Sitka Tribe of Alaska Environmental Research Lab to be separated and tested using a receptor binding assay at NOAA Hollings Marine Laboratory.



Discussion

As the result of the research that was conducted, our hypothesis was supported by the data. PST levels didn't vary much across time or between sites so the support for our hypothesis is not strong. This small variability could be because phytoplankton aren't as active in the winter months as in summer. If we were able to continue this project through spring, we might have seen a lot more change in the data. At the False Island boat launch, or control site, leaching also could have been a contributing factor to PST levels because the sites are close together.

References:

1. Porter, K.; Fearey, D.; Esposito, T. Paralytic Shellfish Poisoning in Southeast Alaska , May – June 2011. State Alaska Epidemiol. 2011, 17, 99503.
2. Mcpartlin, D.A.; Loftus, J.H.; Crawley, A.S.; Silke, J.; Murphy, C.S.; Kennedy, R.J.O. ScienceDirect Biosensors for the monitoring of harmful algal blooms. Curr. Opin. Biotechnol. 2017, 45, 164–169.

More information:

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