



## **NIRB Application for Screening #125673**

### **Understanding the impacts of climate change on Arctic nesting geese – a key towards Inuit food sovereignty in Arviat, Nunavut**

**Application Type:** New

**Project Type:** Other

**Application Date:** 2/23/2022 12:06:24 PM

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

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

**Project Proponent:** Shirley Tagalik  
Aqqiumavvik Society  
Box 178, 807 1st Ave  
Arviat NU X0C0E0  
Canada  
Phone Number:: 2042180866, Fax Number::

# DETAILS

## Non-technical project proposal description

English: Title: Understanding the impacts of climate change on Arctic nesting geese – a key towards Inuit food sovereignty in Arviat, Nunavut Applicant: Aqqiumavvik Society, Box 444, Arviat, NU, X0C0E0 Kukik Baker, Executive Director, arviatwellness@gmail.com ; 867-857-2037 People to be covered under the permit: Frank Baldwin, ECCC (CWS) Dominique Henri, ECCC Jennifer Provencher, ECCC Yohannes Berhane, CFIA Aqqiumavvik Ujjiqsuiniq Young Hunters Program The Aqqiumavvik Society has brought together a team of experts to investigate the dynamics of climate-food-health from a food sovereignty perspective based on the experiences of Arviarmiut in relation to light goose harvesting and consumption. Our research builds on insights gained from the Kangut Project (2016-2020) that identified Arviarmiut priorities related to light goose management and research. The goal of our project is to assess the viability of an increased harvest of geese and eggs in a changing climate, to contribute to food security in Arviat. Our work contributes to community efforts to restore Inuit relationships with geese, address food sovereignty issues, promote climate change awareness and action in Arviat, and restore nutritionally rich diet options within the community and across Nunavut. As part of these goals, we propose to gather information on geese with the nearby Kuugaajuk Migratory Bird Sanctuary. Proposed work that will take place within the sanctuary includes: 1. Mapping current goose nesting locations and estimating abundance through systematic nest plot surveys (a grid of sample plots where numbers of nests inside a 30 m radius are counted, and eggs are measured to determine species; details provided below). 2. Goose population health monitoring: collect a sample of 50 adult snow and 50 adult Ross's geese to assess cotemporary pathogens, plastic pollution, contaminant, and pre-breeding nutrient levels (note: some of these birds may be collected outside the MBS). 3. Banding a representative sample of snow and Ross's geese to determine current harvest and survival rates, which will guide local harvesting thresholds (note: some banding may occur outside the MBS). Project location All activities will take place within the Kuugaajuk Sanctuary and within a 25-mile radius of Arviat with specific focus on goose nesting areas to the northwest of the community. Dates and duration of the project: Activity in the Kuugaajuk Sanctuary will take place in April-September of each year from 2022-2026. Depending on the research activity to be undertaken, visits will be: daily from mid-late May to harvest up to 50 snow and 50 Ross's geese for contaminants, microplastics, nutrient reserve analysis. Daily from late May-end of June to visits to map nesting areas, measure and monitor eggs and take nest vicinity soil samples. Daily for approx. 1 week between early-mid July, for capturing and banding a sample of lesser snow and Ross's geese. Method of transportation and frequency: We will use ATVs to enter and traverse the MBS for field work. ATVs will be used to transport crew to the edge of the nesting colony, but the colony itself will be accessed on foot during the nesting period. When using ATVs, we intend to stay on established routes in the intertidal zone, and avoid sensitive habitats where ATVs may cause damage. During the approximate 1 week of banding, we will establish a mobile base camp in, or within close proximity to the nesting area (perhaps on an esker). At the end of the banding process all evidence of the camp will be removed. Summary of activities and rationale: 1. Assessing goose abundance and distribution around Arviat (monitoring colony location, size and changes over time) - a biotic determinant of health. There is currently a need to further monitor goose abundance and distribution around Arviat in the context of changing climatic conditions. 2. Establishing a goose banding program to monitor goose population dynamics - a social determinant of health. Banding is the main monitoring program for Snow and Ross' Geese across North America and is conducted annually across Nunavut by Environment and Climate Change Canada (ECCC). Banding is an important program for continental harvest management, and for understanding the status of the population, but has not been conducted in the Arviat area for several years. 3. Assessing pathogens, emerging diseases and contaminants in geese - a biotic determinant of health. Our main interest is in the zoonosis pathogens and diseases that could pose a risk from the consumption of geese. However, we are also interested in understanding the incidence of other pathogens (e.g., influenza A, avian paramyxoviruses, coronaviruses, avian metapneumovirus and other emerging viruses as well), as indicators of goose health. Understanding both legacy contaminants (i.e. those that have been detected and tracked over many years), and contaminants that are of emerging concern is critical information for Inuit communities to holistically consider the benefits and risks to eating in a healthy way. 4. Assessing of plastic pollution in geese and their habitats - an abiotic determinant of health - Plastic pollution ingestion has been recorded in several bird species in northern Canada, but to date, light geese have not been examined. 5. Studying Canada geese genomics and hybridization of Canada and Cackling geese at the McConnell River - A Canada-Cackling Goose hybrid zone occurs between northern Manitoba and southern Nunavut, and there is interest in determining if there is a relationship between egg size and genomics, so other hybrid areas can be identified, and so we can gain an understanding of the northward movement of nesting Canada Geese. 6. Examining Pre-nesting nutrient reserves- The demand for protein by millions of geese concentrated in a narrow-band coastal habitat has driven habitat alteration in the sub-Arctic and southern Arctic. Protein reserves in individuals have been in long-term decline in both species (Ross et al. 2017) and may be related to declining habitat quality and per-capita availability in the North. 7. A climate change analysis activity – looking potentially on impacts for goose abundance and health as climate conditions change resulting in drying of marshlands and ponds. 8. Analysis of the implications of data for

[illegible]

Operations Phase: from 2022-04-28 to 2026-08-27

## Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Kuugaarjuq Migratory Bird Sanctuary	Researching	Crown	Kuugaarjuq Migratory Bird Sanctuary is co-managed under the Nivvialik Co-management Committee.	N/A	Arviat is the closest community. Our project will work within a 25 miles radius from Arviat and also within the Kuugaarjuq Migratory Bird Sanctuary

## Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Arviat	Peter Alareak	Nivvialik Co-management Committee	2022-01-28
Arviat	Sam Muckpah	Arviat Hunters and Trappers Organization	2022-01-28
Arviat	Gordy Kidlapik	Hamlet of Arviat	2022-01-28
Rankin Inlet	Kono Tattuinee	Kivalliq Inuit Association	2022-01-28
Rankin Inlet	Burt Dean	Nunavut Tunngavik	2022-01-28

## Authorizations

Indicate the areas in which the project is located:

Kivalliq

### Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Tunngavik Inc	Application for a community research certificate	Applied, Decision Pending		
Canadian Wildlife Service	The project actively partners with CWS which has committed in-kind funding and training support.	Active	2021-10-08	2026-03-31
Environment and Climate Change Canada	The project actively partners with ECCC which has committed in-kind funding and training support.	Active	2021-10-08	2026-03-31
Government of Nunavut, Department of Environment	The project actively partners with DoE which has committed in-kind funding and training support.	Active	2021-10-08	2026-03-31
Hamlets and Municipalities	The project has received a letter of support from the Hamlet of Arviat	Active	2022-02-09	2026-03-31
Hunters and Trappers Associations/Organizations	The project has received a letter of support from the Arviat HTO	Active	2022-02-09	2026-03-31
Other	The project has received a letter of support from the Canada Food Inspection Agency	Active	2021-10-09	2026-03-31
Kivalliq Inuit Association	The project has asked KIA for project support.	Applied, Decision Pending	2022-02-09	2026-03-31
Other	The project has submitted a permit request to Nivvialik Co-management Committee and NPC to work in the Kuugaajuq Migratory Bird Sanctuary	Applied, Decision Pending	2022-02-09	2026-03-31

### Project transportation types

Transportation Type	Proposed Use	Length of Use
Land	Access using snowmobiles/ATVs	

**Project accomodation types**

Temporary Camp

## Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
ATV	8	4x4	We will use ATVs to enter and traverse the MBS for field work. ATVs will be used to transport crew to the edge of the nesting colony, but the colony itself will be accessed on foot during the nesting period. When using ATVs, we intend to stay on established routes in the intertidal zone, and avoid sensitive habitats where ATVs may cause damage. During the approximate 1 week of banding, we will establish a mobile base camp in, or within close proximity to the nesting area (perhaps on an esker?).
Sled and tent frame	1	8x10	temporary camp
ATV/skidoo	8	4x4	Access to data collection sites

### Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Gasoline	fuel	4	10	40	Gallons	Resupply of equipment as needed.
propane stove	hazardous	2	2	4	Gallons	Shelter and cooking during monitoring activities

### Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	10 l water container.	Wold Creek or McConnell River



# Waste

## Waste Management

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

### Environmental Impacts:

Our work is poised to make significant impacts by addressing Arviarmiut priorities, advancing light goose research in Inuit Nunangat, connecting climate and human health research, and examining migratory bird policies and regulations in the context of Inuit rights and governance. There is not expected to be significant environmental impact from this work. However, overall research impacts included • Migratory bird management/policy (regional, territorial, national, international scales) –i) improving population monitoring and assessment of goose abundance and health informs evidence-based policy- and decision-making; ii) developing safe goose consumption guidelines contributes to northern health policy; iii) refining policies relating to sustainable harvest and food sharing in Nunavut; and, iv) understanding impacts of colonial wildlife management is essential to improve cross-jurisdictional management practices and policies across light goose migratory ranges.

# **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**

Kuugaarjuk Migratory Bird Sanctuary is an area extending inland from the deep tidal flats of western Hudson Bay. It is nesting grounds for a rich variety of shore birds and various goose species. The area is low marshland and includes several eskers and shallow lakes.

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

Much of the Kuugaarjuk Migratory Bird Sanctuary has been stripped of vegetation in recent years. Climate conditions are causing a drying of shallow ponds. It remains a key nesting area for geese and shore birds.

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

Kuugaarjuk Migratory Bird Sanctuary has been a rich harvesting area for geese in the past. It continues to be used by Inuit but reportedly to a lesser degree given the habitat degradation that has occurred due to goose over population.

### **Miscellaneous Project Information**

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

Our research will have little impact on the area. We will be using plotting surveys which should cause as little disruption as possible. Sampling of nests will be limited and nest assessment will take place after goslings have hatched.

### **Cumulative Effects**

None anticipated.

# Impacts

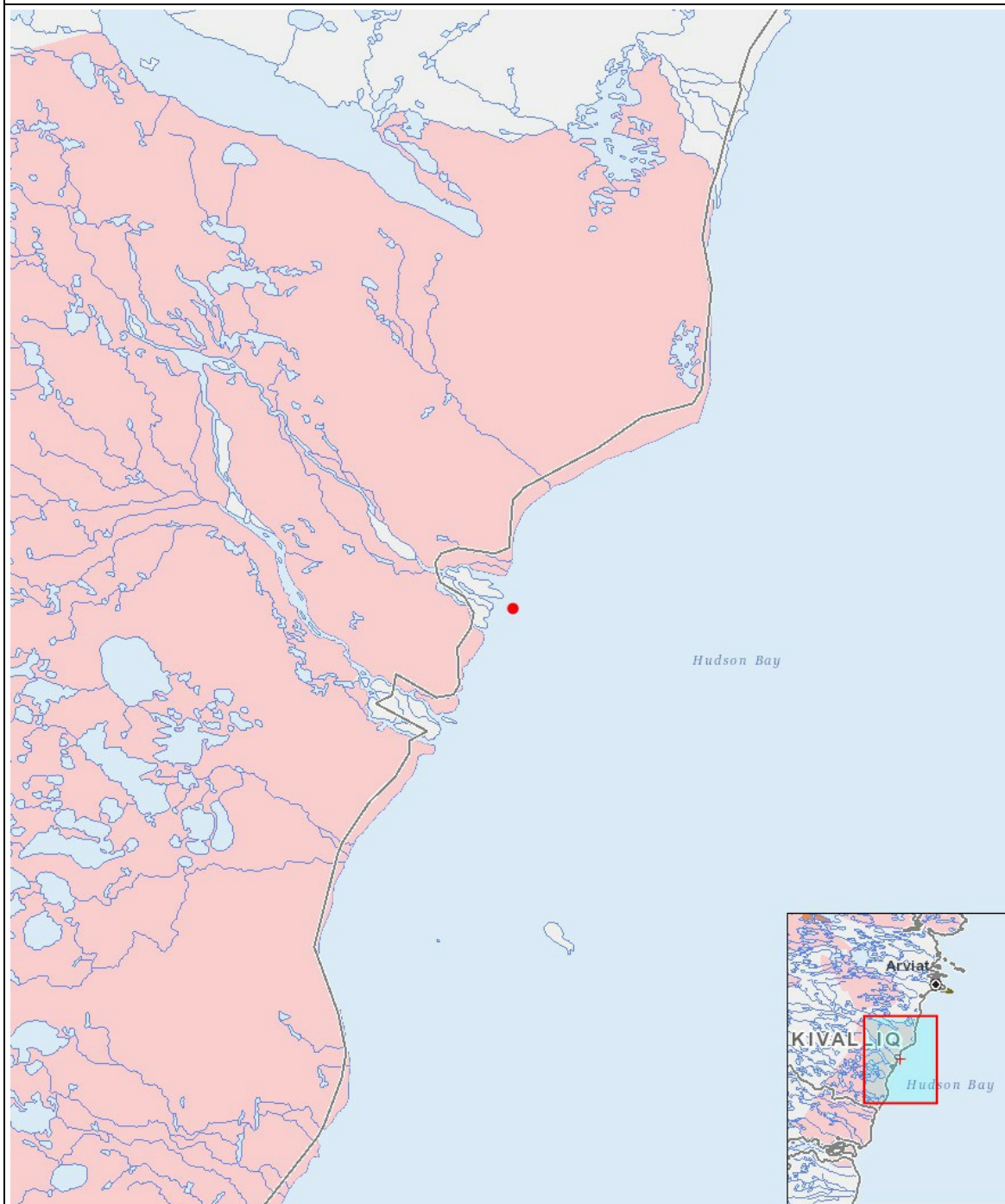
## Identification of Environmental Impacts

			PHYSICAL														BIOLOGICAL														SOCIO-ECONOMIC													
			Designated environmental areas														Vegetation														Archaeological and cultural historic sites													
			Ground stability														Wildlife, including habitat and migration patterns														Employment													
			Permafrost														Birds, including habitat and migration patterns														Community wellness													
			Hydrology / Limnology														Aquatic species, incl. habitat and migration/spawning														Community infrastructure													
			Water quality														Wildlife protected areas														Human health													
			Climate conditions														Vegetation														Archaeological and cultural historic sites													
			Eskers and other unique or fragile landscapes														Wildlife, including habitat and migration patterns														Employment													
			Surface and bedrock geology														Birds, including habitat and migration patterns														Community wellness													
			Sediment and soil quality														Aquatic species, incl. habitat and migration/spawning														Community infrastructure													
			Tidal processes and bathymetry														Wildlife protected areas														Human health													
			Air quality														Vegetation														Archaeological and cultural historic sites													
			Noise levels														Wildlife, including habitat and migration patterns														Employment													
			BIOLOGICAL														SOCIO-ECONOMIC														Human health													
			Vegetation														Wildlife, including habitat and migration patterns														Community infrastructure													
			Wildlife, including habitat and migration patterns														Archaeological and cultural historic sites														Human health													
			Aquatic species, incl. habitat and migration/spawning														Employment														Community wellness													
			Wildlife protected areas														Community infrastructure														Human health													
			SOCIO-ECONOMIC														Human health														Community infrastructure													
			Archaeological and cultural historic sites														Community infrastructure														Human health													
			Employment														Community infrastructure														Human health													
			Community wellness														Community infrastructure														Human health													
			Community infrastructure														Community infrastructure														Community infrastructure													
			Human health														Community infrastructure														Human health													

Construction																										
-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
Operation																										
Researching		P	-	-	-	-	P	-	-	-	-	-	-	-		-	P	P	-	P		-	P	P	-	P
Decommissioning																										
-		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

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

## Project Location



## List of Project Geometries

1	point	Kuugaarjuq Migratory Bird Sanctuary
---	-------	-------------------------------------