



## Introduction

Glacier Bay National Park and Preserve have monitored its humpback whale population since 1985 via photo identification. One of the main concerns of the park is to ensure that the habitat, prey, and feeding activity of humpbacks are not disturbed by anthropogenic forces, which include rising ocean temperatures and noise pollution. To better understand humpback prey patch composition, this study is utilizing environmental DNA (eDNA) to confirm current understanding of prey patch makeup. We decided to test for Pacific Herring (*Clupea pallasii*), Walleye Pollock (*Gadus chalcogrammus*), Capelin (*Mallotus villosus*), and Sand Lance (*Ammodytidae*), as these are known to be common prey of humpback whales.

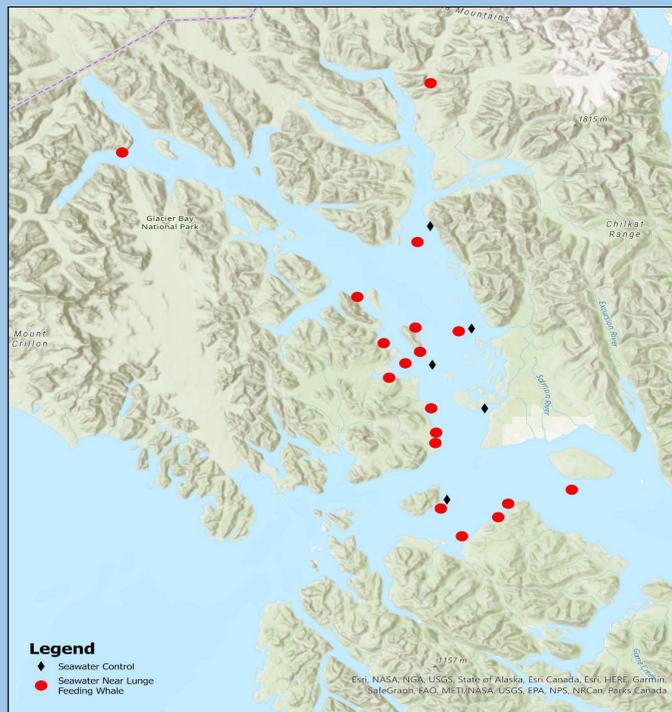
## Objective

The purpose of this study is to identify the prey of humpback whales in Glacier Bay National Park and Preserve.

## Methods

- Collect water samples
  - Two samples, each two liters, per collection site
- Filter eDNA from Collected Water Samples
- Extract eDNA from filters
- Perform PCR with MiFish and a species-specific PCR
- Perform Digital PCR (dPCR) on samples

Image 4. Glacier Bay sample sites.



Map: Chris Gabriele

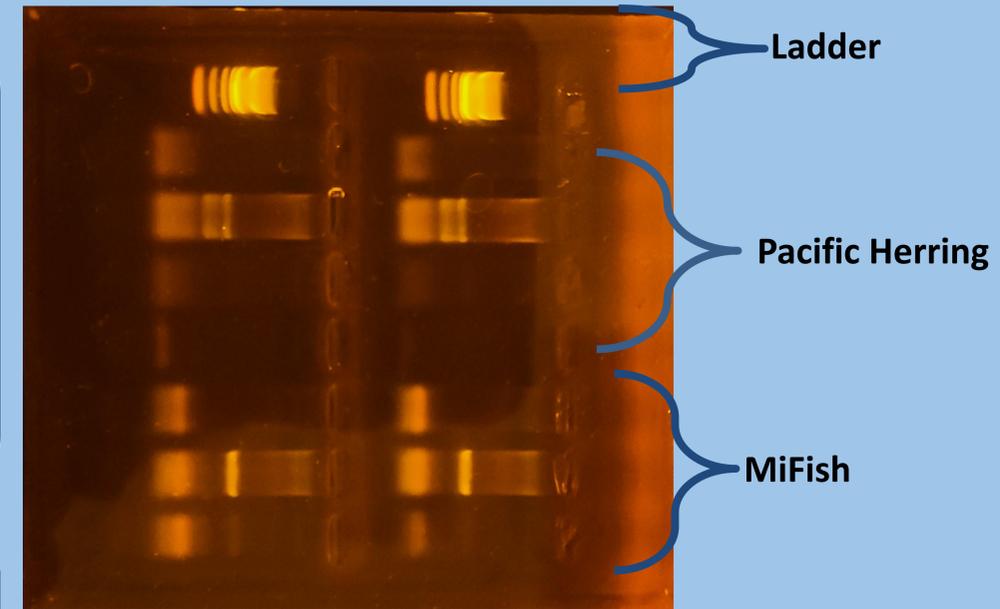


Image 5. Gel electrophoresis of PCR with MiFish and Pacific Herring PCR. Photo: Rhayne Loggins

## Results/Discussion

- Found indication of high DNA concentration from PCR
- Next steps:
  - Create primers for Walleye Pollock, Capelin, and Sand Lance
  - Continue with species-specific PCR
  - dPCR of samples for detection and quantification of specific species.
  - Collect more samples during the 2024 season
- dPCR less expensive than metabarcoding

## References

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Image 1. Water sample collection. Photo: Chris Gabriele



Image 2. Filtering water samples. Photo: Rhayne Loggins

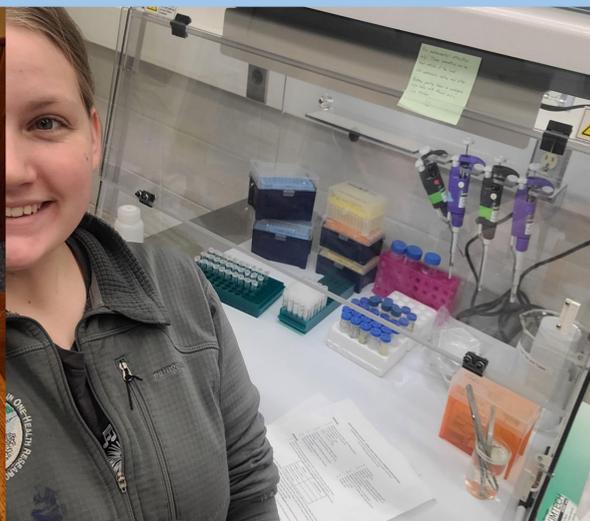


Image 3. Extracting eDNA from filters. Photo: Rhayne Loggins