

RE-EVALUATION OF THE NORTHERN KIVALLIQ MUSKOXEN (Ovibos moschatus) DISTRIBUTION, ABUNDANCE, AND TOTAL ALLOWABLE HARVEST IN MUSKOX MANAGEMENT UNITS MX-10.

The Government of Nunavut, the Department of Environment, accept this report in totality and would like to inform NWMB of the results and management recommendations.



SUMMARY REPORT ON MUSKOX DISTRIBUTION AND ABUNDANCE, MUSKOX MANAGEMENT UNITS, MX-10, 2017

This short document is a summary of the information provided in the report entitled: "Re-evaluation of the Northern Kivalliq Muskoxen (*Ovibos moschatus*) Distribution, Abundance, and Total Allowable Harvest in muskox management unit MX-10".

The Government of Nunavut mandate includes the management of muskox populations and the harvest of muskox in Nunavut and needs to conduct research and monitoring (population surveys) to inform the management process. This report provides scientific information and recommendations to help decision-makers in the ongoing managing of the species in Nunavut.

This summary is based on the information in the full English version of the research report done in July 2017. The original English copy of the report has been provided for reference.





Information

The Muskox Management Unit MX-10 is an example of a location where muskox are recolonizing their historical range. Survey work conducted over the past 20 years has monitored the muskox range expansion in the Kivallig region.

The first survey of Northern Kivalliq Muskox (NKMX) subpopulation, former southern part of MX-10, was done in July 1999. The muskox estimate at that time was 1,522 adult and yearling muskoxen. During the years after, local hunters from Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet, and Baker Lake reported increases in muskox abundance and continued expansion, where they have observed muskox closer to their communities.

Another survey of the NKMX area was completed in 2012 and that survey resulted in a population estimate of 2341 adult and yearling muskox. Expansion to the east was evident during the 2012 survey.

Based on local knowledge, there was a need to re-evaluate the existing Total Allowable Harvest (TAH) of 190 as the population seemed to be increasing and expanding. To date, there have not been any indications of disease within the muskox in the management area.

Objectives

This project aims to address concerns of Inuit, as well as to provide new scientific information, by establishing a new 2017 estimate. Therefore, the main objectives of this study were to:

- Determine the estimated number of muskoxen
- 2. Determine muskox distribution and density; and
- 3. Determine calf: adult ratio.

Methods

Study Area

The study area is the lower half of the muskox management unit MX-10. The Northern Kivalliq Muskox survey study area is based on prior survey and recent observations of muskox moving eastward. Thus, effort was made to survey outside of known distributions to ensure capturing the extent of the range expansion. Thus, the survey included portions of the Back River Plain, Garry Lake Lowland and Wager Bay Plateau ecoregion.

Survey area

maximize To the coverage area investigated, anticipated muskox distribution pattern was obtained from past ground surveys, hunter observations, and Inuit Traditional Knowledge. According Traditional Knowledge. muskox have increased in number, and they are now expanding. The survey area in an estimated 60,576 km² and encompassed the lower half of MX-10 management area. Based on this, the whole study area was surveyed at

29.2% and 7 km spacing between transect line (Figure 1).

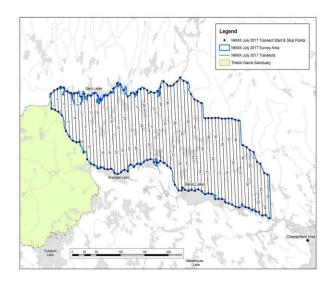


Figure 1: Study area and transect of the July 2017 Northern Kivalliq muskox survey. The study area is delineated based on estimated densities from IQ studies and past survey results.

Aircraft configuration

This survey was flown using a Cessna 206 Grand Caravan high wing single engine turbine aircraft. The transect line were surveyed at a speed of 160 km/hr and the survey altitude was maintained as close as possible of 152 meters above ground level (AGL). Using distance sampling techniques, the strip width was marked at 0, 250, 500, 750, 1,000 meters on each side of the aircraft for a total of 2,000 m strip width along each transect. An independent double observer pair, sight-re-sight method was used. Observers on both side of the plane were responsible for continuously searching for, spotting, and counting muskox including the number of calves. Only counts of adults and yearling was used in the final estimate. Incidental sightings of caribou, polar bear, wolverine, and wolf were also recorded.

Results

Distribution

The survey was conducted from July 21st to July 29th, 2017. Survey observations suggest that the muskox of NKMX has extended their geographic distribution east and southeast (Figure 2; blue vs red dots). This was monitored with the increase in study area from 35,378 km² in 1999, 49,302 km² in 2012, and 60,576 km² in 2017 which represent a range increase of 41%.

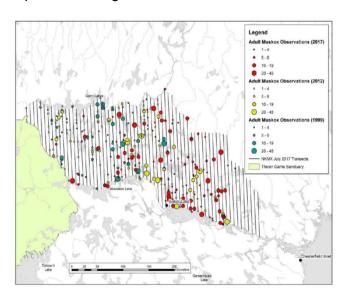


Figure 2: Northern Kivalliq muskox aerial survey observations of muskox from July 1999 (blue) to July 2012 (yellow) and July 2017 (red).

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Calf proportions and estimate

During the visual survey 941 adult muskoxen and 160 calves were counted on transect. Calf proportions within NKMX has increased from 12.5% to 17% in July 1999 and July 2017, respectively.

Overall, the muskox density of the study area was low at 0.054 muskox / km^2 . The estimated number of muskoxen in the management unit MX-10 is 3,239 \pm 1,050 (95% CI; CV = 0.16) (Figure 3). Although figure 3 suggests an increase in abundance between 2012 and 2017, the results were not statistically significant.

Recommendations

Based on the high proportion of calves, which is consistent with a stable or increasing abundance, low prevalence of disease within the population, an expansion of range eastward, stable to increasing trends in the adjacent Muskox Management Units of MX-08 and MX-13, and the declining population trends in mainland barren-ground caribou herds, an increase to the MX-10 TAH is recommended. There is some risk associated with an increased TAH as the population estimate from the scientific survey is not significantly different from the 2012 estimate, but the local Inuit knowledge has been consistent identifying changes in Muskox trends and increased monitoring would help mitigate the risk. The Department of Environment is recommending increasing the TAH of 190 to 240 muskoxen for the Muskox Management Unit MX-10.

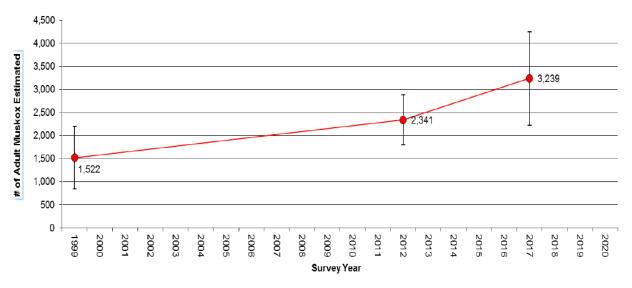


Figure 3: Northern Kivalliq muskox population trend in the Muskox Management Unit MX-10 for 1999, 2012, and 2017 from aerial surveys