



## **NIRB Uuktuutinga Ihivriuhikhamut #125611**

### **Muskox (*Ovibos moschatus*) distribution and abundance of Central Mainland, Nunavut (MX11)**

**Uuktuutinga Qanurittuq:** New

**Havaap Qanurittunia:** Scientific Research

**Uuktuutinga Ublua:** 5/3/2021 10:34:51 PM

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

**Piumayaat Angirutinga:** from 0001-01-01 to 0001-01-01

**Havauhikhaq Ikayuqtinga:** Lisa Marie Leclerc  
Government of Nunavut  
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Hivayautit Nampanga:: 867-982-7444, Kayumiktukkut Nampanga::

# QANURITTUT

## Tukihinnaqtunik havaariyayumayumik uqauhiuyun

**Qablunaatitut:** Project Title: Muskox (*Ovibos moschatus*) distribution and abundance of Central Mainland, Nunavut (MX-11) Applicant: Lisa-Marie Leclerc Government of Nunavut P.O. Box 3771 leclerc@gov.nu.ca 1-867-982-7444 Number of Personnel and Visitors: The permit will need to cover 6 persons; the pilot (TBD), co-pilot (TBD), Biologist (Lisa-Marie Leclerc), Biologist (TBD), Wildlife Technician (Terry Milton), Wildlife Technician Trainee (Lena Davis), community members as observers (TBD). Project Objective: This project aims to provide new scientific information on the muskox abundance and distribution of muskox in the management zone MX-11, to be able to review the current Total Allowable Harvest. Project Location: The project will include the West and Central Portion of the Queen Maud Gulf Bird Sanctuary (QMGS). Figure 1: Map of the Muskox management unit MX-11 (black line), in relation to the Queen Maud Gulf Bird Sanctuary (light green). Project duration: From July 1, 2021 to September 15, 2021. We are looking to be 2-5 days in the QMGS. Method of transportation: This is an aerial survey with no landing in the QMGS. Summary of the activity and rationale: In 2015, new muskox management units were established in Nunavut to represent muskox population boundaries. The management unit MX-11 represents now three old harvest zones; MX-13, MX-14, MX-15, and part of MX-16 and MX-19. Current harvesting rate for the muskox management unit MX-11 is based on muskox numbers estimated in 2013 from the west part and old surveys results, which result to 7,500 adult muskoxen. Although this number is the best available information, it does not accurately represent the current muskox distribution and abundance in the western part of MX-11. To obtain these numbers, we are planning to conduct an aerial survey of MX-11 in summer 2021. The area will be flown with up to 25% coverage, with transect lines spaced 8 to 12 km apart. The transect line will be surveyed at a speed of 160 km/h and an altitude of 150 m. Observers will record the number of muskox and GPS location. This project will aim to provide new scientific information on the abundance and distribution of muskox in MX-11 to be able to review the Total Allowable Harvest. Waste disposal: N/A Potential environment impact and mitigation measure: The muskox survey will commence in mid-July, with the survey area occurring within the QMGS in early August. We will be flying at approximately 150m above the ground with an airspeed of approximately 160kms/hour. This could have a small impact on local wildlife as the aircraft flies overhead, but the wildlife will not be disturbed any further once the area has been surveyed. In the sanctuary, the survey there should be completed between 2 and 5 full days (depending on weather). The percentage of coverage will be adjusted to known muskox distribution, keeping the number of km flown low and the spacing between transect lines wider, where possible, to limit disturbance. In this case, most of the area to be surveyed in the QMGS will overlap with the dark blue strata shown in Figure 1, which is at a low coverage density of 10%. In addition, the timing of the survey has been selected to minimize overlap with the peak of the breeding bird season in June and July. Measures to avoid dangerous wildlife encounters: No planned landing will occur in the QMGS area, which will limit conflict with or major disturbance to wildlife. Community consultation and involvement: Since this is a Government of Nunavut, Department of Environment -led project, extensive consultation with the community and co-management partners occurred in the preparation of this project. Direction and community support was given at the 2017 September muskox workshop and at the 2017 and 2018 KRWB AGM that this surveyed was desired. HTOs have been involved in the review of the permit application, as well as in the survey design in 2019, 2020, 2021, as well as during a conference call in the summer of 2019 to plan the survey design. In addition, community members will be employed as observers during the survey. Future Plans: This is a short-term duration research project, until there is a need to reassess the Muskox population MX11. Research results will be provided to co-management partners at the Kitikmeot Regional Wildlife Board Annual Meeting, as well as in part of the

**Uiviititut:** Titre du Projet: Distribution et abondance des boeufs musclés (*Ovibos moschatus*) du Centre du continent, Nunavut (MX-11) Applicant: Lisa-Marie Leclerc Government of Nunavut P.O. Box 3771 leclerc@gov.nu.ca 1-867-982-7444 Quantités de personnel et visiteurs: Sous ce permis, il y aura 6 personnes: le pilote, le co-pilot, la Biologiste (Lisa-Marie Leclerc), le technicien de la faune (Terry Milton), l'apprentie technicienne (Lena Davis) et les observateurs de la communauté. But du projet: Ce projet a pour but d'amasser des nouvelles données scientifiques sur la distribution et l'abondance des boeufs musclés (*Ovibos moschatus*) du Centre du continent, Nunavut (MX-11), et ainsi de déterminer les quotas de chasse en vigueur avec plus d'exactitude. Location du projet: Le projet s'effectuera dans les parties ouest ainsi que dans la zone centrale du Sanctuaire d'Oiseaux de Queen Maud Gulf. Figure 1: Carte de la zone de gestion du boeufs musclés (MX-11) (ligne noire) en relation avec le Sanctuaire d'Oiseaux du Queen Maud Gulf (en vert pâle). Durée du projet: Ce projet prendra place du 1er juillet 2021 au 15 septembre 2021. Pendant le projet, nous serons dans le Sanctuaire d'Oiseaux du Queen Maud Gulf pour une durée 2 à 5 jours seulement. Méthode de transport: Ce projet est un survol aérien sans atterrissage dans le Sanctuaire d'Oiseaux du Queen Maud Gulf. Résumé de l'activité: En 2015, de nouvelles zones de gestions ont été établies au Nunavut afin de mieux représenter la délimitation des populations de boeufs musclés. La zone de gestion MX-11 est constituée de trois anciennes zones de chasses : MX-13, MX-14, MX-15 et d'une partie de MX-16 et MX-19. Le quota de chasse pour cette

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[illegible]

7,500 inirniinnik umingmaknik. Taimaitkaluaqhuni una amigaitilaanga ihuatqijaugaluahuni hailihimajuq naunaitkuti, pingittuq ihuatqijaujumik tautungnarninginni tadj a umingmainni humiittaakhainnik amigaitilaanginniklu uvani ualliani ilangani uvani MX-11mi. Pijaanginni hapkuninnga amigaitilaanginnik, hivunikhaliuliqtugun piluni tingmitikkut qaujiharutinik uumani MX-11mi aujami 2021mi. Ininga tingmidjutiqarniaqtuq piluni imaatun 25%ngujumik takuvikhanik, piqarluni nalrujunik tingmivikhanik ungahilaarutiqaqtunik 8nik 12nun kilaamatanik (km) ungahiknirnik. Taapkuat nalrujut tingmidjutikhat qaujihaqtauniaqtun kajumiktilaakkut 160 km/h qulvahiktilaaqarlunilu imaatun 150 m (miitanik). Qunngiaqtut titiraqniaqtait kaffiujaakhainnik umingmait iliuraqlugillu GPS-kut humiinningit. Una havaakhaq piniaqhimajuq tuniluni nutaanik nalunaqtumik kangiqhidjutinik amigaitilaanginnik humiittaakhainniklu umingmainni uvani MX-11mi ihiviuriami Tamatkiutiinni Pijaaqtuni Angujauttaaqtuni. Taimaitkaluaqhuni una amigaitilaanga ihuatqijaugaluahuni hailihimajuq naunaitkuti, pingittuq ihuatqijaujumik tautungnarninginni tadj a umingmainni humiittaakhainnik amigaitilaanginniklu uvani ualliani ilangani uvani MX-11mi. Pijaanginni hapkuninnga amigaitilaanginnik, hivunikhaliuliqtugun piluni tingmitikkut qaujiharutinik uumani MX-11mi aujami 2021mi. Ininga tingmidjutiqarniaqtuq piluni imaatun 25%ngujumik takuvikhanik, piqarluni nalrujunik tingmivikhanik ungahilaarutiqaqtunik 8nik 12nun kilaamatanik (km) ungahiknirnik. Taapkuat nalrujut tingmidjutikhat qaujihaqtauniaqtun kajumiktilaakkut 160 km/h qulvahiktilaaqarlunilu imaatun 150 m (miitanik). Qunngiaqtut titiraqniaqtait kaffiujaakhainnik umingmait iliuraqlugillu GPS-kut humiinningit. Una havaakhaq piniaqhimajuq tuniluni nutaanik nalunaqtumik kangiqhidjutinik amigaitilaanginnik humiittaakhainniklu umingmainni uvani MX-11mi ihiviuriami Tamatkiutiinni Pijaaqtuni Angujauttaaqtuni. Iqqakut humungaqtukhat: Pingittuq Piniaqnahuginikkut avatimi hulaqutinik imaalu ingattaqtihimainnikkut qanuriliurutikhat: Umingmainni qaujihaqniq aullaqtirniaqtuq qitkani-July-mi, qaujihaqnikkut iningani piniaqtuq iluani Queen Maud Tariungani Tingmianun/Qupanuanun Hapummiviani atulihaaliqqat August. Tingminiaqtugu imaakiaq 150m qulaani nunaup kajumiktilaaqarluni imaakiaq 160kms/ikaaqnirmi. Una pidjutittaarungnarhijuq mikijumik hulaqutimik tahamaniittunun huradjanun taimaatun tingmiti qulautirutaanin, kihimi huradjaq pilaqutiffaarutiqalimaittun ininga iniqtaukpat qaujiharnirmin. Talvani hapummivingmi, qaujiharniq iniqtauniarungnarhijuq uvani 2nik 5niklu naahimajuni ubluni (pidjutiqaqluni qanurinningani hilaup). Avvakua takuvikhanik ihuaqhaqtauniaqtuq ilihimajaujuni umingmait humiininginnun, pipkainikkut amigaitilaanginnik kilaamitanik (km) tingmidjutinik ikiklihimaninginnun ukuallu ungahiktilaanginnik akunnainni nalrujuni hilikhijuummiqninginni, humilu pijaaqqat, kikliqaqtittijumanikkut hulaqutinik. Taimaittuq uvani, tamatqiuvjangniaqtun iniit qaujihaqtaujukhat uvani Queen Maud Tariungani Tingmianun/Qupanuanun Hapummiviani qaliriigutiginiaqtun uumani tunguktingajumi qaliriikhimajuni nunami tautungnaqtuq Naunaitkutimi 1mi, taamna ikittunik tautukvikhanik amigaitilaanginni imaatun 10%mik. Taimaatullu, ublukhait qaujiharnirvingmi pihimajun mikhilaaqtittumanikkut qaliriigutinik piqpialirutaani ivajuni tingmiani/qupanuani pidjutainni June-mi July-milu. Qanuriliurutikhat pingittaami qajangnaqtuni huradjanu akkuqtuutainnik: Piniaqhimangittut mittaamiknik uvani Queen Maud Tariungani Tingmianun/Qupanuanun Hapummiviani, taimaatun kiklikaqtipkainiaqtuq ihuangidjutinik taapkununga imaaluunniit angijunik hulaqutinik huradjanun. Nunallaani miiturutinik ilaupkainirniklu: Taimainman una Nunavut Kavamangani, Avatilqijikkut Havagvianin-hivuliqtaungman havaakhaq, amigaittun miitirutit nunallaani ukunanilu atuni-aulapkainikkut paannarijani pivaktun hivunikhaliuqnikkut uumani havaakhami. Hivunikhaliurutit nunallaaminllu ikajurutit tunijauvaktun uvani 2017mi Septembermi umingmakkut katimadjutimi uvanilu 2017mi 2018milu KRWB Katimarjuarutimi una qaujiharniq pijumajauninganik. Anguhiqijiit katimajiit (HTOs) ilauvaktun ihivriuhinirmi laisighamik uukturutimi, uvanilu qaujiharnikkut qanuridjutikhaanun May 2019,

2020,2021mi, imaalu hivajautikkut miiturutimik aujami 2019mi hivunikhaliuqnikkut qaujiharnikkut qanuridjutikhaanun. Taimaalu, nunallaamiutat havaktitauniaqtut qunngiaqtiulutik qaujiharutimi.Hivunikhami Hivunikhaliurutit:Una ikittunik-ublunik hivituniquaqtuq naunaijarnikkut havaguti, pijukhaudjutiqliqqat naunaijaffaaqtaujuqhanguqqat una Umingmainni amigaitilaanginni uvani MX11mi. Qaujiharnikkut pidjutit tunijauhungujun ukununga atuni-aulapkainikkut paannarijani uvani Kitikmeot Aviktuqhimanirniani Uumajulirinikkut Katimajiinnun Ukiuq tamaat Miitiquviani, taimaalu ilaupluni miitiquatigiiknikkut havagutini Anguhiqijiit Katimaviinnun Inungnullu.

**Personnel**

Personnel on site: 0

Days on site: 20

Total Person days: 0

Operations Phase: from 2021-07-01 to 2021-09-15

## Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaliyainnit nuna
Study area MX-11	Researching	Crown	not applicable	not applicable	Cambridge Bay, Kugluktuk, Bathurst Inlet, Bay Chimo and Queen Maud Gulf Bird Sanctuary

### Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Ikaluktuttiak	Beverly Maksagak	Hunters and Trappers Organization	2021-01-12
Kugluktuk	Amanda Dumond	Hunters and Trappers Organization	2021-01-12
Urhuqtuuq	Enuk Pauloosie	Hunters and Trapper Organization	2021-04-13

# Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Transboundary

Kitikmeot

## Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Kaanatami Huradjat Munariniq	CWS permit was submitted in February 2021	Applied, Decision Pending	2021-02-24	
Nunavut Kavamanga, Avatiliriyikkut	Permit granted- permit number 2021- 34	Active	2021-03-05	2021-12-15

## Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Air	fixed-wing	

## Project accomodation types

Nunauyuq



# Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
n/a	0	0	0

## Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Aviation fuel	fuel	0	0	0	Gallons	Fueling of the aircraft will be done mainly in Kugluktuk and Cambridge Bay. Pending in-kind support, landing and refueling might take place at TMAC and Sabina. No fuel cache will be done for this project.
n/a	hazardous	0	0	0	Gallons	n/a

## Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqittagaani qanuq	Atulirumayain imavaluin utiqittagani humi
0		

# Iqqakuq

## Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Aerial surveys	Ikulaaqtun iqqakuvaluin	zero liter	none applicable	none applicable

### Avatiliriniqmut Ayurhautingit:

The muskox survey will commence in mid-July, with the survey area occurring within the QMGS in early August. We will be flying at approximately 150m above the ground with an airspeed of approximately 160kms/hour. This could have a small impact on local wildlife as the aircraft flies overhead, but the wildlife will not be disturbed any further once the area has been surveyed. In the sanctuary, the survey there should be completed between 2 and 5 full days (depending on weather). The percentage of coverage will be adjusted to known muskox distribution, keeping the number of km flown low and the spacing between transect lines wider, where possible, to limit disturbance. In this case, most of the area to be surveyed in the QMGS will overlap with the dark blue strata shown in Figure 1, which is at a low coverage density of 10%. In addition, the timing of the survey has been selected to minimize overlap with the peak of the breeding bird season in June and July.

# **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**

### **Qanurittuq Ittunik Avatinga: Avatingalluanga**

N/A

### **Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga**

N/A

### **Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga**

N/A

## **Miscellaneous Project Information**

### **Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit**

The muskox survey will commence in mid-July, with the survey area occurring within the QMGS in early August. We will be flying at approximately 150m above the ground with an airspeed of approximately 160kms/hour. This could have a small impact on local wildlife as the aircraft flies overhead, but the wildlife will not be disturbed any further once the area has been surveyed. In the sanctuary, the survey there should be completed between 2 and 5 full days (depending on weather). The percentage of coverage will be adjusted to known muskox distribution, keeping the number of km flown low and the spacing between transect lines wider, where possible, to limit disturbance. In this case, most of the area to be surveyed in the QMGS will overlap with the dark blue strata shown in Figure 1, which is at a low coverage density of 10%. In addition, the timing of the survey has been selected to minimize overlap with the peak of the breeding bird season in June and July.

### **Tamatkiumayunik Ihuikgutivaktunik**

Impacts

Ilitariyauniq Avatiliriniqmut Ayurhautingit

	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
Havakvinga	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aulapkaininnga																									
Researching	-	-	-	-	-	-	-	-	-	-	-	M	M	-	M	M	M	-	M	-	P	P	-	-	-
Piiqtauniq																									
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyauyuq)

# Havaariyauyukhamut Nayugaa



## List of Project Geometries

1	polygon	Study area MX-11
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