Public Registry - Project Proposals

NPC 150660: Physiological response of soft-shell clam Mya truncata to spring microalgal blooms

Close

Proposal Status: Conformity Determination Issued

Overview Documents

Project Overview

Type of application: New

Proponent name: Michelle Kamula

Proponent company: DFO

Project Description:

This project aims to investigate how the soft-shell clam (Mya truncata) population, found in the coastal marine waters near the community of Qikiqtarjuaq, respond to different primary production blooms of sea ice algae in spring and phytoplankton in summer, which function as different food sources. We plan to collect sea ice and water samples to examine the type of microalgal available to soft-shelled clams in spring (ice algae) and summer (open water phytoplankton). At the same time, clams will be collected by a local SCUBA diver. These clams will be used to examine food web linkages between microalgae in the water and sea-ice, the clam's reproductive cycle, and the populations overall reproductive health. This investigation will provide more information on the roles the different microalgal communities play in the spawning cycle of M. truncata and will provide in site on how climate or anthropogenic related changes to the timing of primary production and, therefore, food quality and quantity, will influence soft-shell clams, their reproductive capacity, and ultimately the higher trophic levels of the food web that rely on the clams as a major food source.

Project Schedule

Start Date: 2025-05-01

End Date: 2026-03-31

Project Map

List of project geometries:

Id Geometry Location Name

15550 polygon Coastal Marine Area South of Qikiqtarjuaq - polygon 1- No sampling will take place on Inuit Owned Lands

15551 polygon Coastal Marine Area South of Qikiqtarjuaq- No sampling will take place on Inuit Owned Lands

15553 polygon Coastal Marine Area of Broughton Channel - No sampling will take place on Inuit Owned Lands

15554 polygon Coastal Marine Area North of Qikiqtarjuaq - No sampling will take place on Inuit Owned Lands

15557 polygon Coastal Marine area North and East of Broughton Island - - No sampling will take place on Inuit Owned Lands

NPC Planning regions:

No Approved Plan

Project Land Use and Authorizations

Project Land Use:

Marine-Based Activities

Scientific Research

Licensing Agencies:

Government of Canada - Fisheries and Oceans Canada

Government of Canada - Fisheries and Oceans Canada

Nunavut Impact Review Board

Nunavut Research Institute

Material Use

Equipment:

Type	Quantity	Type	Use
Ski-doo	2	115 x 50 x50 inches	We plan to hire two ski-doos and komatiks, and local Inuit guides to operate the machines to reach our sampling sites. The Inuit guides will also our bear monitors while sampling on the ice.
Boat	1	25 feet	We will hire a local Inuit owned and operated Cuddy Cabin Aluminum Boat 25 footer boat to collect samples in open water
Ion Auger	2	47.69 x15.37 in	We will use a standard 10inch blade Ion battery operated auger to drill through sea ice to sample water underneath.
RBR Maestro CTD	1	60 inches long x 15 inches wide	A RBR Maestro CTD will be attached to a rope and lowered through the water column to just above the seafloor to collect measurements of the temperature, depth, conductivity, turbidity and ffluorescence of the water.
Mark II Kovacs Ice Corer	2	100x9 cm	An ice corer will be used to collect ice core samples. The samples will be used measure ice algae biomass, taxonomy, nutrients, salinity, fatty acids, and highly branched isoprenoid (HBI's)

Niskin water sampler 2 5L We will use a 5L Niskin water sampling bottle, attached to a rope and weight, to collect water throughout the water column. The water will be analyzed for nutrients, salinity, phytoplankton, chlorophyll a, particulate organic carbon, and highly branched isoprenoids.

Light Meter 1 5.5 × 3 x1.5 Used to measure the light at the sampling sight. Will be placed on a cooler while sampling takes place.

Fuel Use:

Type Container Capacity Use

Gasoline 25 20 Gasoline will be used to operate local Inuit owned and operated snowmobiles and boats.

Hazardous Material and Chemical Use:

Type Container Capacity Use

Acetone (90%) 4 2 Acetone is used in the lab when conducting chlorophyll a concentration measurements, which is a common method to measure primary production in water.

Hydrochloric acid (5%) 1 1 Used in the lab to clean glassware and forceps

Ethanol (70%) 1 1 Used in the lab for cleaning and as part of the chlorophyll a analyses test.

10 % Formaldehyde 6 5 Use to preserve clam tissue samples

Water Consumption:

Daily Amount (m2) Retrieval Method Retrieval Location

0

Waste and Impacts

Environmental Impacts:

This project will utilize the new Qikiqtarjuaq research centre. All chemicals will be shipped directly to and securely stored appropriately within the lab at the research station. All chemicals will remain and be used in the research centres lab only. Any chemical related garbage and chemicals will be shipped back to the Freshwater Institute according to Transport Canada Dangerous Goods regulations.

Waste Management:

Waste Type Quantity Generated Treatement Method Disposal Method

Hazardous 70% Ethanol (1L) Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used within the lab. Ethanol will be packaged and shipped according to the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.

Hazardous 5% Hydrochloric Acid (1L) Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. The diluted acid will be packaged and shipped according to the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.

Hazardous 10% Formaldehyde (30L) The 10% formaldehyde will be used to preserve samples. All samples and left over chemicals will be packaged and shipped to the Freshwater Institute for storage and if necessary, disposal. Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used in the lab.

Hazardous waste Acetone (8 L) Chemicals will be received by and securely stored at the new Qikiqtarjuaq research centre in proper chemical storage cabinets. This chemical will only be used within the lab. All acetone and related glassware will be packaged and shipped according the Transport Canada dangerous goods regulations to the Freshwater Institute for disposal.