

# Contention in the Conservation of the Western Steller Sea Lion

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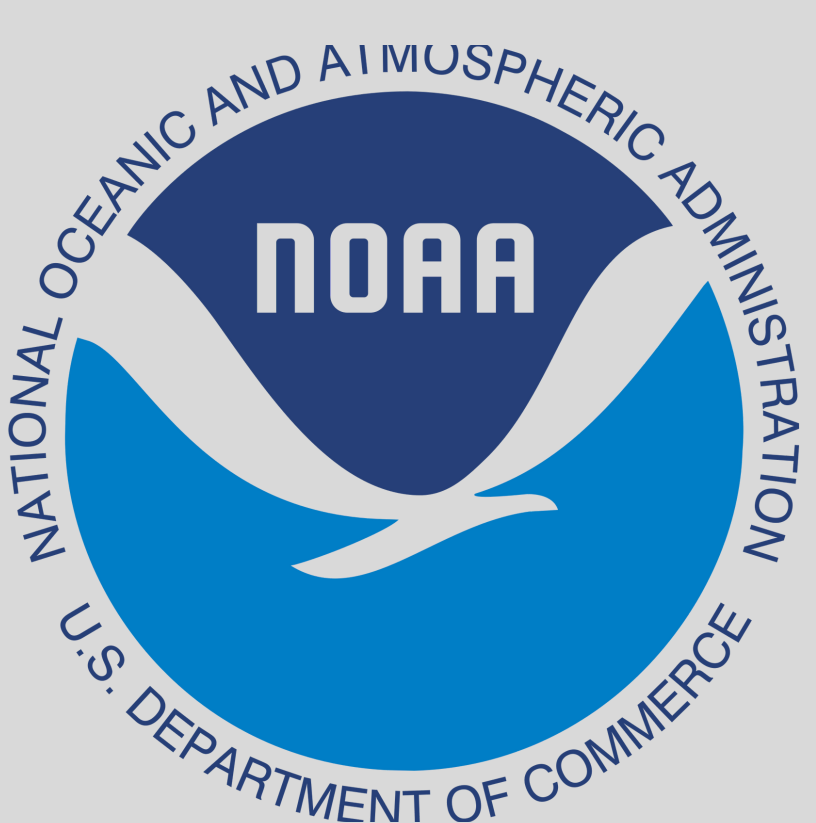
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## Background

- The western stock of Alaskan Steller sea lion are currently struggling and listed as endangered under the Endangered Species Act (Figure 1)
- Despite efforts, the population has failed to recover
- Historically, stakeholders have held differing opinions on the impediments to recovery
- This emphasizes the need for further research

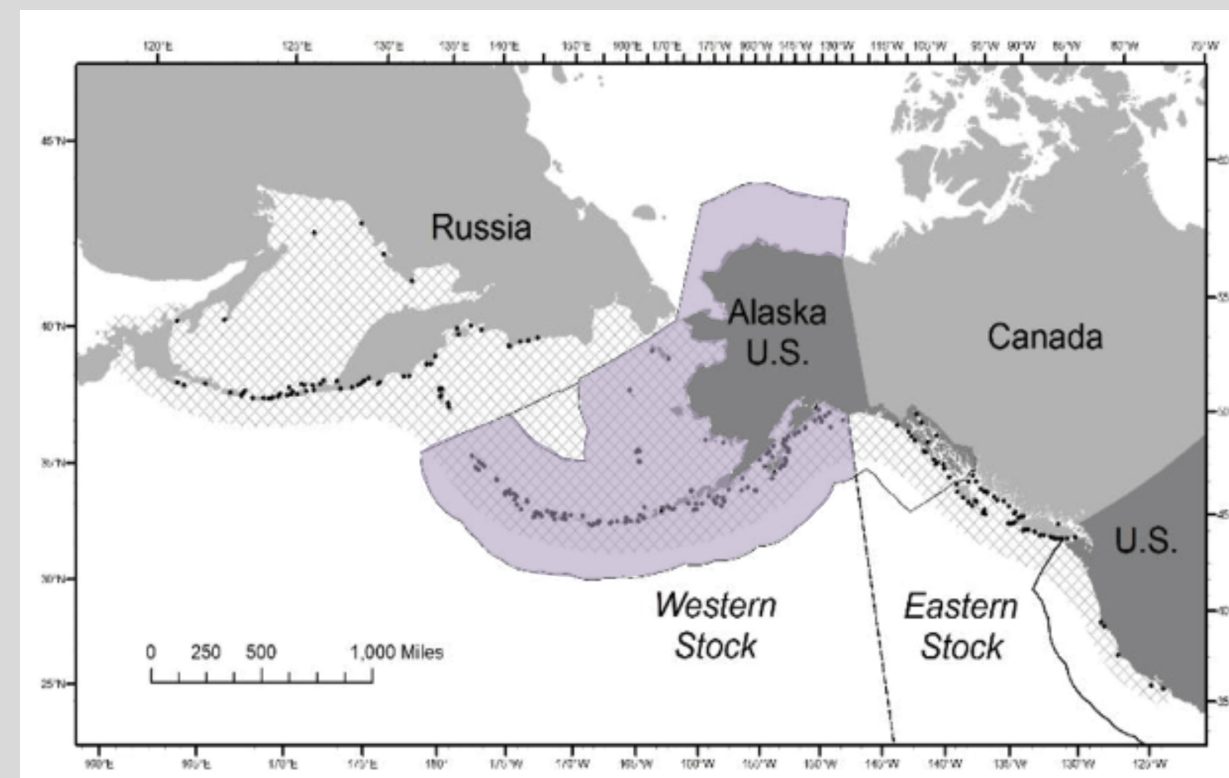


Figure 1: Distribution of the two stocks of Alaskan Steller sea lion. The western stock is highlighted in purple. Source: NOAA

## Research Question

What are the social, economic and environmental factors that caused the most recent decline in the western stock of Steller sea lion in Alaska and how do the opinions vary among stakeholders?

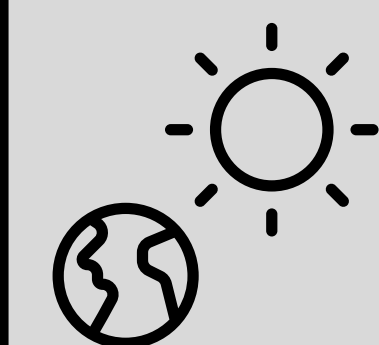
## Internship/ Methods

- Interned at the National Oceanic and Atmospheric Administration (NOAA) in the Marine Mammal Lab from January to March 2022
- Helped the lab research the Steller sea lion species in Alaska
  - Primarily helped with obtaining an accurate species count
    - Did this by assessing aerial imagery processed with an Artificial Intelligence (AI) algorithm to identify sea lions by age and sex classes

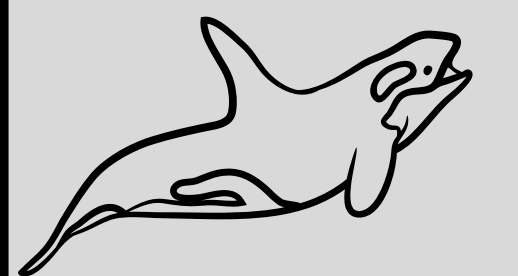
- Collected data in two ways
  - Analyzed peer reviewed literature and conducted interviews with stakeholders from each of the five stakeholder categories (Government, Academia, Industry, NGO, Indigenous)

## Results

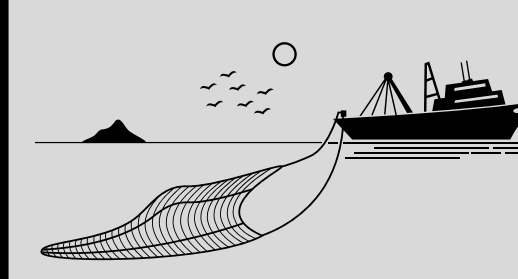
### Four Main Stakeholder Hypotheses



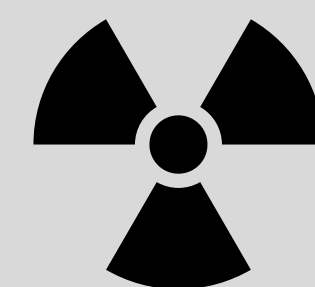
Environmental Change: changes in the natural environment negatively affected the population



Predation: non-human predation, specifically predation by killer whales led to a decrease in the population



Competition with Fisheries/ Industry: fisheries depleted the ecosystems' fish supply leading to nutritional stress for Steller sea lion



Exposure to Contaminants: toxic contaminants found in Steller sea lion harmed the population

### Stakeholder Opinions

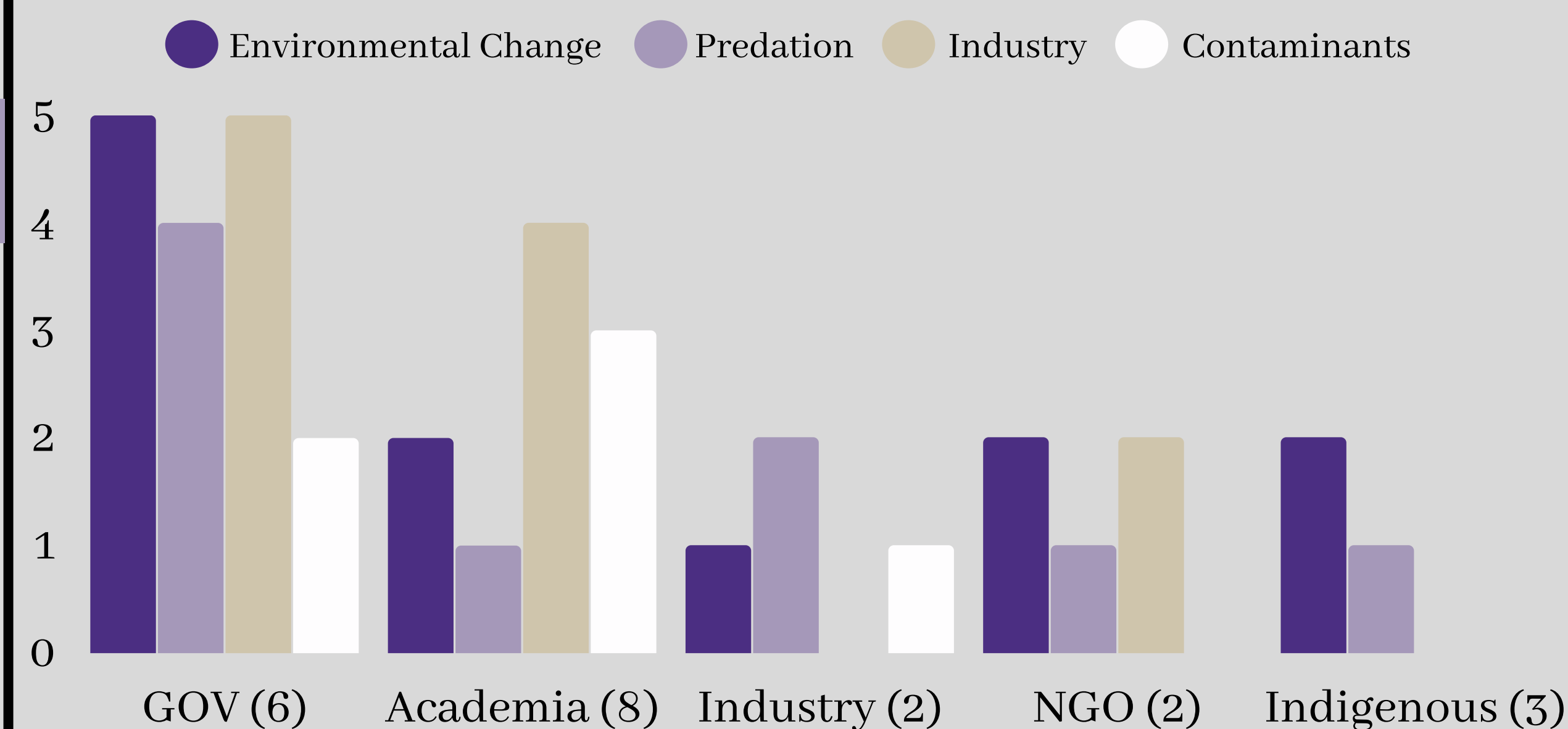


Figure 2: Stakeholder group's opinions on the cause of the decline. The graph shows the number of times each stakeholder group attributed each hypothesis as the cause of the decline. The numbers in parentheses indicate the number of observations from each group which encompasses both interviews and literature reviews.

- Stakeholders had very different opinions on which of the four hypotheses likely caused the decline (Figure 2)
- I found the biggest points of contention were focused around the effects of commercial fisheries, the validity of the predation hypothesis and the danger of contaminants

## Takeaways

- In response to my research question, it is likely one or more of the hypotheses contributed to the recent decline
- Stakeholders are very divided on the root cause and tend to support the hypotheses that align with their private interests



Figure 3: Western Steller sea lion in Alaska, female (left) and male (right). Source: NOAA

## Significance and Next Steps

- Understanding stakeholder perspectives and the hypotheses attributed to the decline are crucial for future work
- Next steps should include:

### Additional Funding

Obtaining additional funding for marine mammal research is integral to getting answers and implementing recovery measures

### Ecosystem-Based Management

The interconnectedness of ecosystems allows for benefits to managing entire ecosystems rather than individuals

### Sustainable Fisheries

Important to focus on how we are sustaining the current fish population as well as the impact fishing is having on the rest of the ecosystem

### Stakeholder Dialogue

Open conversations about the best way to manage the population with all stakeholder groups would likely be very productive

## Acknowledgements

I wanted to thank Katie, Burlyn and Professor Thompson for making my capstone experience so great and for helping me develop my research. I also wanted to thank my friends and family for the constant support throughout Capstone and my time at the University of Washington!

