

MX-10 Population Survey Report: Executive Summary

Prior to the enactment of protection in 1917, muskox subpopulations throughout the central Arctic were hunted to near extirpation. Muskox populations within Nunavut are currently re-colonizing much of their historical range though there remain gaps in information on the status of muskox subpopulations in the area collectively known as the Northeastern Mainland. The northeastern mainland encompasses an area north of the Thelon River, Baker Lake, and Chesterfield Inlet to the arctic coastline, east of Chantrey Inlet. The range extents of the Northern Kivalliq Muskox subpopulation also termed the MX-10 muskox management unit, are completely within this area (**Figure 1**). This subpopulation borders the Central Kivalliq Muskox subpopulation (or the MX-13 muskox management unit), separated by Chesterfield Inlet. Together the central (MX-13) and northern (MX-10) Kivalliq muskox subpopulations make up the muskox range extents within the Kivalliq region of Nunavut. At its greatest extent, the distribution of muskox in the Kivalliq region of Nunavut occurred within an area extending south of 66° latitude, west to the Northwest Territories (NWT)/Thelon Game Sanctuary boundaries, and east to the Hudson Bay coast line and south to the Manitoba border. Survey work conducted within the last 20 years has indicated a range expansion of Kivalliq muskox subpopulations to the northeast, east, and south of their historical range (**Figure 2**).

Prior to 2010, Kivalliq muskox subpopulations were estimated using fixed-width line transect surveys in July of 1985, July 1986, July 1991, July 1999 and July 2000. Surveys were generally flown in July when muskox are distributed more evenly across the landscape, as compared with the winter season when groups can often coalesce as a result of limited forage accessibility due to snow and ice. The history and reasons behind fluctuations in muskox numbers for the MX-10 subpopulation are poorly understood. The first abundance survey of this subpopulation was undertaken in July 1999 within the southern extents of the MX-10 management zone, formerly known as the MX-20 management zone. This July 1999 survey resulted in an estimated population size of 1,522 (95% CI = 679; CV = 0.22) adult and yearling muskox for MX-10.

In the five years following the July 1999 survey estimates, local hunters from Arviat, Whale Cove, Rankin Inlet, Chesterfield Inlet, and Baker Lake reported increased muskox abundance in MX-10, and a continued expansion of muskox into previously unoccupied ranges. Following the receipt of this local knowledge, the Government of Nunavut Department of Environment (DOE) met with the Kivalliq Wildlife Board (KWB) to discuss an increase in the Total Allowable Harvest (TAH), and the removal of the seasonal Non-Quota limitations (NQL), based on a new population assessment of both the MX-10 and MX-13 subpopulations.

By the fall of 2008, a new TAH was established for both the MX-13 and MX-10 subpopulations. All parties agreed to increase the TAH from 3%, to 5% of the lower confidence intervals of the 1999 survey estimates, with the understanding that aerial surveys to confirm hunter observations of increased muskox numbers would be flown as soon as possible. Additionally, all NQLs were removed for both the MX-10 and MX-13 subpopulations.

A re-evaluation of Kivalliq muskox subpopulations was undertaken in July 2010, and again in 2016, for the MX-13 subpopulation, and in July 2012 for the MX-10 subpopulation.

The July 2012 MX-10 subpopulation abundance survey estimated 2,341 (95% CI = 545; CV = 0.12) adult and yearling muskox, an increase from the July 1999 survey estimate of 1,522 (95% CI = 679; CV = 0.22) adult and yearling muskox. The results of this survey suggested strong growth within the MX-10 subpopulation. Additionally, range expansion to the south and east for the MX-13 subpopulation, and eastward for the MX-10 subpopulation, was evident (**Figure 2**). The following report provides a re-assessment of the MX-10 subpopulation and summer range. The population assessment analysis presented herein is reliable and complete for the purposes of management. We utilized methods consistent with previous survey analysis and proven to provide reliable estimates of abundance. However, the DOE has developed new analytical methods and is in the process of applying these methods to previous survey observations to assess whether these new methods improve our ability to assess abundance, improve reliability, and facilitate greater community involvement. When re-analyses of these data are completed, the DOE will share the results with all stakeholders, and if proven useful, will update current muskox survey methods to improve our ability to monitor muskox abundance, and more effectively engage and inform communities across Nunavut.

To date, there are no indications of disease within the herd. Research into the distribution of the lungworm (*Omingmakstrongylus pallikuukensis*) amongst mainland muskox has included samples from the MX-10 subpopulation, but no evidence of the disease has been found, to-date. Similarly, no evidence of Yersiniosis has been discovered in muskox within the Kivalliq region, however, no screening has occurred for Kivalliq muskox in recent years. Despite the lack of evidence of prevalent disease within Kivalliq muskox subpopulations, continued screening of suspect samples provided by hunters is strongly recommended.

From the late 1980s to present, hunters have been reporting increased observations of muskox closer to their communities, both south and east of previously documented distributions. Ideally, communities in the Kivalliq region would like to have access to healthy muskox populations. Both population abundance, and distribution observations discussed herein, will provide information that will enable Regional Wildlife Organizations (RWOs), local Hunters and Trappers Organizations (HTOs), and biologists to determine the potential long-term effects of current and proposed harvest regimes on muskox populations in the Kivalliq, while also providing information on the continued expansion of muskox into their historical range.

The Government of Nunavut continues to use aerial surveys and strip transect quantitative methods to estimate both MX-13 and MX-10 subpopulation numbers, and uses these estimates to re-assess the TAH for both management units. The TAH for Kivalliq muskox subpopulations is currently based on 5% of the estimated lower 95% Confidence Interval (CI) of the most recent mean population estimate. At present there is a TAH of 90 for the northern Kivalliq muskox subpopulation (southern extents of MX-10) (**Figure 1**). There are no NQLs being recommended at this time.

In this report, we provide a detailed analysis of the results of our 2017 abundance survey for the MX-10 subpopulation, and discuss management recommendations for both the MX-10 and MX-13 subpopulations.

The abundance survey conducted in MX-10 in July 2017 produced an estimate of 3,239 adult and yearling muskox, an increase from the 2,341 adult and yearling muskox estimated in 2012. Additionally, evidence of range expansion within the management unit to the north and east was documented in July 2017. Based on the increase in muskox abundance detected in the July 2017 survey, an increase in TAH from 90 to 95 muskox is recommended for the subpopulation of muskox in MX-10. Though small, the DOE recognizes the potential for this additional amount to generate additional income for Kivalliq families, as well as enhance food security.

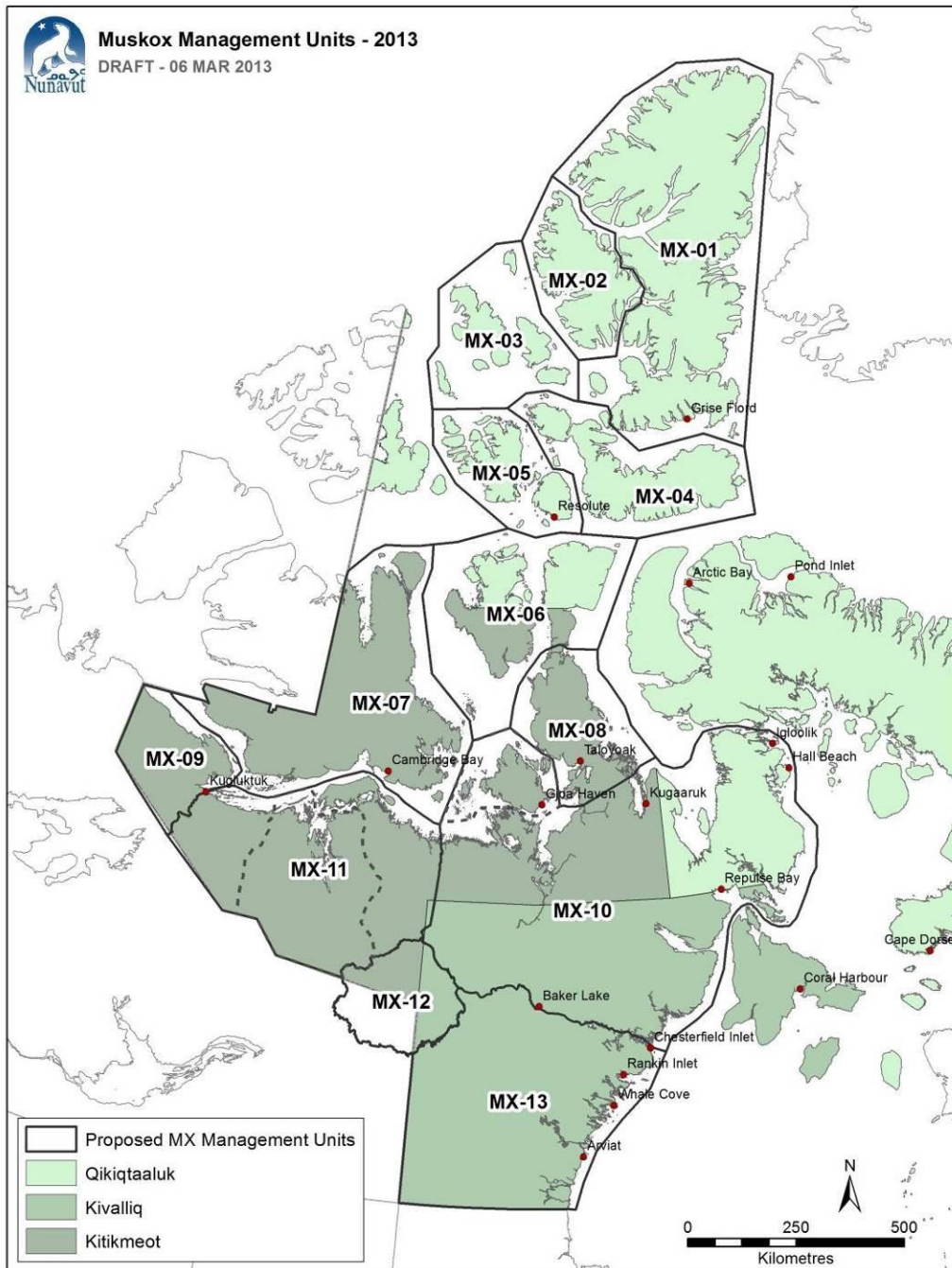


Figure 1. Nunavut Muskox Management Units. The northern Kivalliq muskox subpopulation (NKMx) extents are represented by the southern extents of the northeastern mainland group (MX-10).

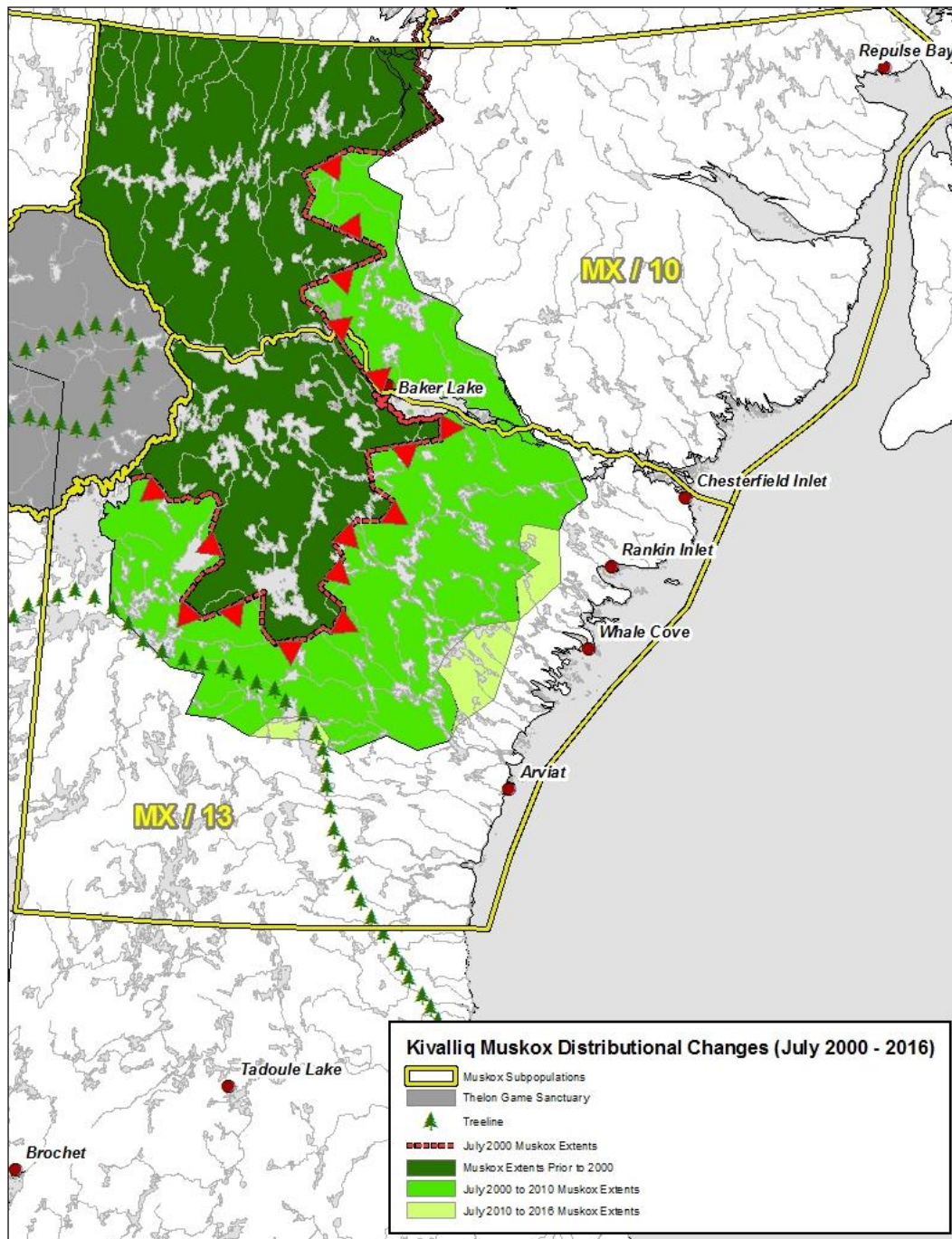


Figure 2. Indicated central and northern Kivalliq muskox range expansion from pre-2000 extents, to July 2010, and to July 2016 extents.