NIRB Application for Screening #125503

Long-term changes in bird populations near Cambridge Bay based on lake sediment records

Application Type:	New
Project Type:	Scientific Research
Application Date:	1/21/2020 12:13:43 PM
Period of operation:	from 0001-01-01 to 0001-01-01
Proposed Authorization:	from 0001-01-01 to 0001-01-01
Project Proponent:	Jules Blais University of Ottawa 30 Marie Curie Road Ottawa Ontario K1N6N5 Canada Phone Number:: 1-613-562-5800 Ext 6650, Fax Number:: 1-613-562-5486

DETAILS

Non-technical project proposal description

English: Who:Jules Blais, University of Ottawa, 30 Marie Curie Road, Ottawa, Ontario, K1N 6N5; Email: Jules.Blais@uottawa.ca; Phone: (613) 562-5800 Ext. 6650What:Our field collections will involve collecting lake sediment cores near bird colonies. We do this by removing a 3 inch diameter core of sediment from the bottom of a lake, typically about 3 feet in length. We then place samples in containers, and collect small samples of soil, water, and filtered particles in one liter of lake water. Our work is not invasive and has a minimal impact on the environment. We will have a maximum of 4 (four) people on site for these sample collections. We will not need to build any facilities because we will use either the Canadian High Arctic Research Station at Cambridge Bay or the Karrak Lake research station in the Ahiak Migratory Bird Sanctuary for lodging. We will use commercial aircraft to reach Cambridge Bay, and all other transport to field sites will be either by helicopter or twin otter, or by ATV for sites closer to Cambridge Bay. Why:Our objective is to show how bird populations around Cambridge Bay and the Ahiak Migratory Bird Sanctuary have changed over time using lake sediments as a natural archive. Long term, we will integrate bird population histories with recent research and indigenous knowledge to investigate the stability of migratory bird populations and their reliability as a food source in the North. Sediment is a natural archive because it slowly accumulates at the bottom of lakes and it contains animal and plant material from the time it was deposited. Thus sediment is a record of environmental changes. When birds colonize the area, they fertilize the water, and these changes are recorded in the chemical and biological composition of the lake sediment layers, which can be used to show the long term history of bird populations. We can also learn more about how bird species have changed over the past several thousand years by analyzing bird and other wildlife DNA in sediment. This study can provide new information on the stability of these populations over time and how they were affected by past changes in climate. Where:We propose to track long-term changes in several geese populations (snow geese and Ross's geese) in the Ahiak Migratory Bird sanctuary, the Anderson Bay colony, and the Icebreaker colony. Our main base will be the Canadian High Arctic Reserch Station in Cambridge Bay. Our field sites are all within a 300 km radius of Cambridge Bay and include the Anderson Colony, the Icebreaker Colony, and the Karrak Lake Research Station in the Ahiak Migratory Bird Sanctuary. The Karrak Lake Research Station is located at the main field site at Karrak Lake (67º 14' N, 100º 15' W). It consists of six plywood buildings ranging in size from 8x12' to 20x20'. When:We plan to do our field work over a 2 week period in June/July of each year under this permit. We will spend about a week at the Ahiak Migratory Bird Sanctuary (Environment Canada research base at Karrak Lake) each sumer. Our work at the Anderson Colony and Icebreaker colony will consist of day trips to each location, where we will conduct our field work for a period of 4-8 hours on site.

French: N/A

Inuktitut: N/A

Inuinnaqtun: KinnaJules Blais, Illahakvirjua Ottawami, 30 Marie Curie Apkutta, Ottawami, Ontariop Illuanni,Titikikivip Naunnaitkutta K1N 6N5Karitaujakkut Naunaitkkutta: Jules.Blais@uottawa.ca ; Hivvajauta Naunaitkutta: (613)562-5800 Nanminnia: 6650HunnaHavvangnahuaktakkut imma, katitiikataklutta tahiup makluannik, hannianni tingmiat nunanni. Immatut 3 inch takitjutta makluk ammuluru imman attaniin, 3 feet takitjutta. Ummakaraluttik illirivaktaqut puqhivingmun, katihimaqhutta mikkiunik nunamik, immangmik tahapkuatlu kuhiiktaktaujimayut, illiriqataqhutta one litre ukkumaitjutta immang. Havvavut hivvurannaituk hillarjuangmut. Hittamainnangnik havvatikangniakturut havvakviptingnii. Iglukpangnik nappaktilimaiturut, Canadami Ihivriutiitiaruktut havakviit, iglukpainlu attuktinniangmatta, Ikaluktuiammi, hamannilunin Karrak Tahia, ihivriukrvik, Ahiangmii, Tingmiat Nunani. Tingmikuuklutta Ikaluktutiamun tikinniakturut, Angutikaktutlu tingmijutit attuklurit, Mikaitlu akhaluaktut atturlugit, kannitkijaujut Ikaluktutiammi.HuukNaunapkanqhiinahuarlutta kannukliiTingmiat ammigaitkutait naunaijattiarluru, Ikaluktutiap hannaini, Ahaikmilu. Kannukli allangurumik ihivriutirlurit tahiit Tingmiat attukattaktait, titirakqharlurit tutkumannahuaqtut tairuaqtqhait. Hivuptaa ihumariluru, katinniakaqut titkikihimajut havvavut. Tahapkuanlu Inuit pitkuhiit attahimalurit ihivriutiarlurit qannuk nammatjutta Tingmiat, immalu nikkautjutaulutiik Inuinnun. Makluk attani tahiup, itkumatiqhamik, immak lu, maklulu attarammik atanni immap tahingmi, huratjaat, tingmiatlu tahik attuktat naunaittuk.Makluk tamna naunaitjutaurammi,, kannukli immak, nunalunnin allangulirangami. Tingmiat mihimragamik tahingmi, immangmik allangutilangmatta, hapkuat itkumajut maklungmi, immangmilu.

Hapkuat naunaitkutiriikpaktakkut kannuilitaruttait tingmiat, Taima naunaijatiakpakpakkut allanguraanngamiik nuna, immaklu, taima uingaijakpakpakkut tingmiat amiraikattaqhutik, ikkilikataqhutiklu. Ihivriutirangaptta naunaittut kangarallukimmangmii itkumarammik maklungmii, imma kangaraaluk tingmiat huratjaat kannukliallanguvjakpan. Una ihhiriungnik tittikkatlu, uingaipgallaqtuk tingmiat kannuritqhait, kannuklu hilla allangungman itpan.HummiHavvaraiumajakkut, Uingaijakluru allatkiik Tingmiat ammirairumik, ikkilirumiklunin(Kannguit, Tahapkuat lu-Ross Tingmiat) Ahiak Tingmiat nunarijaat, Anderson milu Tingmiat, tahpkuatlu umiaryuat inniainnik inglirajuktut. Canadami Ihirviurvik Havakvia Ikaluktutiammi. Nuna Havarvirinahuaktakkut 300 miles nik takkitjutta, Ikaluktutiap hanniani, Anderson tingmiat illarija, hapkuatlu ummiat innit, tamnalu Karrak ihivriurvik havvakvia, Ahiangmittuk. Karrak Tahia naunaitkuta (6714° Kanangnaq, 100° 15 Uatta) Tallimat attauhingmik iglukpkaktuk, aktirutait allatkingujut.Kangalhumajurut havvaqhavut Junemi, Julymilu havvarumayakkut ummunga titikkat angitutta.Tallimat malrungnik Ahiangmi illutta aujangurangat. Havvavut Andersonmi, Ummit Innanilu, uppakatrlurit malgunnik ublunik, tamaitta havvarvikput nunami. Hitamanik-tallimat pingahuut ubluqhiunmi iggangniit tahamanni havvarlutta.

Personnel

Personnel on site: 3
Days on site: 14
Total Person days: 42
Operations Phase: from 2020-06-22 to 2022-07-10

Activities

Location	Activity Type	Land Status	Site history	Site archaeological or paleontological value	Proximity to the nearest communities and any protected areas
Ahiak Migratory Bird Sanctuary	Scientific/International Polar Year Research	Crown	The research station where we will base operations in the Ahiak Migratory Bird Sanctuary is maintained by scientists from the Canadian Wildlife Service (led by Ray Alisauskas). This station has been in continuous operation for the past 30 years.	N/A	Within the Ahiak Migratory Bird Sanctuary, and about 300 km from Cambridge Bay
Icebreaker Colony	Scientific/International Polar Year Research	Crown	Established bird colony	N/A	100 km to Cambridge Bay
Cambridge Bay and region	Scientific/International Polar Year Research	Crown	Town of Cambridge Bay	N/A	N/A

Community Involvement & Regional Benefits

Community	Name	Organization	Date Contacted
Cambridge Bay	Jenny Rausch	Ahiak Area Co-Management Committee for the Ahiak (Queen Maud Gulf) Migratory Bird Sanctuary	2019-04-23
Cambridge Bay	Beverley Maksagak	Ekaluktutiak Hunters & Trappers Organization	2019-04-15

Authorizations

Indicate the areas in which the project is located:

Kitikmeot

Authorizations

Regulatory Authority	Authorization Description	Current Status	Date Issued / Applied	Expiry Date
Nunavut Research Institute	Scientific licence	Applied, Decision Pending		
Canadian Wildlife Service	Wildlife Sanctuary access permit	Applied, Decision Pending		

Project transportation types

Transportation Type	Proposed Use	Length of Use
Air	Commercial flights to Cambridge Bay, then PCSP flights (helicopter or twin otter) to field sites	
Land	ATV to sites near Cambridge Bay	

Project accomodation types

Temporary Camp

Community

Material Use

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

Equipment Type	Quantity	Size - Dimensions	Proposed Use
Aircraft	1	20' x 8'	A helicopter to ferry passengers and equipment to field sites
Sediment coring device	1	3' x 1'	A sediment coring device to collect lake sediment samples
All terratin vehicle	3	6' x 4'	All terrain vehicles for accessing field sites near Cambridge Bay

Detail Fuel and Hazardous Material Use

Detail fuel material use:	Fuel Type	Number of containers	Container Capacity	Total Amount	Units	Proposed Use
Information is not available						

Water Consumption

Daily amount (m3)	Proposed water retrieval methods	Proposed water retrieval location
0	Bucket	Stream near Karrak Lake research station

Waste

Waste Management

Project Activity	Type of Waste	Projected Amount Generated	Method of Disposal	Additional treatment procedures
Scientific/International Polar Year Research	Greywater	10 L/day	Greywater is disposed of by soil leaching, at least 31 meters from the high water mark.	Most waste is incinerated in an incinerator. Sewage is buried in pits, at least 31 m from the nearest high water mark. Glass, metal, ash from incinerated waste, and other non-combustible waste is shipped to Cambridge Bay, Nunavut or Saskatoon, Saskatchewan for disposal or recycling.

Environmental Impacts:

Land: Impact is minimal, and almost entirely restricted to 1-2 hectares at each Research Station. Restoration plans are to remove all evidence of habitation once research projects are complete. Aircraft landing strips at Karrak Lake are on ice only and therefore land is not damaged; at Perry River the airstrip (mud flat) is marred with tire tracks (and not all are ours), but little vegetation exists in this habitat. Water: Water is used for domestic purposes only, and grey water is disposed by soil leaching. Minimal gas/oil from boating activities is deposited into Karrak Lake and nearby Adventure Lake, as fuel tanks are filled on shore. Spill kits are located at each fuel cache. Flora: Some disturbance to flora is limited to 1-2 hectares at each Research Station, as pits are dug for disposal of sewage. Pits are backfilled with soil, and vegetation colonizes these areas within 5 years. Minimal impact. Vegetation sampling for research activities is largely observational (non-destructive). Wildlife: Geese avoid nesting within 100 m of Research Stations. Garbage is incinerated regularly, to avoid attracting bears. Travel by boats and snowmobiles likely disturbs wildlife, but temporarily. Air: Incineration of domestic garbage at Research Stations expels minimal pollutants.

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

We propose to be within the Ahiak Migratory Bird Sanctuary staying at an established research station with wildlife biologists present at all times. We will do all we can to avoid wildlife, and our work will not involve wildlife in any way.

Description of Existing Environment: Biological Environment

We will be working in a ross's goose colony, and will take care to minimize disturbance. Among the species listed on Species at Risk include wolverines, buff-breasted sandpiper, grizzly bears - we will take care to avoid these species. We will avoid caribou herds.

Description of Existing Environment: Socio-economic Environment

There are documented archeological sites in the Ahiak Migratory Bird Sanctuary, but we will avoid these sites.

Miscellaneous Project Information

Identification of Impacts and Proposed Mitigation Measures

We are working in a migratory bird sanctuary with many geese - our work is non-invasive and we will avoid wildlife. We will not be present during their breeding season which should minimize our impact. We anticipate having a positive impact on the community by hiring an assistant from the local community as a guide. We have indicated a positive impact on human health because we are studying the long term stability of bird populations that can inform questions regarding food security in northern communities.

Cumulative Effects

Personnel conducting research activites may disturb wildlife, including species at risk, but care is taken to disturb all wildlife as little as possible. Researchers avoid working in the bird colonies during the light goose hatching period to avoid disrupting dispersing goslings and their parents. Research Stations can act as attractants for grizzly bears, so areas are kept tidy and garbage is incinerated regularly (and stored in closed buildings until incinerated, if required).

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
Construction																									
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Operation																									
Scientific/International Polar Year Research			M	-	-	-	-	-	-	-	-	-	-	-		-	M	M	-	-		-	P	-	-	P
Decommissioning																									
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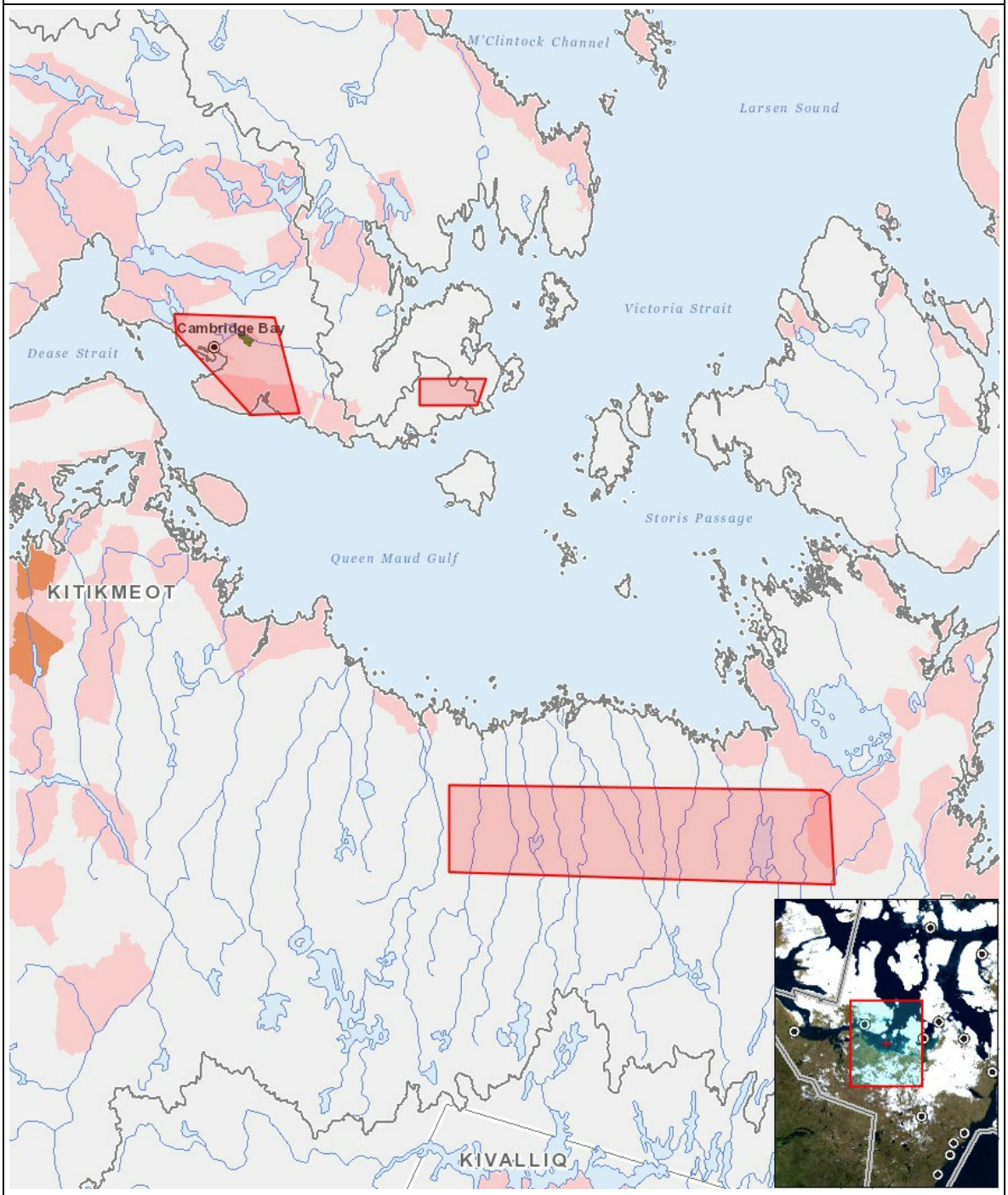
(P = Positive, N = Negative and non-mitigatable, M = Negative and mitigatable, U = Unknown)

Project Location



List of Project Geometries

1	polygon	Ahiak Migratory Bird Sanctuary
2	polygon	Icebreaker Colony
3	polygon	Cambridge Bay and region