Title: Studying Long-Term Changes in Arctic Ocean Ecosystems near Qikiqtarjuaq

Primary Applicant: Natasha Leclerc, Université Laval

Background

Tiny marine plants called phytoplankton are the foundation of Arctic marine food webs. They help feed fish, clams, and many other animals that are important to northern ecosystems and harvesting. Phytoplankton are also important because they absorb carbon from the atmosphere.

The amount of phytoplankton in the ocean changes from year to year as sea ice, sunlight, water temperature, and other environmental conditions change. Understanding how these changes have occurred over the past hundreds of years can help us better understand how Arctic marine ecosystems are responding to climate change and other human activities, including future coastal development.

Some marine organisms, such as clams and coralline algae, grow in yearly layers similar to tree rings. These layers preserve information about past ocean conditions and allow scientists to study how the marine environment has changed over time including phytoplankton dynamics.

Project Objectives

This project will study clams and coralline algae collected near Qikiqtarjuaq (within 115 km) to better understand long-term changes in the marine environment and phytoplankton.

The project has two main activities:

1. Collect clams and coralline algae from coastal areas around Qikiqtarjuaq.
2. Install a small underwater monitoring platform for one year to study how coralline algae grow under changing environmental conditions. Platform will be removed at the end of the study.

Whenever possible, fieldwork will be coordinated with other research projects to reduce environmental impacts and minimize demands on community members.

Field Activities

Fieldwork will take place between August 2026 and October 2029. Research will be based out of Qikiqtarjuaq Research Centre and will involve boat trips and SCUBA diving near Qikiqtarjuaq.

Community Involvement

Working with the community is an important part of this project. Inuit Knowledge and observations will help guide the selection of study sites and improve our understanding of environmental change. Working with local guides and partners will also ensure that fieldwork does not impede on local hunting activities.

The project will provide opportunities to employ local boat operators and field assistants and, where possible, offer training in scientific diving and laboratory techniques. Community members have already contributed valuable knowledge by identifying potential sampling locations and sharing their observations of the local marine environment.

Sharing Results

Project updates will be shared with the Hamlet and the Hunters and Trappers Association (HTA) through annual reports and community presentations. Outreach activities will also be offered at the local school.

The final results will be shared with the community before being published in scientific journals and presented at conferences. Whenever possible, Inuit partners will be invited to participate in presenting the research.