



NIRB Application for Screening #125988

The truncate softshell clam as an indicator of eco-geochemical conditions around the community of Qikiqtarjuaq, Nunavut.

Application Type: New

Project Type: Scientific Research

Application Date: 8/9/2024 7:38:56 PM

Period of operation: from 2024-09-12 to 2024-09-20

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DETAILS

Non-technical project proposal description

English: This project seeks to address the following two questions: 1) What is the extent of plastic contamination in soft-shell clams and their surrounding environment? and 2) How have the components of the regional ecosystem evolved, including factors such as temperature and salinity? The main objective of this project is to contribute to the knowledge of food health in countries by examining the impact that the accumulation of microplastics could have on the softshell clam. Additionally, we seek to understand how components of the regional ecosystem (e.g., temperature, productivity) are changing, using a subsistence and heritage species, the truncated softshell clam, as a proxy for environmental change. Our project, directly aligned with the research requests expressed by the Nattivak HTA, will therefore collect baseline data on the oceanographic (surface/subsurface sea, inorganic carbon, oxygen) and biological (phytoplankton, invertebrates) components of the target ecosystem established at the national level. This project will thus improve our ability to detect environmental changes in coastal environments; to make use of a long-lived, sessile and filter-feeding species that is abundant around the community of Qikiqtarjuaq, and the Canadian Arctic, and that is considered of cultural and ecological importance; and to provide the first estimates of microplastic and plastic additive concentrations in *Mya truncata*. The fieldwork will be conducted from September 12, 2024, to September 20, 2024, in Qikiqtarjuaq. Samples of water, sediment, and soft-shell clams will be collected near the shore, at depths of up to 30 meters. This year, we propose to collect 80 clams (10 clams per site) with the hope to hire a local boat operator and diver to help us with this study. Water samples (2L per site) and sediment samples (100g per site) will also be taken at the same sites as the clams; and stored in glass bottles. Our study is unlikely to have any significant impact due to the small sample quantities involved. However, the project will necessitate the collection of a few truncated clams. The total quantity will be verified and approved by community members to ensure it does not affect local fisheries. These organisms are not listed under the Species at Risk Act (SARA) of the Department of Fisheries and Oceans (DFO). Additionally, our sampling does not involve the use of chemicals. All data will be managed by the principal investigator, David Deslauriers. Additionally, we are currently collaborating with the St. Lawrence Global Observatory (SLGO) for data storage. Our project is part of the Coastal Environmental Baseline Program for Qikiqtarjuaq. It was conceived with the community and approved by the Nattivak Hunters and Trappers Association. We hope to hire a local boat operator and diver to help us with this study. Results of the 2024 research will be presented to the Hunters and Trappers Association during an update meeting in the summer of 2025.

French: Ce projet vise à répondre aux questions suivantes : 1) Quelle est le niveau de contamination plastique dans les myes et leur environnement ? et 2) Comment les composantes de l'écosystème régional ont-elles évolué, y compris des facteurs tels que la température et la salinité ? L'objectif principal de ce projet est de contribuer à la connaissance de la santé alimentaire en examinant l'impact que l'accumulation de microplastiques pourrait avoir sur la mye. En outre, nous cherchons à comprendre comment les composantes de l'écosystème régional (par exemple, la température, la productivité) changent, en utilisant une espèce de subsistance et de patrimoine, la mye commune tronquée, comme indicateur du changement environnemental. Notre projet, directement aligné sur les demandes de recherche exprimées par la communauté de Qikiqtarjuaq, collectera donc des données de base sur les composantes océanographiques (mer de surface/sous-surface, carbone inorganique, oxygène) et biologiques (phytoplancton, invertébrés) de l'écosystème. Ce projet permettra ainsi d'améliorer notre capacité à détecter les changements environnementaux dans les milieux côtiers, d'utiliser une espèce sessile et filtreuse qui est abondante autour de la communauté de Qikiqtarjuaq et dans l'Arctique canadien, et qui est considérée comme ayant une importance culturelle et écologique, et de fournir les premières estimations des concentrations de microplastiques et d'additifs plastiques dans *Mya truncata*. Le travail sur le terrain sera effectué du 12 au 20 septembre 2024, à Qikiqtarjuaq. Des échantillons d'eau, de sédiments et de myes seront prélevés près du rivage, à des profondeurs allant jusqu'à 30 mètres. Cette année, nous proposons de prélever 80 myes (10 myes par site) avec un plongeur de la communauté. Des échantillons d'eau (2L par site) et de sédiments (100g par site) seront également prélevés sur les mêmes sites que les myes et stockés dans des bouteilles en verre. Cependant, le projet nécessitera la collecte de quelques palourdes tronquées. La quantité totale sera vérifiée et approuvée par les membres de la communauté afin de s'assurer qu'elle n'affecte pas les pêcheries locales. Ces organismes ne figurent pas sur la liste de la Loi sur les espèces en péril (LEP) du ministère des Pêches et des Océans (MPO). De plus, notre échantillonnage n'implique pas l'utilisation de produits chimiques. Toutes les données

Operations Phase: from 2024-09-12 to 2024-09-20

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
S1-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S2-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S3-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S4-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S5-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S6-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S7-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq
S8-Sampling site for soft-	Sampling sites	Marine	N/A	N/A	Qikiqtarjuaq

shell clams, water, and sediment (maximum depth: 30m)					
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Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Qikiqtarjuaq	Mr. Juilie Kuksiak Chairperson	Nattivak Hunters and Trappers Association	2024-04-24
Qikiqtarjuaq	Sammy Qappik	Scuba Diver	2024-02-26

Authorizations

Indicate the areas in which the project is located:

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Hunters and Trappers Associations/Organizations	Presentation of the project to the HTA with sampling sites and number of soft-shell clam samples. On behalf of the Nattivak Hunters and Trappers Association, I am pleased to inform you that the Board of Directors has reviewed your project and the additional information provided to us, particularly with respect to the following research project: Soft-shell clams as an indicator of eco-geochemical conditions around the community of Qikiqtarjuaq, Nunavut. Approved for 2024-2026.	Active	2024-05-26	2026-05-26
Fisheries and Oceans Canada	Application for a licence to fish for scientific purposes application. Pursuant to Section 52 of the Fishery (General) Regulations, the Minister of Fisheries and Oceans hereby authorizes David Deslauriers and Camille Berthod to fish for scientific purposes, subject to the conditions specified.	Active	2024-08-01	2025-05-31

Project transportation types

Transportation Type	Proposed Use	Length of Use
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Air	I would fly to and from Qikiqtarjuaq. When I leave the community, I'll take the samples with me.	
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Project accomodation types

Community

Material Use

Equipment to be used (including drills, pumps, aircraft, vehicles, etc)

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Boat	1	Na	We will work with community divers who will use their equipment and one of their boats to reach the sampling site.

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Information is not available						

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0		

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Information is not available				

Environmental Impacts:

Environmental impact will be minimal. The total quantity of organisms removed is minimal compared to the quantities present and has been approved by local fishermen. What's more, the clams will be harvested underwater by a community member accustomed to fishing them by hand. Water and sediment samples are also very small and will also be taken by the diver. Our sampling activities pose no significant risks beyond those typically associated with scuba diving. The dives will not exceed a depth of 30 meters, and we will limit ourselves to no more than two dives per day. The duration of each dive will be carefully calculated in accordance with scuba diving safety standards. Additionally, the diver we have hired is a member of the Qikiqtarjuaq community, experienced with the selected dive sites, which we have chosen in consultation with him. These precautions help mitigate the inherent risks of scuba diving. Importantly, because our sites are close to the coast, we can quickly return to shore if any issues arise. We will also carry first-aid equipment with us. Lastly, we have built in additional time on-site to allow for cancellations if weather conditions are deemed too hazardous.

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

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Description of Existing Environment: Physical Environment

Description of Existing Environment: Biological Environment

Description of Existing Environment: Socio-economic Environment

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

Cumulative Effects

Impacts

Identification of Environmental Impacts

	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
Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operation		N	-	-	-	N	-	-	-	N	-	-	M		N	N	N	M	N		-	-	-	-	-
Decommissioning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

- 1 point S1-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 2 point S2-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 3 point S3-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 4 point S4-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 5 point S5-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 6 point S6-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 7 point S7-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)
- 8 point S8-Sampling site for soft-shell clams, water, and sediment (maximum depth: 30m)