

Days on site: 60

Total Person days: 240

Operations Phase: from 2021-07-17 to 2021-09-15

					fuel boats. Local boat operators will determine how much fuel to bring. It is estimated that there may be 5-8 45-gallon drums of fuel used during the research season.
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ΔL⁹⁶ ΔJ⁹⁶ CDΔL⁹⁶ J⁹⁶

Δ ^c ΔL ⁹⁶ ΔJ ⁹⁶ CDΔL ⁹⁶ J ⁹⁶	96 ⁹⁶ ΔΓ ⁹⁶ C ⁹⁶ C ⁹⁶ Δ ⁹⁶ < ^c	ΔP ^c ΔΓ ⁹⁶ C ⁹⁶ C ⁹⁶ Δ ⁹⁶ < ^c
0	N/A	N/A

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

To deploy acoustic equipment and remote tags on killer whales, we will have a field team of four people using a single boat approximately 8 m/24 ft in length run by two 150 HP outboard motors. The team will be all Inuit researchers and be based out of Pond Inlet. Researcher will use vessels to deploy and retrieve acoustic equipment and to access different locations in Pond Inlet, Eclipse Sound and adjacent fjords depending on killer whale locations. We aim to deploy five passive acoustic recorders (hydrophones) in total. Each recorder will be part of a small mooring with a rock anchor at the bottom. We will deploy three in Tremblay Sound at the same locations they were previously deployed during the Ecosystem Approach to Tremblay Sound project (2017-2019). Recorders will be deployed in the summer and then retrieved and redeployed to overwinter in Tremblay Sound. The three other passive acoustic recorders will be deployed in Milne Inlet where there is shipping related to the Baffinland Mary River mine. These passive acoustic recorders will record for the summer and be retrieved at the end summer of 2021. This data will be used to measure noise level related to shipping as well as investigate the presence of narwhals in areas with different noise levels and look at killer whale call occurrence and repertoire. Killer whales will be slowly approached by boat to within 10m and Limpet model satellite tags (Wildlife Computers) will be deployed onto the dorsal fin with 6-cm metal darts that will anchor below the skin into the cartilage, using crossbows. Skin biopsies will be collected using a Dan Inject CO2 gun to fire biopsy darts fitted with a 25 mm long x 6 mm diameter sterile stainless steel biopsy tip. The core of skin and blubber will be removed from the biopsy tip using sterile forceps, wrapped tightly in foil, and frozen until genetics and chemical analyses (stable isotopes, fatty acids, trace elements, and contaminants) are completed at Fisheries and Oceans Canada or commercial labs. Genetics analyses (e.g., whole-genome) will provide information on group and population structure of ECA killer whales, while the suite of microchemistry analyses will provide information on both distribution and diet.

SECTION H2: Disposal At Sea

All waste create by the project will be properly disposed of in Pond Inlet and no discharge will occur into the water.

SECTION I1: Municipal Development

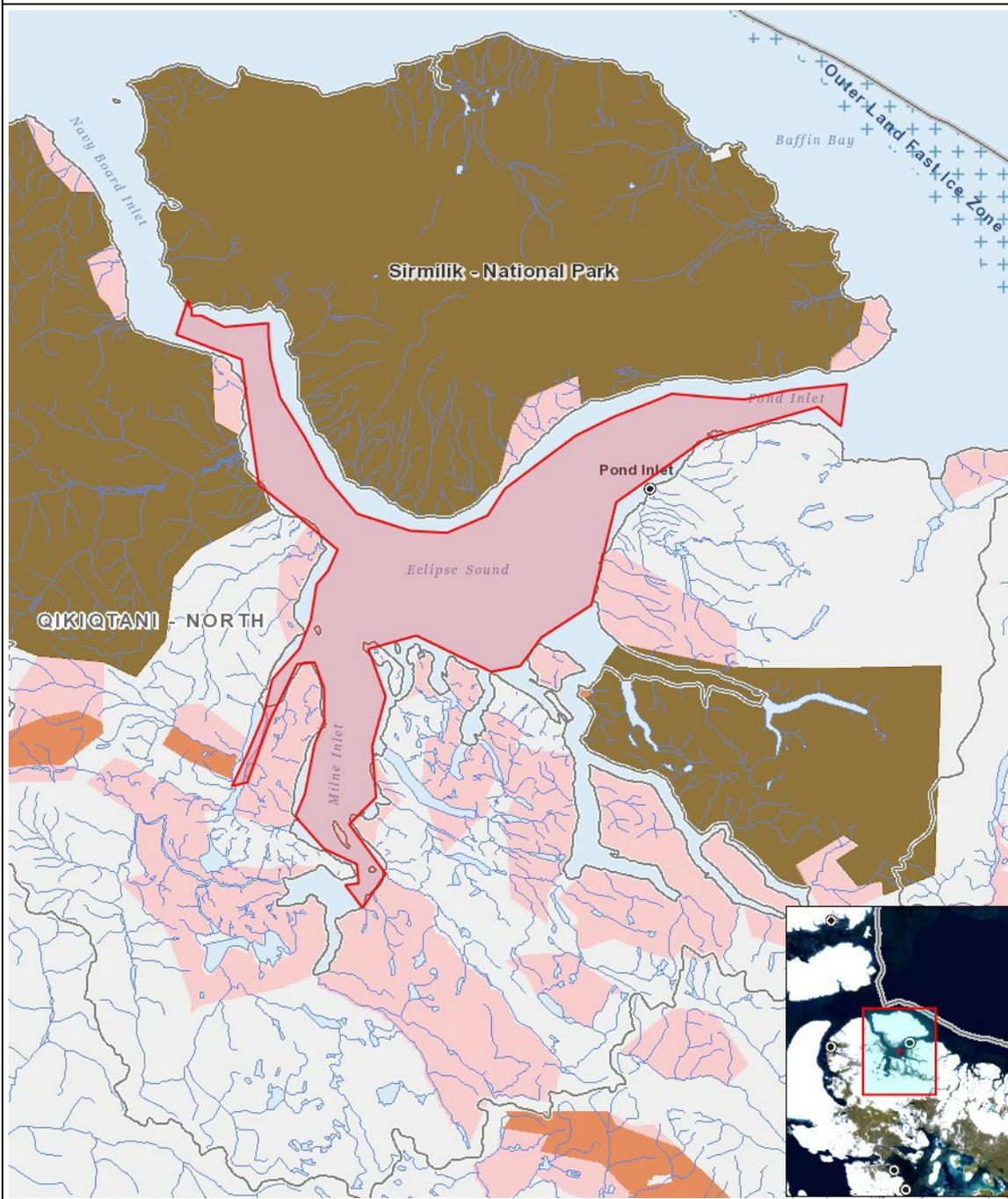
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The project area is located within the Tallurutiup Imanga National Marine Conservation Area and encompasses the Baffinland Iron Mine Corporation Shipping Route in Milne Inlet. The project area includes Tremblay Sound, Milne Inlet, and Eclipse Sound which are important areas for multiple marine species including: ringed seals, bearded seals, Arctic char, beluga, bowhead whales, and narwhal. Tremblay Sound is an important summering ground for narwhal. It is also an important harvesting

objectives of this research is examining the underwater environment and how vessel traffic impacts the noise levels underwater. This research is important in order to examine the cumulative effects of underwater noise from vessel traffic. Project impacts are anticipated to be minimal to the biological environment. Killer whales will be pursued in order to deploy satellite tags and collect skin biopsies, which may temporally increase stress to killer whales. However, researchers will be assessing the whales' behaviour to determine if/when the boat should stop pursuing the animals. Satellite tags have two titanium darts that anchor subdermally into the cartilage of the dorsal fin or blubber tissues of the animals. Anchors are pre-sterilized prior to fieldwork using Betadine or isopropyl alcohol and sealed in a clean pack until use. Skin biopsies will be collected using a Dan Inject CO2 gun to fire biopsy darts fitted with a 25 mm long x 6 mm diameter sterile stainless steel biopsy tip. As with tag darts, biopsy tips are sterilized using Betadine or isopropyl alcohol. Tagging and biopsying will be done by experienced Inuit researchers who have been trained on all procedures. A missed tagging or biopsy attempt may cause a scrape or small puncture wound to the animal, but will not cause long term harm. In the case of a miss, the tag darts or biopsy tip will be re-sterilized on board the ship using Betadine or isopropyl alcohol. All biopsy, tagging, and behaviour data collection procedures have been reviewed and approved for 2021 by DFO's Freshwater Institute Animal Care Committee. These protocols include provisions to minimize short-term impacts on killer whales, and long-term studies of killer whales and several other marine mammal species have shown no long-term negative impacts of satellite tag deployment or biopsy collection. Project impacts on the socioeconomic environment will be positive, with project funds upwards of \$60,000 going towards salaries of Inuit field researchers. Research activities will not affect Inuit's harvesting activities or travel in the project area. In addition to financial gains, DFO has trained and worked with researchers in the North for many years to develop scientific research capacity and ownership in northern communities. Inuit beneficiaries hired to assist with field research have received training in the collection of tissue biopsies, the deployment of satellite transmitters, the recording of observational data, and data entry. Research assistants hired and trained in this manner in previous years are now operating as independent researchers in their communities. Our project relies heavily on the engagement and participation of local communities, and as such, there will be strong focus on training of Inuit/Nunavut beneficiaries. We will use this opportunity to build long-term science/research capacity in several communities, such that each eventually has teams of local researchers who direct and conduct field research programs independently. Travel restrictions in 2021 will mean DFO staff will train and work with researchers remotely.

Cumulative Effects

The use of vessels for research activities will contribute to underwater noise from a single boat approximately 8 m/24 ft in length run by two 150 HP outboard motors. The effects from our project will be small due to the short time period and small size of the vessels compared to cruise ship and cargo ships that are abundant in the area, and local boating traffic by Pond Inlet residents. A goal of this project is to examine the cumulative effects of vessel traffic on underwater noise levels and this research cannot be completed without some vessel use to deploy and retrieve hydrophones.



List of Project Geometries

- 1 polygon Project Area - Tremblay Sound, Milne Inlet and Eclipse Sound