



ΛΓΔΕΖΗΘΙΚ
 ΞΟΠΑΡΣΤΦΧΨΩ
 Scientific Research

📅: Friday, July 3, 2026

Period of operation: from 2026-08-01 to 2029-10-31

Natasha Leclerc
 Université Laval
 315 rue Saint-Jean, Apt. 421
 Québec Québec G1R 1N9
 Canada
 Téléphone: 6475235994, Courriel:

ፍጹሙ ለሥራ ለሥራ ለሥራ ለሥራ ለሥራ

ᐅᓂᓕᓴᓄᓂ: Collection and growth monitoring of sclerocronological organisms to understand hydro-ecological changes in Baffin Bay
Primary Applicant: Natasha Leclerc, Université Laval
Background and Justification Phytoplankton (microalgae) provide essential ecosystem services, including carbon sequestration and supporting marine food webs. Their abundance and composition vary across seasons and years in response to nutrient availability, sea-ice cover, light, and temperature. Understanding how phytoplankton dynamics have changed over the past centuries can improve our knowledge of carbon cycling and food availability in Arctic ecosystems. Establishing baseline information for Qikiqtarjuaq is particularly important given ongoing environmental change, the planned industrial port development, and the importance of phytoplankton to traditional foods such as clams and fish. Phytoplankton influence ocean chemistry, making long-lived organisms that record chemical conditions during growth valuable archives of past environmental change. Clams and the coralline alga *Clathromorphum compactum* are examples of such organisms. They can live for decades to centuries and produce annual growth layers similar to tree rings. Analysis of these layers can provide insights into long-term changes in ocean chemistry and phytoplankton dynamics since industrialization.
Objectives The project aims to collect clams and coralline algae for geochemical analyses to quantify temporal changes in phytoplankton dynamics in coastal regions of Baffin Bay near Qikiqtarjuaq. This will be achieved through:
Collection of clams and thick coralline algal crusts around Qikiqtarjuaq.
Deployment of a one-year coralline algae growth-monitoring platform.
In collaboration with other research teams operating near Qikiqtarjuaq, we will minimize environmental impacts and reduce demands on community members participating in research activities.
Methods and Timeline Fieldwork will begin in August 2026 and continue through October 2029, laying the foundation for future historical reconstructions of phytoplankton dynamics. Activities will be supported by Université Laval's Research Station and involve a team of 4–6 visiting scientists and, ideally, 4–6 community members. Work will involve near-monthly SCUBA dives and boat-based sampling.
1. Coralline algae survey and specimen collection (August–September 2026) In conjunction with a kelp forest survey led by Camille Lavoie (NRI approved), we will conduct a coralline algae survey using drop-down cameras and SCUBA. Thick coralline algal crusts will be sampled opportunistically using a hammer and chisel, with a maximum of 100 samples collected per site. Clams will also be collected opportunistically throughout the project, and shells will be retained for geochemical analyses at Université Laval.
2. Coralline algae growth-monitoring platform Following site selection, 100–120 small coralline algal crusts will be collected and marked with a non-toxic dye (e.g., alizarin) to establish the start of the growth experiment. Specimens will be attached using underwater cement to PVC plates secured to the seafloor with steel rods or rock bolts, depending on substrate type. Sensors measuring temperature, salinity, light, pH, and photosynthetically active radiation (PAR) will be attached to the platform and exchanged during near-monthly dives to reduce fouling-related measurement errors. During these visits, 8–10 coralline algal crusts will also be collected by SCUBA. At the end of the experiment, the platform will be removed. Collected specimens will be returned to Université Laval for analysis. Water samples (1 L) will be collected for carbonate and nutrient chemistry analyses, and sediment samples will be collected for biogeochemical characterization.
Community Involvement A key component of this project is the incorporation of Inuit Knowledge and the involvement of Qikiqtarjuaq community members, many of whom have expressed interest in understanding historical ecosystem change. We will provide opportunities for training in diving and laboratory techniques and employ local boat operators and field technicians throughout the project. Local divers have already played an important role in identifying potential collection sites through their observations and experience underwater. The project will contribute to community-based environmental monitoring and support discussions regarding ongoing changes affecting coastal ecosystems in the region.
Knowledge Sharing Plan We will provide annual reports to the Hamlet and HTA, present project updates during each community visit, and deliver outreach activities at the local school. Final results will be shared with the HTA through a formal presentation, published in open-access journals, and presented at scientific conferences with Inuit partners whenever possible (e.g., ArcticNet and the European Geosciences Union).

ᐅᐃᐱᐅᐅ: N/A Inuktitut or English are the common languages used in Qikiqtarjuaq.

[illegible]

Operations Phase: from 2026-08-01 to 2029-10-31

Λ Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω

ᐊᑦ	ᖃᓄᐃᑦᐅᑦᑦ ᐱᑦᑦᐱᑦᖃᑦᐱᑦᐱᑦ	ᑭᑦᐱᑦ ᓄᐊᑦᐱᑦ	ᐅᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ ᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ	ᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ ᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ ᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ	ᖃᓄᐱᑦᐱᑦᐱᑦ ᓄᐊᑦᐱᑦᐱᑦᐱᑦᐱᑦ ᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦᐱᑦ
Only marine areas near the coast will be used to collect clams and coralline red algae specimens.	Scientific/International Polar Year Research	Marine	Region has a long history of oceanographic and biological research much of which has been led by Université Laval and Memorial University of Newfoundland including the Green Edge project (2015-2016). The area has also long been used for sea mammal hunting by Inuit. Coralline algae is known to be thick and of the desired species in the southern extent of the polygon from prior research in 2014.	n/a	At most, 115 km away from Qikiqtarjuaq
The platform will be installed under seawater near the coast in this zone near the Island of Qikiqtarjuaq	Scientific/International Polar Year Research	Marine	Area surrounds the community of Qikiqtarjuaq, and has a long history of hunting and use for travel for Inuit since time immemorial. The region also has a long history of oceanographic and biological research much of which has been led by Université Laval and Memorial University of Newfoundland including the Green Edge project (2015-2016).	n/a	At most 25 km away from Qikiqtarjuaq.

[illegible]

ᓄᑦᕐᒃ	ᐱᖅ	ᔭᑲᑉᐸᐳᖁᖏᖅ	ᗫᑦᕈ ᐴᙰᐵᐤᐣᐤᐱᐳᖅ
ᑭᑯᑦᕋᐳᑦ	Laila Alookie	Qikiqtarjuaq Research Centre	2025-12-20
ᑭᑯᑦᕋᐳᑦ	Sammy Qappik	N/A	2025-10-26
ᑭᑯᑦᕋᐳᑦ	Jaypootie Aliquatuqtug	Hunters and Trappers Association	2026-01-21

ᑕᐃᕐᕐᕐ ᐱᕐᕐᕐ ᐃᕐᕐᕐᕐᕐ

ᐃᕐᕐᕐᕐ ᐱᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐱᕐᕐᕐᕐᕐ:

South Baffin

ᑕᐃᕐᕐᕐ ᐱᕐᕐᕐ ᐃᕐᕐᕐᕐᕐ

ᑕᐃᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ	ᐃᕐᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐᕐᕐ	ᐃᕐᕐ ᐃᕐᕐᕐᕐᕐᕐ	ᐃᕐᕐᕐ ᐃᕐᕐᕐᕐᕐ/ ᐃᕐᕐᕐᕐᕐᕐᕐᕐᕐᕐᕐ	ᐃᕐᕐᕐᕐᕐᕐ
Nunavut Planning Commission	NPC (File #151191) determined that project falls outside an area of applicable regional land use plan	Active	2026-06-03	
Hunters and Trappers Associations/Organizations	Approval letter provided by Nattivak HTO Chairperson, Jaypootie Aliqatuqtuq.	Active	2026-02-18	
ᐃᕐᕐᕐ	Authorization from Department of Fisheries and Oceans will be sought in the next week for collection.	Not Yet Applied		
ᐃᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐᕐᕐᕐᕐᕐ	Application for research permit to conduct research starting in August 2026. Application submitted June 4, 2026.	Applied, Decision Pending		

Project transportation types

Transportation Type	ᐃᕐᕐᕐ ᐃᕐᕐᕐᕐᕐᕐᕐ	Length of Use
Water	Small boat craft (summer) or skidoo (winter) to collection or growth monitoring platform sites.	

Project accomodation types

ᐃᕐᕐᕐᕐᕐᕐ

אבגדהשקט

[illegible]

ᐃᓕᓕᓕ ᐱᓕᓕ ᐃᐅᓕᓕᐃᓕᓕᓕ ᓕᓕᐃᓕᓕᓕ	ᓕᓕᓕᓕᓕ	ᐃᓕᓕᓕᓕᓕ - ᓕᓕᓕᓕᓕᓕ	ᓕᓕᓕ ᐃᐅᓕᓕᓕᓕᓕ
Hand-held pneumatic drill	1	40 x 40 cm	Used to screw plates into rocks (if required depending on the site) at coralline red algae monitoring site during installation day.
Personal SCUBA Equipment	4	50 x 100 cm	Used to aid divers in collecting specimens and installing monitoring site
Environmental Loggers	4	10 x 30 cm	Photosynthetic active radiation, light, temperature, salinity and pH loggers to be installed at 20m depth at monitoring site
Small vessel	1	10-15 m	Local rental through outfitter and guide to bring researchers to and from field sites

[illegible][illegible]

AL^{5b} ◀^{5b} C ▶^{5b} L^{5b} ▶^{5b}

$\Delta^c \rightarrow \text{Cl}^{\text{sb}} \rightarrow \Delta^{\text{sb}} \text{C} \Delta^{\text{sb}} \sigma \Delta^{\text{sb}} \Delta^{\text{sb}}$	$\text{sb}^{\text{sb}} \Delta \Gamma^{\text{sb}} \text{C}^{\text{sb}} \text{C}^c \sigma \Delta^{\text{sb}} \Delta^c$	$\text{sb}^c \Delta \Gamma^{\text{sb}} \text{C}^{\text{sb}} \text{C}^c \sigma \Delta^{\text{sb}} \Delta^c$
0		

$$\Delta^b C d r n \sigma \Delta^c \sigma^c b$$

4072C³ 4^b3^{5b}CDLZ^c

The proposed project is expected to have minimal environmental impacts. Potential negative but mitigable impacts are limited to temporary increases in noise and human presence associated with vessel and snowmobile travel, which may cause short-term disturbance to wildlife, including marine mammals, seabirds, and aquatic species. These effects are expected to be localized, infrequent, and of short duration. Mitigation measures will include minimizing time spent at sampling locations, avoiding close approaches to wildlife, maintaining appropriate setback distances from marine mammals and birds, conducting activities in accordance with local wildlife guidelines, and suspending or relocating activities if sensitive species are observed nearby. No habitat alteration, resource depletion, pollution, waste disposal, or long-term infrastructure development is proposed. The project is expected to have positive socioeconomic impacts through local employment, collaboration with community members and organizations, support for environmental monitoring, and contributions to knowledge of marine ecosystems that are important for food security and community well-being. Communication with the community will be maintained throughout the research period through local radio, Facebook, and regular contact with the Qikiqtarjuaq Research Centre to ensure concerns can be identified and addressed promptly. Species listed under the Species at Risk Act (SARA), including polar bear, bowhead whale, narwhal, and certain seabird species, may occur within the broader region. The project is not expected to adversely affect listed species, their critical habitat, or residences due to its non-destructive nature and implementation of wildlife avoidance measures. No significant cumulative, transboundary, or non-mitigable effects are anticipated.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

The project area is located in the marine environment adjacent to the hamlet of Qikiqtarjuaq, approximately 1-110 km from the community depending on sampling or surveying location. The area is regularly used by Inuit for travel, harvesting, fishing, hunting, and other land- and sea-based cultural activities. Marine resources contribute significantly to local food security, cultural continuity, recreation, tourism, and the local economy. While no archaeological, palaeontological, or culturally significant sites are known to occur within the marine project footprint, the surrounding region contains numerous Inuit cultural landscapes, traditional travel routes, harvesting areas, and archaeological sites of cultural and historical importance. Any previously

unidentified cultural resources encountered during project activities would be reported to the appropriate authorities. The area experiences seasonal vessel, snowmobile, and small-aircraft traffic associated with community activities, harvesting, tourism, research, and resupply operations. Local resource use includes subsistence harvesting of marine mammals, fish, seabirds, shellfish, and other country foods, as well as tourism, guiding, and wildlife viewing activities. Human health and well-being in the region are closely linked to access to country foods, environmental quality, cultural practices, and opportunities for safe travel on the land and sea ice. The proposed research activities are limited in scale, non-destructive, and are not expected to adversely affect community well-being, resource use, cultural values, navigation, or harvesting activities. Other valued socioeconomic components identified through community engagement and regional studies include food security, cultural continuity, knowledge sharing, environmental stewardship, and access to marine resources.

Miscellaneous Project Information

[illegible]

The proposed project is expected to have minimal environmental and socioeconomic impacts. Project activities are limited to small-scale, non-destructive marine scientific research and environmental monitoring. No construction, blasting, fuel caching, waste disposal, or long-term infrastructure installation is proposed. Potential negative impacts are expected to be minor, temporary, and mitigable. These may include short-term disturbance from vessel or snowmobile activity, noise, or the presence of researchers in marine areas used by wildlife and community members. Mitigation measures will include minimizing time on site, avoiding close approaches to wildlife, maintaining clean field practices, preventing the release of waste or contaminants, and coordinating activities with local partners to avoid interference with harvesting, travel, or culturally important activities. Communication with the community will be maintained throughout the research period through local radio, Facebook, and regular contact with the Qikiqtarjuaq Research Centre. These communication channels will provide opportunities for community members to raise concerns or identify potential impacts, allowing project activities to be clarified, modified, or relocated where appropriate. Potential socioeconomic impacts are expected to be neutral to positive. The project may contribute to local knowledge, environmental monitoring, research capacity, and understanding of marine ecosystems important to food security and community well-being. No adverse effects on human health are anticipated. The project will not restrict access to travel routes, hunting areas, fishing areas, or other marine resource-use areas. No transboundary effects are anticipated, as project activities are localized near Qikiqtarjuaq and do not involve emissions, discharges, habitat alteration, or activities likely to affect areas outside the local study area. Species listed under the federal Species at Risk Act (SARA), including polar bear, bowhead whale, narwhal, and certain seabird species, may occur regionally. The project is not expected to adversely affect listed species, their critical habitat, or residences. Researchers will avoid disturbance to wildlife, maintain appropriate distances from marine mammals, birds, and polar bears, and suspend or relocate activities if sensitive species are observed nearby. Overall, identified impacts are expected to be either positive or negative but mitigable. No negative non-mitigable impacts are anticipated. Monitoring will occur through field observations, documentation of any wildlife interactions or unusual environmental conditions, and ongoing communication with local partners and community members.

Cumulative Effects

The proposed project is not expected to contribute meaningfully to cumulative environmental effects. Activities are limited to small-scale, non-destructive marine scientific research and environmental monitoring and will not result in significant habitat alteration, resource depletion, pollution, or long-term infrastructure development. While the project will occur within a region that experiences ongoing community activities, harvesting, tourism, marine transportation, and research, its contribution to cumulative effects is expected to be negligible due to its limited spatial extent, short duration, and low-intensity nature. The project is not expected to interact with past, present, or reasonably foreseeable future activities in a manner that would result in significant cumulative environmental or socioeconomic effects.

Impacts

$\mathbb{A}^b \mathbb{C} \triangleright \sigma^a \mathbb{R}^c \triangleleft \mathbb{R} \mathbb{C} \triangleright \mathbb{C}^c \mathbb{D}^c \triangleleft \mathbb{D}^b \mathbb{C}^b \mathbb{C} \triangleright \mathbb{L} \mathbb{R}^c$

Physical														
Designated environmental areas														
Ground stability														
Permafrost														
Hydrology / Limnology														
Water quality														
Climate conditions														
Eskers and other unique or fragile landscapes														
Surface and bedrock geology														
Sediment and soil quality														
Tidal processes and bathymetry														
Air quality														
Noise levels														
Biological														
Vegetation														
Wildlife, including habitat and migration patterns														
Birds, including habitat and migration patterns														
Aquatic species, incl. habitat and migration/spawning														
Wildlife protected areas														
Socio-Economic														
Archaeological and cultural historic sites														
Employment														
Community wellness														
Community infrastructure														
Human health														

[illegible]

1 polygon	The platform will be installed under seawater near the coast in this zone near the Island of Qikiqtarjuaq
2 polygon	Only marine areas near the coast will be used to collect clams and coralline red algae specimens.

- | | |
|-----------|---|
| 1 polygon | The platform will be installed under seawater near the coast in this zone near the Island of Qikiqtarjuaq |
| 2 polygon | Only marine areas near the coast will be used to collect clams and coralline red algae specimens. |