

Project Dashboard

Department of Fisheries and Oceans - Ecosystem Approach to Tremblay Sound (EAT)

Program (149435)

Proposal Status: Conformity Determination Issued

Project Overview

Type of application: **New**

Proponent name:	Leah Pengelly
Company:	Department of Fisheries and Oceans

Schedule:

Start Date:	2021-08-01
End Date:	2021-09-30
Operation Type:	Seasonal

Project Description:

Introduction Fisheries and Oceans Canada (DFO) seeks to continue marine ecosystem research and monitoring of the Eclipse Sound region, including Tremblay Sound and Milne Inlet. This field program consists of passive acoustic monitoring, remote biopsy and tagging of narwhal and killer whales, behavior recording using drones, and photo identification of killer whales. Length: 8 weeks Time: August – September Research Questions: 1.What are the fine-scale movements of narwhals in the Eclipse Sound area, and how do these movements relate to prey availability, predator presence, shipping traffic and oceanographic parameters? 2.What are the temporal and spatial patterns of underwater sound (biological, wind, ice, shipping) in Tremblay Sound and Milne Inlet? 3.What is the population size and structure of killer whales in the Eastern Canadian Arctic and what is their ecology (distribution, movement, diet)? 4.What is the fine-scale behaviour of killer whales and how do they interact with their prey species and influence the Arctic marine ecosystem? Project Objectives: 1.Assess narwhal and killer whale abundance, behaviour and distribution in Eclipse Sound. 2.Examine environmental noise and vocalizations of marine mammals in Tremblay Sound and other areas. 3.Continuation of community-based research teams for remote tagging of killer whales and narwhals. 4.Produce a catalogue of killer whale calls and associated behaviors to allow for passive acoustic monitoring (PAM) of presence and activity throughout the study area. Rationale Killer whale presence and shipping traffic is increasing in Eclipse Sound and there is growing concern among Inuit that this will negatively impact marine mammals and food security. This project seeks to understand cumulative effects of shipping and killer whales on narwhals. Methods: Hydrophones and recorders will be attached to small bottom anchored moorings placed within Milne Inlet, Tremblay Sound, and Eclipse Sound to record ambient noise, shipping noise, and marine mammal vocalizations. Specific locations will be determined after consultation with local Hunters and Trappers Organizations (HTO), Parks Canada, and local communities. Recorder deployments are expected to last from months to approximately 1 year. Biopsy collection and satellite tag deployment will be done remotely from a boat using either CO2 rifles or crossbows. For satellite tagging of killer whales, the whales will be slowly approached by boat, to within 10m, and Limpet model satellite tags will be deployed onto the dorsal fin with 6-cm metal darts that will anchor below the skin into the cartilage. Drone work and other behavioural observations will be conducted opportunistically when killer whales and narwhals are present, either from a boat or from the shore. Impacts: Researchers will be stationed out of Pond Inlet, DFO's Tremblay Sound camp, or at Inuit hunting camps in the area. Environmental impacts from the field camp are expected to be minimal and will be mitigated using best management practices. Impacts from remote tagging are expected to be minimal and will follow the required DFO animal use protocols to ensure that the methods meet the Canadian Council on Animal Care guidelines. Community Involvement and Data: Locally hired project participants have been previously trained and involved in narwhal killer whale research program (moorings, drones, remote tagging). The 2021 field program and beyond will continue to hire, train and work with Inuit researchers. Data will be stored and managed using DFO protocols. Interim and final results will be shared with local communities and organizations including those from graduate students' research.

Personnel:

Persons:	4
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Days: 60

Project Map

List of all project geometries:

ID	Geometry	Location Name
6957	polygon	Project Area
6999	polygon	Project Area

Planning Regions:

Kivalliq

Affected Areas and Land Types

Inuit Owned Surface Lands

Municipal

Established National or Territorial Park

Settlement Area

North Baffin Planning Region

Project Land Use and Authorizations

Project Land Use

Scientific Research

Marine-Based Activities

Licensing Agencies

PC: 0

DFO: Animal Use Protocol Permit

Other Licensing Requirements

No data found.

Material Use

Equipment

Type	Quantity	Size	Use
Generator	3	2000 Watts	Electricity (Camp Kitchen, Wet Lab, Dry Lab)
Hydrophone	5	S3M3	Collecting passive acoustic data (underwater noise recordings). Moored either with a surface buoy (vinyl fishing float and anchor, or a subsurface buoy and acoustic VEMCO release. Aluminum frame boat or zodiacs. To move personnel to camp, deploy and retrieve hydrophones and to remotely tag
Boat	2	-	

			<p>narwhal and killer whales.</p> <p>Tags will be attached via a single point anchor system similar to a Domeier or Wilton design.</p> <p>Depending on distance to the narwhal and preference of the crew, a jab-stick, harpoon or crossbow(preferably jab-stick) will be used to attach the anchor. Narwhals will not be actively pursued during this procedure and should only feel the momentary jab from tag anchor insertion.</p> <p>A max of 25 narwhals would be tagged, the final number will be decided with the Pond Inlet HTA</p>
Remote tagging (narwhal)	25	-	<p>Limpet model satellite tags will be deployed onto the dorsal fin with 6-cm metal darts that will anchor below the skin into the cartilage, using crossbows. A maximum of 20 killer whales will be tagged this final number will be decided with the Pond Inlet HTA</p>
Remote tagging (killer whales)	20	-	<p>Drone work and other behavioural</p>
Drones	1	-	

Dan Inject CO2 gun	1	-	<p>observations will be conducted opportunistically when killer whales are present</p> <p>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. Biopsies will be used for killer whale genetics work.</p>
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Fuel Use

Type	Container(s)	Capacity	UOM	Use
Gasoline	5	25	Liters	Generators Gasoline will be used to fuel boats. Local boat operators will determine how much fuel to bring. It is estimated that there
Gasoline	8	45	Gallons	may be 5-8 45-gallon drums of fuel used during the research season. If fuel is cached best practice will be used for

fuelling
and
storage.

Hazardous Material and Chemical Use

Type	Container(s)	Capacity	UOM	Use
No records found.				

Water Consumption

Daily Amount (m ³)	Retrieval Method	Retrieval Location
1	By zodiac at high tide or by collected hand	Local Streams

Waste and Impacts

Environmental Impacts

Researchers will mainly use the Tremblay Sound camp or Inuit hunting camps of collaborators in the area. Environmental impacts from the field camp are expected to be minimal and will be mitigated using best management practices, including: •When stationed at Tremblay Sound, as done in previous years, participants will dig trenches to buried disposed of organic waste and grey water away from water sources. •Burnable garbage will be burned to remove attractants. •Food will be stored to prevent wildlife attractants. •Firearms and bear deterrents including air horns are located at camp to prevent polar bear conflicts. •Inuit researchers and trained staff will perform camp watches if needed to ensure the safety of the research team and animals. •Chemicals and containers will be stored, handled and disposed of in accordance with labels, MSDS, and regulations. •DFO staff will receive WHIMIS training prior to field seasons and complete DFO OSH camp safety protocols and check lists. Camp will be kept orderly and clean to avoid any spills or accidents. •Waste, fuelling and storage will adhere to Tallurutiup Imanga National Conservation Area's best management practices. •When working from Inuit hunting camp researchers will mitigate impacts using the practices used by Inuit for their camps. •All non-burnable will be transported back to Pond Inlet for disposal.

Waste Management

Waste Type	Quantity Generated	Treatment Method	Disposal Method
Combustible wastes	<1 Garbage bag / day	-	Burned and/or transported back to Pond Inlet for proper disposal in accordance with local Inuit and Parks Canada regulations.
Non-Combustible wastes	<1 Garbage bag/day	-	Dispose of at municipal waste centre in Pond Inlet

Greywater	20 L/day	-	Greywater will be disposed using responsible methods (backfilled) and will ensure greywater is dispersed away from water sources.
Sewage (human waste)	10 L / day	-	Human waste will be disposed using responsible methods (backfilled) and disposed of well away from water sources.