



## **NIRB Application for Screening #125513**

### **Re-estimating the abundance of the Lancaster Sound (LS) polar bear subpopulation via genetic mark-recapture sampling**

**Application Type:** New

**Project Type:** Scientific Research

**Application Date:** 3/23/2020 3:43:15 PM

**Period of operation:** from 0001-01-01 to 0001-01-01

**Proposed Authorization:** from 0001-01-01 to 0001-01-01

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## DETAILS

### Non-technical project proposal description

English: The Lancaster Sound (LS) polar bear subpopulation is one of Nunavut's largest polar bear populations – it spans a geographical area of about 470 000 km<sup>2</sup> (with about approximately 250 000 km<sup>2</sup> of sea-ice) and is home to an estimated 2541± 391(mean ± 1 SE) polar bears. There are no current data for LS and the population estimate derived from data in the late 1990's has a high degree of uncertainty, in part due to environmental changes and a prolonged male-biased harvest that has been part of the polar bear management system. In order to fulfill mandated wildlife monitoring objectives and provide appropriate management advice to the Nunavut Wildlife Management Board, we propose to undertake a 3-year study (2021-2023) involving genetic biopsy mark-recapture techniques to reassess the size and status of the LS polar bear subpopulation. In order to conduct the research, logistical preparations such as fuel purchase and caching, are required beforehand. For this 3-year field study, subpopulation size and status will be assessed by means of genetic mark-recapture, done with 1-3 helicopters, which does not require the handling of bears. Results from this study will be used to provide TAH and management recommendations for the LS polar bear subpopulation. During this work, field crews will work out of remote camps (possibly Creswell Bay, Gascoyne Inlet, Polar Bear Pass camp, Fort Ross) and communities (Resolute Bay, Grise Fiord, Arctic Bay) with differing and variable time plans (from a few days to weeks out of communities and camps, weather-dependent). Field work is conducted between April – June 2021, 2022, and 2023 with fuel caching activities beginning likely between August 2020 and Mar 2021.

French: La sous-population d'ours blanc du détroit de Lancaster (DL) est une des plus importantes populations d'ours blanc au Nunavut – elle occupe une zone géographique de quelque 470 000 km carrés (dont environ 250 000 km<sup>2</sup> de banquise) et la population d'ours estimée est de 2541±391 (moyenne ± 1 SE). Il n'existe aucune donnée récente provenant du détroit de Lancaster, et la population estimée se fonde sur des données datant des années 1990 et est, par conséquent, très approximative. Cela est particulièrement dû aux changements environnementaux et la période prolongée de récolte des mâles uniquement intégrée au système de gestion de l'ours blanc. Afin de respecter les objectifs imposés de surveillance de la faune et de fournir des recommandations adéquates au Conseil de gestion des ressources fauniques du Nunavut, nous proposons de réaliser une étude triennale (2021-2023) à l'aide de techniques de biopsie génétique de marquage-recapture, pour réévaluer la taille et l'état de la sous-population d'ours blanc du détroit de Lancaster. Aux fins de la recherche, des préparatifs logistiques comme l'achat et la cache d'essence au préalable sont nécessaires. Durant cette étude de terrain triennale, la taille et l'état de la sous-population seront évalués au moyen de méthodes génétiques de marquage-recapture réalisées par trois hélicoptères, ce qui ne nécessite pas de manipuler les ours. Les résultats de l'étude serviront à évaluer la RTA et à faire des recommandations sur la gestion de la sous-population d'ours blanc du détroit de Lancaster. Durant cette initiative, les équipes de terrain travailleront à partir de camps éloignés (possiblement situés à Creswell Bay, Gascoyne Inlet, Polar Bear Pass camp, Fort Ross) et de hameaux (Resolute Bay, Grise Fiord, Arctic Bay) selon des plans différents et variables dans le temps (de quelques jours à quelques semaines à l'extérieur des hameaux et des camps, selon les conditions météo). Le travail de terrain sera réalisé d'avril à juin 2021, 2022 et 2023, et les activités de cache d'essence commenceront probablement en août 2020 et mars 2021.

[illegible]

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## Personnel

Personnel on site: 12

Days on site: 30

Total Person days: 360

Operations Phase: from 2020-08-11 to 2024-09-11

## Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
rough outline of the Lancaster Sound polar bear subpopulation boundary which is our study area	Researching	Crown	N/A	N/A	communities are Arctic Bay, Resolute Bay and Grise Fiord; proximity depends on where we are flying - we are working out of communities searching the sea ice and islands for bears; at times we are far away from communities and work from camps
rough outline of the Lancaster Sound polar bear subpopulation boundary which is our study area	Fuel and chemical storage	Inuit Owned Surface Lands	N/A	N/A	we are planning to cache fuel for the polar bear work at anticipated sites - we applied with QIA for permits to cache fuel; caches are strategically along shorelines/landasses within the study area
rough outline of the Lancaster Sound polar bear subpopulation boundary which is our study area	Researching	Marine	N/A	N/A	our research takes place over the sea ice to look for and sample polar bears for a new study that is a priority for the QWB and communities

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Arctic Bay	Jennifer Pauloosie, HTO Manager	Ikajutit HTO	2020-03-02
Grise Fiord	Inger-Lise Manager Iviq HTO	Iviq HTO	2020-03-02
Resolute Bay	Nancy, Manager Amarualik, Manager RB HTO	resolute Bay HTO	2020-03-02

## Authorizations

Indicate the areas in which the project is located:

Kitikmeot  
North Baffin

### Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Canadian Wildlife Service	permit for Migratory Bird Sanctuary and National Wildlife Areas	Applied, Decision Pending		
Qikiqtani Inuit Association	Inuit Land Use Permit	Applied, Decision Pending		
Parks Canada	collection permit and land use access for Qausuittuq National Park	Applied, Decision Pending		
Government of Nunavut, Department of Environment	wildlife research permit	Not Yet Applied		

### Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	1-3 helicopters for research survey work to sample polar bears on sea ice	

### Project accommodation types

Temporary Camp  
Community  
Other,

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
helicopter	1-3	LongRanger	we will use 1-3 helicopters to conduct our field operations during our search and sampling of polar bears within the study area during spring time. We search the sea ice but will re-fuel at our fuel caches that we have throughout the study area, or at airports when we are near communities. The field work is being conducted between April to June 2021, 2022, and 2023. There is likely a total of approx. 350 helicopter hours for the entire project flown
Twin Otter	1	DeHavilland	We will have several fuel caches throughout the study area; the Twin Otter will begin caching likely during summer (Aug/Sep 2020) at locations that have been used by Polar Continental Shelf, and that are safe to land and cache fuel. All fuel will be stored away from water sources, and checked while we are conducting the survey. The Twin Otter only comes in, drops off new fuel or collects empties throughout the length of the project. The are about 80 hrs of caching planned the first season.
Generator 200W	1	Honda	If we camp out at some of the field location (Fort Ross, Polar Bear Pass Camp, Creswell Bay) we will have a generator to maintain the helicopter's fuel and oil temperatures during the cold nites through heat blankets, and we use the generator for camp use

### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Propane	fuel	2	100	200	Lbs	we will be using the propane for cooking in our camps through the April - June field season.

						Likely only need 1 per season for only 2 camps (camp duration is usually 2-3 weeks depending on weather)
Gasoline	fuel	12	5	60	Gallons	if we decide to stay in camps we need the fuel for the generators to maintain camp electricity and the helicopter; if there are 2-3 camps we need about 3-4 jerry cans per camp for 2-3 weeks each.
Aviation fuel	fuel	280	205	57400	Liters	this fuel is spread throughout the study area in several fuel cache locations with number of drums ranging from 5 to 12; it is used for our polar bear survey so we can continue searching for bears effectively.
Diesel	fuel	2	205	410	Liters	if we stay at pre-existing camps we will use the diesel as heating fuel to keep the cabin warm and operational for the crew of 4 person per helicopter.

#### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	we are not using water because the work is between April and June; we will be using snow and ice; we are only using snow and ice IF we are staying at established camps and if that is feasible;	collecting snow and/or ice for use for the 4 people per camp that are present there for 7-12d, if that is being considered to be feasible

# Waste

## Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Camp	Greywater	50-80 gal	greywater will be disposed of in a greywater pit away from water bodies and safe from wildlife	if there are solids in the greywater we will pick them out (i.e., food particles from dish washing)
Camp	Sewage (human waste)	hard to tell	urine will go on snow in a pee pit; solid human waste we will collect and haul back to communities for appropriate disposal - this only occurs if we use camps	N/A

## Environmental Impacts:

see attachment



# **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**

Our project activities consist of flying above the sea ice at various altitudes depending on when we ferry or when we search for and sample polar bears. No geomorphology or any other features are affected by our activities because there is no construction and nothing that will be moved or touched in the environment. We are operating near National Wildlife Areas (Nirjutiqarvik NWA and the Polar Bear Pass NWA, and a National Park [Qausuittuq NP; permits applied] but the prime activity during our research is between April and June when most of these areas are still covered in snow and ice. Most bears will be on the sea ice hunting so we will spend the majority of our time on the sea ice. However, in order to be able to determine if bears are using some land or island areas we will have sporadic flights over islands that are within our study area. When we fly over these land masses it will be for a short and brief moment throughout our study period, likely only minutes to 1-2 hours per study period. All other work is done on the ice. Our cached fuel is anticipated to be stored at locations that have been determined to be good locations where they can be easily removed after the work is done; all locations have been determined under cooperation of Polar Continental Shelf Program who will assist in deploying fuel. If there are concerns that perhaps wildlife is still present during the planned fall fuel caching we can be flexible and cache all other locations first, and cache areas of possible concern during the spring when no birds are present. Our methods to search for polar bears and to sample bears have been approved in the past by animal care committees (application in process) and are standard accepted methods to conduct field work; these methods have also been agreed upon in the past by Nunavut communities for some of our projects. The process here has been offset because of the COVID-19 scenario where we did not have a chance yet to present the methods to the communities, and we did not have a chance to engage the HTO where we are seeking local knowledge to supplement our methodology. As soon as we can travel and the communities are welcoming us we will commit to consultation meetings or conference calls to inform all involved.

### **Description of Existing Environment: Biological Environment**

As mentioned above our field work will be conducted during the ice period (April to June) where the length is weather-dependent. The primary species that is listed under SARA and that we are dealing with will be polar bears - to examine their abundance and well-being is the purpose of our study so that this information can be used for national assessments that feed into SARA. There might be camping or hunting areas being used while we survey during spring; in order to avoid possible conflict we will discuss the details with the affected HTOs so that we not interfere with local harvesters. Should there be anything else of concern we will take their advice and address their concerns. In addition we will have local participation for this project so that we are obtaining first-hand information of where possible concern areas exist that we should avoid or re-schedule for surveying.

### **Description of Existing Environment: Socio-economic Environment**

### **Miscellaneous Project Information**

### **Identification of Impacts and Proposed Mitigation Measures**

There are no impacts to human health; the impacts to wildlife (polar bears) are very short-term and negligible - we are using a methodology that has been used as a viable alternative to handling: in our work bears are approached by helicopter and sampled remotely - many bears do not respond - and the sampling only takes between 1-2 minutes; there are no trans-boundary impacts; from a social-socio-economic perspective our project provides short-term employment for a few individuals that we invite to assist us in the field - this work is short-term and may last for up to 2 weeks per hired individual; we have worked all across Nunavut on polar bear populations and are familiar with the logistics/caching and field work; we take this work serious and we respect local desires of not handling wildlife that is why we use remote sampling; we listen to local people and if there are concerns while we are researching about disturbances we will address those concerns and change flight patterns if needed.

### **Cumulative Effects**

Research projects like the one we are proposing are not occurring in regular short-term intervals. The last time a project of this magnitude was conducted in the Lancaster Sound area was between 1993-97. The chance that there are any cumulative impacts from our work are very minute. Other projects of this kind are not conducted in the area so it is difficult for us to predict how large any cumulative impacts are.

# 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
<b>Construction</b>																										
-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
<b>Operation</b>																										
Fuel and chemical storage		-	-	-	-	-	-	-	-	-	-	-	-	-		-	M	N	-	N		-	-	-	-	-
Researching		M	-	-	-	-	-	-	-	-	-	-	-	M		-	M	-	-	M		-	P	-	-	-
<b>Decommissioning</b>																										
-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

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

## Project Location



## List of Project Geometries

- 1 polyline rough outline of the Lancaster Sound polar bear subpopulation boundary which is our study area