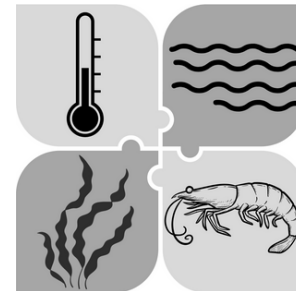# Changing coastal productivity: Using sediment cores, water properties and archived plankton data to identify changes at the bottom of the food web in BC's coastal waters

Researchers conducting fieldwork by boat in a central coast inlet.

This project will investigate whether the rate and/or type of primary productivity has changed in BC coastal waters (e.g. a decrease in total phytoplankton or a change from a short, diatom-based food chain to a longer food chain based on smaller phytoplankton), as a consequence of climate change. Such a change is thought to have occurred in Puget Sound, with negative effects on the early marine survival of juvenile salmon. DFO geochemical oceanographer (SJ) is collaborating with biological oceanographers from Canada and the United States, to permit a multidisciplinary approach to the research question.

Researchers leverage existing samples, data, and monitoring programs. Data is combined from new and existing sediment and seawater samples with a trend analysis of archived taxonomic data. Geographic and temporal overage of existing data is expanded, while adding new biomarker analysis (sterols and fatty acids). It is crucial for managers to understand the causes of trends and variability in

Take-aways
- Has climate change reduced the amount of plankton at the bottom of the food web in BC waters, reducing the carrying capacity for salmon?
- Have smaller phytoplankton replaced diatoms, lengthening the food chain and making food less nutritious for salmon?
- This study uses chemical markers in sediment cores and water samples to investigate food web changes in BC coastal inlets.

salmon populations in order to set catch limits. This project will determine whether a change in primary productivity (carrying capacity) could be responsible for observed long-term declines in some species of salmon.
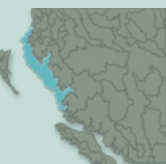

Deployment of sediment core sampling equipment.

Timeline
- ✓ November 2023: Five day sample collection
- ✓ March 2024: Twelve day sample collection
- ✓ March 2024: Annual report
- ✓ Oct 2024: 13-day Inlet sample collection
- ↻ March 2025: 10-day sample

DFO Science Division
Ocean Sciences

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Ecology and Biogeochemistry

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Location
BC Coastal Inlets

Project ID
2406