



# WILDLIFE RESEARCH PERMIT APPLICATION FORM

Cover letters with the project title, a summary of the project proposed, the main species of interest (muskox) and a description of the survey areas were sent to the organizations listed below under consultation.

Check One Please:

New Project X

Ongoing

**APPLICANT:**

(Individual responsible for the project)

Jan Adamczewski<sup>1</sup> & Judy Williams<sup>2</sup>

1 - Ungulate Biologist, Wildlife Division, ENR GNWT

2 - Biologist (Ungulate Studies), Wildlife Division, ENR GNWT

**ADDRESS:**

(Include affiliation, mailing address, phone, fax, and e-mail)

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**SPONSOR(S):**

GNWT

**FUNDING SOURCE(S):**

GNWT

**ADDITIONAL LICENCES REQUIRED:**

none

**PROJECT TITLE:**

Muskox Photo Composition Survey, East Arm of Great Slave Lake Region

**RATIONALE:**

In the early 1900s, muskoxen in NWT and Nunavut on the Canadian mainland were at very low numbers (Fournier and Gunn 1998). They have since resumed their historic range and numbers have increased; however, in some areas (e.g., Thelon Sanctuary) numbers declined substantially after an initial increase. As part of monitoring North Slave regional muskox abundance and distribution, a survey centered on the East Arm region of Great Slave Lake in late winter 2018 demonstrated a more than 5-fold increase in densities from a previous



survey with a similar area in 2010 (D. Cluff, unpublished; Adamczewski et al. 2019). An additional smaller-scale survey associated with the regional survey in 2018 was flown to test whether photos taken from a small fixed-wing aircraft (Aviat Husky) could be used to classify sex and age classes of muskoxen (1, 2, 3 and 4+ year old male and female muskoxen). The results showed that muskoxen could be classified to these classes in 75% of groups photographed. The population was shown to have an exceptionally high proportion of calves and young muskoxen (Adamczewski et al. 2020). The survey proposed here would be a follow-up to March 2018 photo composition survey, to monitor the demography and approximate abundance of this population in succeeding years. In other populations, rapid increases in muskox abundance have often been followed by large declines (e.g. Alaskan North Slope, Reynolds 2001, Reynolds et al. 2002).

**References:**

Adamczewski, J., K. Olesen, D. Olesen, J. Williams, D. Cluff, and J. Boulanger. 2019. Late winter 2018 muskox photo composition survey, East Arm of Great Slave Lake. Draft report, Sept. 12, 2019, Environment and Natural Resources, Government of Northwest Territories, Box 1320, Yellowknife, NT.

Fournier, B. and A. Gunn. 1998. Muskox numbers and distribution in the Northwest Territories, 1997. Department of Resources, Wildlife, and Economic Development, Government of the Northwest Territories, Yellowknife, Northwest Territories. File Report No. 121.

Reynolds, P.E. 2001. Reproductive patterns of female muskoxen in northeastern Alaska. *Alces* 37(2):403-410.

Reynolds, P. E., H. V. Reynolds, and R. T. Shideler. 2002. Predation and multiple kills of muskoxen by grizzly bears. *Ursus* 13:79-84.

**TIME PERIOD:**

Approximately 35 flying hours, late March 2020, Aviat Husky.

**LOCATION AND NEAREST COMMUNITY:**

Lutsel K'e is the nearest community. The proposed survey area would be similar to the area surveyed in March 2018 in attached map.

**SPECIES STUDIED:**

Muskox; note that other large mammals seen (e.g., moose, caribou, wolves), will also be recorded.

**PROJECT LEADER(s):**

Jan Adamczewski and Judy Williams

**PROJECT PERSONNEL:**

Den Cluff, N Slave Regional Biologist, ENR; Dave Olesen, pilot; Kristen Olesen, photographer.



**OBJECTIVES:**

1. Obtain a demographic profile of the muskox population in the East Arm area of Great Slave Lake in March 2020, to compare with earlier results from March 2018 (proportions of calves, and 2, 3 and 4+ year old muskox males and females).
2. Assess approximate trend in abundance and distribution of muskoxen in the East Arm area.

**METHODS:**

Transect lines similar to those in the attached map will be flown to find groups of muskoxen, using an Aviat Husky aircraft. Locations of each muskox group will be identified with a GPS. The larger muskox survey will use aerial fixed-wing strip-transect methods that are well established in the NWT (see Fournier and Gunn 1998). Photos of each group will be taken to try to classify calves, yearlings, 2-year-old males and females, and 3-plus-year-old males and females, using methods similar to those of Jones (2015) in Alaska and as described in detail by Adamczewski et al (2019).

Reference: Jones, P. 2015 Nelson Island muskox survey results. Department of Fish and Game, Division of Wildlife Conservation, Northwest, Bethel, Alaska.

**CURRENT CONSULTATION:**

Wildlife Research Permit application will be sent to:

- Yellowknives Dene First Nation
- Tłıchq Government
- North Slave Métis Alliance
- Łutsel K'e Dene First Nation
- Wek'èezhì Renewable Resources Board (as a Wildlife Management Proposal)
- Deninu Kue First Nation
- Fort Resolution Métis Council
- NWT Métis Nation

**FUTURE COMMUNITY CONSULTATION PLAN:**

Report on survey results will be sent to:

- Yellowknives Dene First Nation
- Tłıchq Government
- North Slave Métis Alliance
- Łutsel K'e Dene First Nation
- Wek'èezhì Renewable Resources Board
- Deninu Kue First Nation
- Fort Resolution Métis Council
- NWT Métis Nation



**OPPORTUNITIES FOR LOCAL PARTICIPATION:**

The Aviat Husky is a small aircraft with room for a pilot and one observer. In this case, the pilot would be Dave Olesen and the observer would be photographer Kristen Olesen. There would not be room for any additional observers or GNWT staff in the aircraft.

**MANAGEMENT OR RECOVERY PLANS:**

GNWT ENR will be developing a muskox management strategy for the NWT.

**FOLLOW UP REPORT:**

A report on results of the muskox survey will be sent to each of the groups consulted. A draft report on the 2018 photo composition survey will be sent to all organizations included in the permit application.

Figure 1: Map of proposed muskox survey areas for March 2018, and 2010 muskox survey area. The two survey areas in March 2018 would include the area surveyed in 2010 to enable a comparison, and include additional areas. Final survey boundaries may be adjusted depending on fuel and budgets.

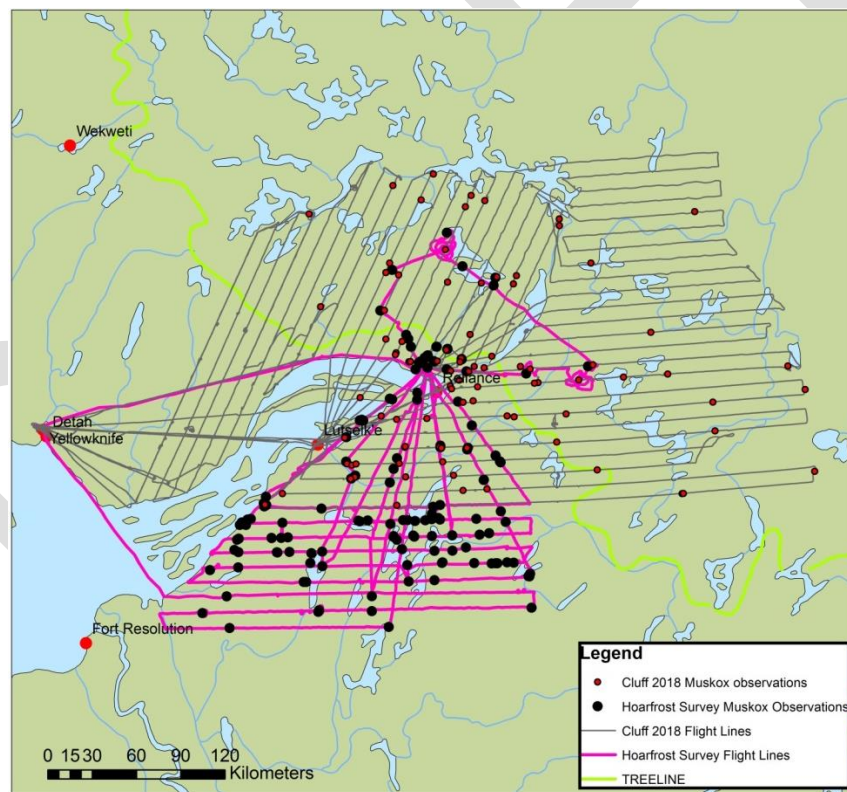


Figure 1. Muskox fixed-wing survey area in late winter 2018 in the East Arm area of Great Slave Lake. Grey lines were part of the large regional survey flown by Cluff (Unpublished). Red dots show locations of muskox groups. Pink lines are the additional lines flown in the southern part of the survey area with the Husky and the additional flying to photograph muskox groups. Black dots show muskox groups seen during the Husky flying. Survey area and lines to be flown in March 2020 would be similar to the pink lines on the map.



## Instructions for submitting your application

Most of the survey area proposed is in the North Slave administrative region, but a portion would extend into the South Slave region. As a result, this application is being sent to the Wildlife Director, GNWT ENR. The consultation list includes organizations in the North Slave and South Slave regions.

### **Acting Director, Wildlife Division**

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