HIGH ARCTIC MUSKOX (*Ovibos moschatus*) AND PEARY CARIBOU (*Rangifer tarandus pearyi*) HARVEST SUMMARY 1990-2015

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Summary
Harvest reporting has been in place for muskoxen in the High Arctic in the Qikiqtaaluk Region of Nunavut since the 1990-91 harvest year. A previous report in 2010 summarized the harvest database from 1990 to 2009. This report provides an update on harvest activities in the region from 2010 to 2014 and compares current harvesting trends with previous trends dating back to 1990. No mandatory harvest reporting or quotas are currently in place for Peary caribou, and any records of caribou harvest are voluntary and usually represent estimates or best guesses by the Hunters and Trappers Organizations or Wildlife Officers.

Overall, muskox harvest has declined in Resolute and Grise Fiord since the 1990s. Arctic Bay hunters hunt muskoxen sporadically on Somerset and Devon islands. The recovery of Peary caribou populations on the Bathurst Island Complex allows hunters in Resolute an alternate, and preferred, source of country food, which may be why muskox harvest has declined. The proportion of harvest for domestic/ commercial use has also declined relative to sport hunts, although sport hunting still accounts for approximately the same number of tags as in the 1990s. Despite lower harvests, muskox populations are at historic highs on Bathurst Island and southern Ellesmere Island, and could support more harvest than is currently taken.

The lack of mandatory reporting for Peary caribou harvest prevents any analyses or conclusions based on harvest levels. Comparing tag records and harvest reported through surveys to the Nunavut Wildlife Harvest Study for muskoxen, it becomes clear that reported harvest underestimates actual harvest, but inconsistently enough so as not to readily predict actual harvest. The minimum incidental harvest reports presented here for Peary caribou would therefore not allow us to reliably determine overall harvest or population trends. Establishing reporting procedures for Peary caribou harvest is recommended.

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ᐊᖑᑕᐅᕙᒃᑐᓂᑦ ᐅᓂᒃᑲᐅᓯᐅᖕᓃᑦ ᐊᑐᖅᑕᐅᖃᑦᑕᖅᓯᒪᔪᑐᖃᐅᓕᖅᑐᑦ ᐅᒥᖕᒪᖕᓄᑦ ᐅᑭᐅᖅᑕᖅᑐᒥᑦ ᖁᑦᑎᒃᑐᒥᑦ ᕿᑭᖅᑖᓗᖕᒥᑦ ᓄᓇᕗᒻᒥᑦ 1990-91–ᒥᓂᓂ ᐱᔭᐅᕙᒃᑐᓂᑦ. ᑭᖑᓪᓕᖕᒥᑦ ᐅᓂᒃᑳᓕᐊᖑᓚᐅᖅᑐᑦ 2010–ᒥᑦ ᓇᐃᓈᖅᓯᒪᓚᐅᖅᓯᒪᕗᑦ ᐊᖑᑕᐅᓯᒪᔪᑦ 1990–ᒥᑦ 2009–ᒧᑦ. ᑖᓐᓇ ᐅᓂᒃᑳᖅ ᑐᓴᖅᑎᑦᑎᒋᐊᒃᑲᓐᓂᖅᐳᖅ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓂᑦ ᑕᐃᕙᓂ ᓄᓈᓐᓂᑦ 2010–ᒥᑦ 2014–ᒧᑦ ᐊᔾᔨᒌᙱᓐᓂᖏᓐᓂᒃᑯ ᑕᑯᓯᒪᓪᓗᑎᒃ ᐅᓪᓗᒥ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓄᑦ ᓯᕗᓪᓕᓖᑦ ᐅᑎᖅᓯᒪᓪᓗᑎᒃ 1990–ᒧᑦ. ᐱᔭᕆᐊᖃᓪᓚᕆᒃᑐᖃᙱᑦᑐᑦ ᐊᖑᑕᐅᔪᓄᑦ ᐅᓂᒃᑳᓕᐅᖕᓂᖕᓄᑦ ᐱᔭᐅᔪᓐᓇᖅᑐᓂᒃᔫᓐᓃᑦ ᖃᑯᒃᑕᓄᑦ ᑐᒃᑐᓄᑦ, ᑎᑎᖅᑲᐃᓪᓗ ᑐᒃᑐᑕᐅᕙᒃᑐᑦ ᒥᒃᓴᓄᑦ ᐱᔪᒪᓂᒃᑰᖓᓱᑦ ᐊᔾᔨᓪᓗᐊᑕᕆᕚᖔᓂᒋᓪᓗ ᓇᓚᐅᑦᑖᕈᓄᑦ ᐃᓱᒪᒋᔭᐅᔪᓄᓪᔫᓐᓃᑦ ᐊᖑᓇᓱᒃᑐᓕᕆᔨᒃᑯᑦ ᑲᑐᔾᔨᖃᑎᒌᒃᑯᖏᓐᓄᑦ ᐆᒪᔪᖕᓂᐊᖅᑎᓄᓪᔫᓐᓃᑦ.

ᑕᒪᐃᓐᓂᒃ, ᐅᒥᖕᒪᒪᓯᓗᐊᖃᑦᑕᕈᓐᓃᓚᐅᖅᑐᑦ ᖃᐅᓯᐃᑦᑐᒥᑦ ᐊᐅᓯᐃᑦᑐᒥᓪᓗ ᑕᐃᑲᙵᓂᓂᑦ 1990–ᖏᓐᓂᑦ. ᐃᒃᐱᐊᕐᔪᖕᒥᐅᑦ ᐃᓛᓐᓂᑯᓚᐅᓯᖕᒫᑐᒃ ᐅᒥᖕᒪᒪᓯᓯᓯᑦ ᑰᒪᓇᔫᑉ ᓄᓇᖕᒪᓐᓂᑦ ᑕᓪᓗᕈᑎᓂᓪᓗ. ᐊᒥᓱᕈᖅᐸᓪᓕᐊᓂᖏᑦ ᖃᑯᒃᑐᐃᑦ ᑐᑐᒃᑐᐃᑦ ᑐᒃᑐᓯᐅᕐᕕᖕᒥᑦ ᐊᖑᓇᓱᒃᑎᓄᑦ ᐊᓯᖕᒫᖕᒪᖕᓈᕈᑕᐅᓯᒪᕗᑦ, ᐱᔭᐅᔪᒪᓂᖅᓴᐅᓪᓗᑎᒡᓗ, ᓂᕿᓪᓗᐊᑕᑦ, ᐃᒻᒪᖄ ᑕᐃᒫᒃ ᐅᒥᖕᒪᒪᓯᓗᐊᖕᓂᑦ ᐊᒃᐸᖅᐹᓪᓕᖅᓯᒪᕗᑦ. ᐃᓚᖕᒪᑦ ᐊᖑᓇᓱᖕᓂᖕᓄᑦ ᓂᕆᔭᒃᓴᒧᑦ/ᐊᑐᖅᑕᓂᖏᑦ ᐊᒃᐸᖅᓯᒪᒋᕗᑦᑕᐅᖅ ᐊᔾᔨᓪᓗᐊᑕᖏᑦ ᐊᖑᓇᓱᒃᑎᑦᑎᖕᓂᖕᓂᑦ, ᑕᒪᒃᑯᐊ ᓱᓕ ᐊᖑᓇᓱᒃᑎᑦᑎᓃᑦ ᐊᔾᔨᐸᓪᓗᐊᑕᓇᓪᓗᓂᒥᑦ ᓂᕕᖕᒪᐅᒃᑯᑕᐅᕙᒃᑐᓂᑦ ᐊᒥᓲᓂᖏᑦ ᑕᐃᑲᓂᑎᑐᑦ 1990–ᑎᑐᑦ. ᐊᒥᓲᓗᐊᙱᒃᑲᓗᐊᖅᑐᑎᒃ ᐊᖑᓇᓱᒃᑕᑦ, ᐅᒥᒃᒪᐃᑦ ᐊᒥᓲᓂᖏᑦ ᐊᒥᓲᓚᖑᔪᑦ ᑐᒃᑐᓯᐅᕐᕕᖕᒥᑦ ᑲᓇᖕᓇᖕᓚᓂᑦ ᐊᐅᓯᐃᑦᑐᖕᒥᐅᑦ ᕿᑭᖅᑕᓛᓂᑦ, ᐃᑲᔫᑕᐅᔪᓐᓇᖅᑐᓂᓗ ᐊᖑᓇᓱᖕᓚᓂᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᐅᓪᓗᒥᐅᔪᖅ.

ᐱᑕᖃᑦᑎᐊᙱᓐᓂᖓ ᐅᓂᒃᑳᓕᐅᕆᐊᖃᓪᓚᓂᖕᒥᑦ ᖃᑯᖅᑕᓄᑦ ᑐᒃᑐᓄᑦ ᐱᔭᔪᑦ ᖃᐅᔨᓴᕈᑎᒃᓴᖃᙱᓚᖅ ᖃᓄᐃᓕᔾᔪᑎᒃᓴᖃᙱᓪᓚᕆᖕᓂᖓᓄᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᑎᒍᑦ. ᕿᒥᕈᓪᓗᒥᑦ ᓂᕕᙯᐅᒃᑯᑎᓄᑦ ᑎᑎᖅᑲᐃᑦ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓄᓪᓗ ᐅᓂᒃᑳᓕᐊᑦ ᓇᐃᓴᐃᓂᒃᑯᑦ ᐅᑯᓄᖅ ᓄᓇᕗᒻᒥᑦ ᐆᒪᔪᖅᑕᕆᐊᖃᖅᑐᓂᒃ ᖃᐅᔨᓴᕐᓂᖅ ᐅᒥᖕᒪᒃᓄᑦ, ᓇᑐᓇᖅᑖᖅᑐᖃ ᑖᒃᑯᐊ ᐅᓂᒃᑳᓕᐊᖑᔪᑦ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓄᑦ ᑐᑭᓯᐅᒪᓂᖅᓴᐅᓗᑎᒃ ᐱᔭᐅᓪᓚᕆᒃᐸᖕᓂᒋᑦ, ᐃᖕᕿᐅᖃᑎᒋᔭᐅᓂᖅᓴᐅᓪᓗᑎᒃ ᓇᓚᐅᑦᑖᕈᓐᓇᖅᑐᓂᒃ ᐱᔭᐅᓪᓚᕆᒃᐸᖕᓂᒋᑦ. ᒥᑭᔪᑦ ᐱᔭᐅᔪᓄᑦ ᐅᓂᒃᑳᓕᐊᑦ ᓴᖅᑭᑕᐅᔪᑦ ᖃᐅᔨᓴᕐᓂᕐᒧᑦ ᑐᑭᓯᐅᒪᓂᖅᓴᐅᓕᕐᓗᓂ ᐱᔭᐅᔪᓂᑦ ᐊᒥᓱᖓᓂᑦ ᓯᕗᓂᒃᓴᒥ ᐅᓂᒃᑳᓕᐊᖑᓂᕆᓯᐊᖅᑕᐃ. ᐅᓂᒃᑳᓕᐅᕐᓂᖅ ᖃᐅᔨᓴᕐᓂᒥᑦ ᑐᑭᓯᐊᒍᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᐊᑐᓂᖅᔭᐅᕗᑦ.

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Introduction

A Brief History of High Arctic Harvest

Terrestrial mammals have been hunted sporadically in productive areas of the High Arctic for thousands of years. A warm period from 2500-1500 BC allowed the Independence I people of the Arctic Small Tools tradition to settle areas of Ellesmere Island. The Saqqaq culture occupied western Greenland and eastern Ellesmere Island from about 1900-800 BC, and from about 1200-800 BC, the Pre-Dorset occupied parts of the High Arctic as well as the Low Arctic. Independence II appeared around 1000 to 500 BC in the High Arctic, as well as the pan-arctic Early Dorset culture from 700 to 500 BC. Many archaeological sites often representing several cultures are found near polynyas, where marine resources would be available year-round (in the High Arctic, particularly Cornwallis, Devon, and Bathurst islands and eastern Ellesmere Island; Schledermann 1980). Other areas, like the Lake Hazen plateau on Ellesmere Island, suggest a lifestyle relying more heavily on terrestrial resources (Manseau et al. 2004).

Changing climate patterns likely caused the sporadic occupation and abandonment of the High Arctic. After the Early Dorset period, the area was largely uninhabited until the next climatic optimum, a shorter and cooler warm period from 900-1100 AD. The pan-arctic Late Dorset occupied parts of the High Arctic from about 700 to 1400 AD, but disappeared about the same time that the ancestors of modern Inuit, the Thule, expanded east from Alaska, around 1100-1200 AD. Meanwhile, the Norse had arrived and settled in Greenland from 1000-1450 AD, apparently establishing trade relations with the Dorset in the eastern Canadian Arctic as far north as Ellesmere Island.

Although whalers, missionaries, and fur trade posts were scattered throughout the arctic in the 1700s and 1800s, exploratory expeditions in the 1800s likely had a particularly significant impact on wildlife in the High Arctic, where there was relatively little human presence. Nares' 1875-76 expedition harvested 62 muskoxen on northern Ellesmere, Greely's 1881-84 expedition harvested 103 muskoxen, and Sverdrup's 1898-1902 expedition harvested 3 Peary caribou and 66 muskoxen (Sverdrup 1904). Peary's 3 expeditions, in 1898-1902, 1905-06, and 1907-08 probably harvested 260 Peary caribou and 978 muskoxen (Peary 1910, Peary 1914). Peary caribou that currently inhabit northern Ellesmere Island are more closely related to central Ellesmere Island caribou than to the northern Ellesmere Island caribou that Peary harvested, suggesting that the population was not able to recover without an influx of animals from farther south (Manseau et al. 2004, Petersen et al. 2010).

In the 1920s, Royal Canadian Mounted Police stations were established in the High Arctic, which also relied partly on local wildlife for sustenance. Craig Harbor, on southern Ellesmere Island, operated from 1922-25 (4 caribou, 5 muskoxen) and again from 1933-1940 (25 caribou; summarized in Manseau et al. 2004). Alexandria Fiord, on the east coast of Ellesmere Island, operated from 1926-32 (28 caribou, 16 muskoxen; summarized in Manseau et al. 2004). Although Inuit have harvested Peary caribou and muskoxen in the High Arctic for generations, there were no permanent settlements there until the Canadian government established Grise Fiord and Resolute Bay in August 1953. Inuit families were relocated from Inukjuak in northern Quebec and Pond Inlet on Baffin Island. Despite the obvious hardships and challenges the original settlers faced in a harsh, unfamiliar environment with no support, the communities persist today, relying on caribou and muskoxen as part of their traditional culture and for subsistence.

Muskox Management in Nunavut

Muskoxen have been regularly harvested by Inuit and their predecessors for generations on the mainland and Arctic Archipelago, and they continue to be an important source of country food. Oral history suggests that muskoxen disappeared from Baffin Island in the 1400s (Barr 1991), and they are also absent from

Southampton Island. Although climatic conditions and natural population cycles likely influenced the steep decline of muskox populations in the late 1800s and early 1900s, it is largely attributed to overharvest (Gunn 1990). After the decimation of bison herds, muskox hides filled the demand for bison robes, making them the focus of intensive harvest for the fur trade (Barr 1991). Muskox harvesting, except by First Nations, Inuit, and Inuvialuit, was banned in Canada in 1917, with total protection in 1924 when it became clear that continued exploitation threatened the persistence of the species. By the 1960s, muskox populations had recovered sufficiently to allow limited harvest, and the first quotas were introduced in 1969. Quotas were assigned to muskox management units (MMUs), which were established based on traditional harvest routes and areas and on knowledge of muskox populations (Gunn 1984).

Following the separation of Nunavut from the Northwest Territories in 1999, quotas and harvest reporting fell to the new territory, under the Nunavut Wildlife Act. The Nunavut Wildlife Management Board (NWMB), a co-management board established under the Nunavut Land Claims Agreement, establishes, modifies, and removes restrictions on Inuit harvest, which can only be implemented given a conservation concern. This includes the old quotas, now called Total Allowable Harvest (TAH), and any non-quota limitations (NQL) like sex-selective harvest, closed season, or restricted areas. TAHs and NQLs are established based on the best available knowledge, both Inuit Qaujimajatuqangit (IQ) and scientific information, with input from all co-management partners. The final authority is the Government of Nunavut's Minister of Environment.

For muskoxen in the Kivalliq, a conservative TAH of 3% of the lower 95% confidence limit of the most recent population estimate was set to encourage range expansion and population recovery (Campbell and Setterington 2001). Harvest levels in the Kitikmeot, without a muskox management plan, are more variable and TAHs have not always mirrored survey results (Dumond 2006). In the High Arctic, a muskox management plan was accepted in 2014, which proposed new MMUs that more accurately reflect population boundaries, and changes to TAHs. New regulations finalized September 1, 2015 reflect the new management plan. For harvest year 2014-15 (June 1 2014 – May 31 2015), quotas still follow the previous Consolidation of R.R.N.W.T 1990, c. W-11 Wildlife Management Muskox Area Regulations (15th July, 1992, and amended thereafter), although Hunters and Trappers Organization/Associations (HTOs/HTAs) can apply for Exemption Letters to harvest muskoxen outside the previous MMU boundaries. Harvest reporting and a database for High Arctic muskox tags were established in 1990-91. The only mandatory reporting information for harvested muskoxen is the management unit in which the animal was caught, the sex of the harvested animal, and the tag number, although other information on location, condition, group size, hunter, and type of hunt is requested as well.

Although muskoxen in general are prone to population crashes due to climate, disease, or other factors, muskoxen on the arctic islands are especially vulnerable to sporadic catastrophic die-offs caused by severe winter weather, particularly when ground-fast ice prevents access to forage. These icing events may affect a small part of the range, in which case muskoxen (and caribou) can move to other areas where forage is available, or they may affect entire island groups, causing massive starvation and population crashes. Aerial surveys have been sporadic, and most of the archipelago is inaccessible to hunters, so our understanding of population dynamics and overall abundance is extremely limited in the High Arctic. The first, and only, time that the Queen Elizabeth Islands were surveyed in one season was in 1961, when Tener (1963) estimated about 7500 muskoxen, although estimates for some of the islands were largely guesses due to low survey coverage and inclement weather. During surveys conducted by the Government of Nunavut and Government of the Northwest Territories from 2006-2015, the estimate for the same island groups was more than 21,000 muskoxen (Jenkins et al. 2011, Davison and Williams 2012, Anderson 2014, Anderson and Kingsley 2015). Muskoxen on the Arctic Archipelago are genetically distinct from mainland muskoxen (Van Coeverden de Groot 2001), although genetic variation in muskoxen is low overall and the measured difference is not sufficient to merit subspecies status (Gunn and Adamczewski 2003).

Peary Caribou Management in Nunavut

Peary caribou have been harvested historically by Inuit travelling and living in the Canadian Arctic Archipelago. They continue to be harvested by the communities of Ulukhaktok and Sachs Harbor on Banks and Victoria Islands in the Northwest Territories, and by several communities in Nunavut. Cambridge Bay, Taloyoak, Gjoa Haven, Kugaaruk, and Arctic Bay harvest Peary caribou when available, but other caribou herds are generally more accessible, more abundant, and relied on more heavily. Taloyoak, Gjoa Haven, Kugaaruk, and Arctic Bay had more access to Peary caribou prior to the 1980s and 1990s, when the Prince of Wales-Somerset population of Peary caribou crashed. Although the population apparently persists at very low densities, to date there is no evidence of recovery. Grise Fiord and Resolute Bay are the only communities in Nunavut without access to other caribou herds, and Peary caribou are therefore especially important to residents of these communities. As they are listed as Endangered under Canada's Species at Risk Act, Peary caribou cannot be harvested by non-Inuit.

Peary caribou harvest has not been regulated by the government or consistently monitored. Harvest reporting is not mandatory and no TAHs or NQLs are in place. A management plan presented to the Nunavut Wildlife Management Board in June 2014 has not moved forward for public hearings or decision (as of September 2015).

Although there have not been restrictions on Peary caribou harvest put in place by the territorial government, the HTAs of Resolute Bay and Grise Fiord have restricted caribou harvest by their members in the past to ensure recovery of caribou populations. In 1975, following weather-related die-offs in 1973 and 1974, the Resolute Bay HTA imposed a ban on harvesting Peary caribou on Bathurst Island, which was expanded to include Cornwallis Island in 1982, in recognition of the fact that caribou move among islands. The ban was lifted in 1989 when it was felt that the population had recovered sufficiently to allow a sustainable harvest. In 1986, Iviq HTA in Grise Fiord imposed a 10-year moratorium on Peary caribou harvest on southern Ellesmere Island. Even before the establishment of the hamlet of Grise Fiord, Peary caribou were likely present in relatively low densities on southern Ellesmere Island, and the harvest ban did not result in a large increase in the population. Harvest is likely not the limiting factor for population growth on southern Ellesmere Island, but the willingness of the community to stop harvesting in an attempt to encourage caribou to increase showcases their willingness and ability to employ adaptive management techniques for sustainable use of local caribou populations. There are currently no restrictions imposed by the territorial government or the HTAs on Peary caribou harvest in either community.

Methods

Muskoxen have been managed under a quota system since their numbers increased enough to allow total harvest bans to be lifted in 1969. The quota is administered in the form of tags by the HTO/HTA, although the Government of Nunavut's Wildlife Officer issues the tags. The HTO can assign tags for domestic use, in which case hunters inform the Wildlife Officer once they have harvested an animal and fill in the muskox mortality data sheet (Appendix 1), or tags can be allocated to sports hunters or commercial hunts. Commercial harvests in Nunavut have generally been either coordinated hunts, processing, and packaging for sale and distribution through companies, or small-scale hunts where some or all of the harvested animals are sold to the HTO/HTA. Muskox mortality data sheets are filled out by these hunters as well. The MMU and sex of the harvested animal are mandatory, but additional information including age, condition, pregnancy, and specific location are also collected. Data forms are forwarded to the Wildlife Research Section for inclusion in the harvest database. Many database entries are missing fields if they were not filled in on the harvest forms, as not all fields are mandatory. The database should be viewed as a minimum harvest record, as some harvest may have gone unreported and some data sheets may have gone missing prior to entry.

Occasionally, tags will be allocated for unsuccessful sport hunts or entered in the database as not used (n=21). These entries have not been removed from the database but they are not included in the analyses presented here. Although 67 tags were issued for natural mortalities, mostly horns collected on the land, these do not represent harvest and, as a physical representation of harvest, it is not clear why tags would be issued for natural mortalities. Natural mortalities have not been removed from the database, but are not considered in harvest analyses. The database contains 668 records, 6 of which indicate possible missed animals based on the Nunavut Wildlife Harvest Study (NWHS), and 574 of which are records of harvest where a tag was issued. The number of database entries assessed for the different summaries presented in this reports varies, since not all tags have the requisite information recorded. For the purpose of this report, the 574 tags used represent harvested muskoxen and are used as a proxy for actual harvest. Because a TAH is in effect and tags are required for any muskox harvest, we assume that all harvested muskoxen were assigned a tag (although this likely underestimates actual harvest, as the possible missing entries from the NWHS could indicate).

No mandatory reporting is currently in place for Peary caribou. Incidental voluntary reports from hunters and estimates from HTOs and Wildlife Officers provide the only information available on Peary caribou harvest at the current time. Provisions for mandatory reporting would be required if tags were issued for Peary caribou, and development of a territorial management plan is expected to formalize reporting requirements to better track and adapt harvest levels by co-management partners. Since Peary caribou are a species of concern federally, and a preferred source of country food, careful regulation of harvest from a community and territorial level is warranted. A recommended harvest reporting data sheet is presented in Appendix 2, mirroring the muskox harvest form.

Study Area

MMUs have changed since the harvest database was established in 1990-91. Previous MMUs are detailed in Figure 1 and Table 1. To examine the proportion of the quotas available and used by each community, these previous MMUs and their associated quotas (Table 2) were used – intuitively, we cannot draw conclusions about the proportion of available tags used by the community for a management unit that did not exist or have tags assigned at the time of the harvest. For other analyses, like hunting areas, demographics, and harvest type, the old MMUs have been aligned with the new MMUs outlined in the Management Plan for the High Arctic Muskoxen of the Qikiqtaaluk Region, 2012-2017, which are shown in Figure 2. This allows us to look at broader patterns using common (and the most current) MMU areas. Peary caribou management units are proposed in the Draft Management Plan for Peary Caribou in Nunavut, 2014-2020, and are shown in Figure 3, but the available information on Peary caribou harvest is not sufficient to make any conclusions on harvest trends or patterns.

Table 1. Current and historic muskox MMUs in the High Arctic.

New (2014) MMU	Previous MMU(s)
MX-01 Ellesmere Island	MX/02 Sor Fiord, Svendsen/Raanes Peninsulas, Ellesmere A/1-1
	MX/03 SW Ellesmere A/1-2
	MX/04 SE Ellesmere A/1-6
MX-02 Axel Heiberg Island	No previous MMU
MX-03 Ringnes Islands	No previous MMU
MX-04 Devon Island	MX/05 E Devon Island A/1-3
MX-05 Bathurst Island Group	MX/01 Bathurst Island Complex A/2-1
MX-06 Russell, Prince of Wales, Somerset islands	MX/06 Russell, Prince of Wales, Somerset islands A/3-1

Table 2. Quotas by community and MMU, prior to adoption of the new MMUs and quotas in the territorial regulations (1990-2014). Only Arctic Bay, Grise Fiord, and Resolute Bay currently have tags for the MMUs discussed here.

MMU (pre-2014)	Arctic Bay Quota	Grise Fiord Quota	Resolute Bay Quota
MX/01 Bathurst Island			40
MX/02 Baumann Fiord		60	
MX/03 SW Ellesmere		10	
MX/04 SE Ellesmere		4	
MX/05 E Devon Island	4	4	7
MX/06 Russel, Somerset, Prince of Wales Islands			20
Total	*4*	*78*	*67*

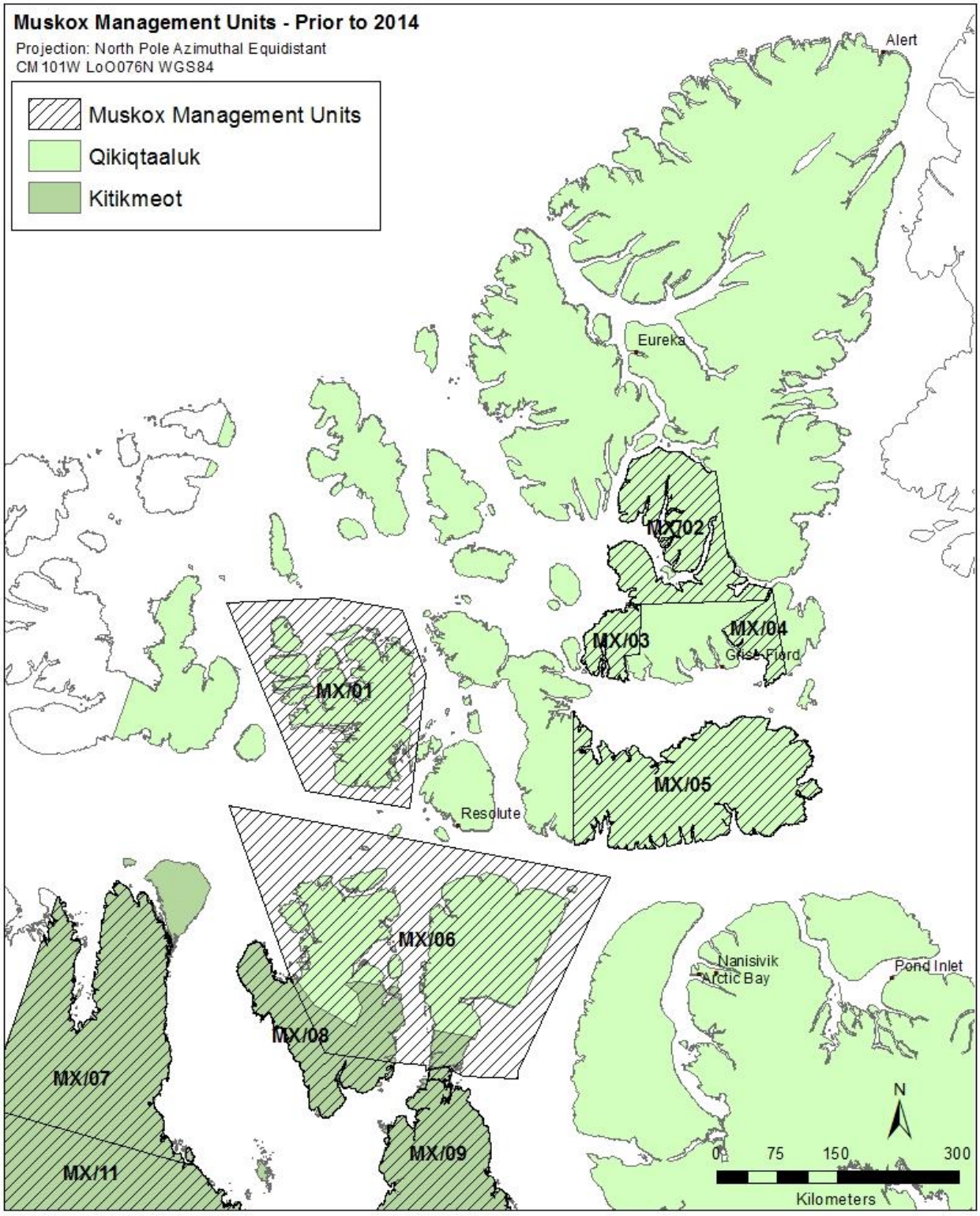

Figure 1. Muskox management units prior to 2014.

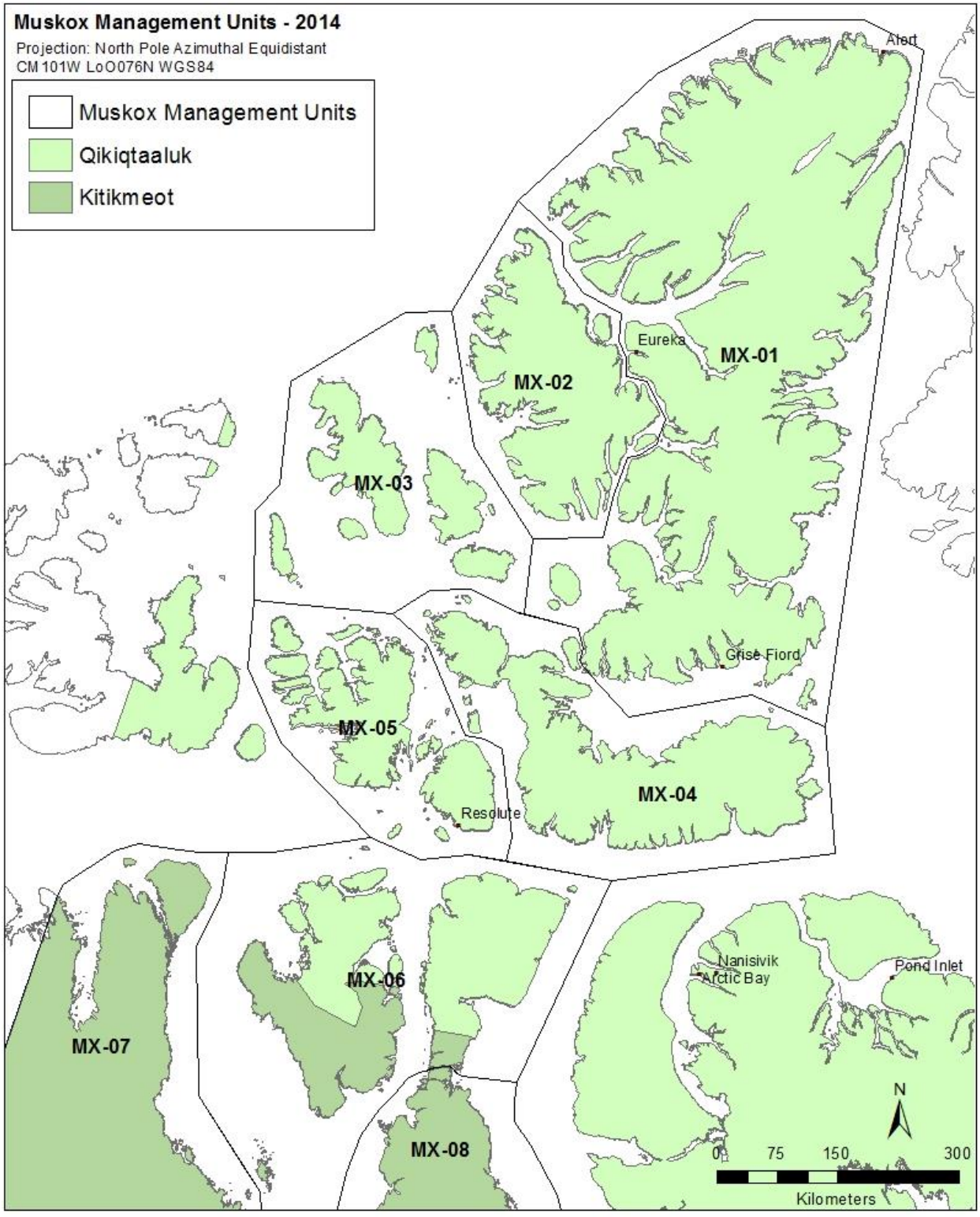

Figure 2. Muskox management zones as of 2014.

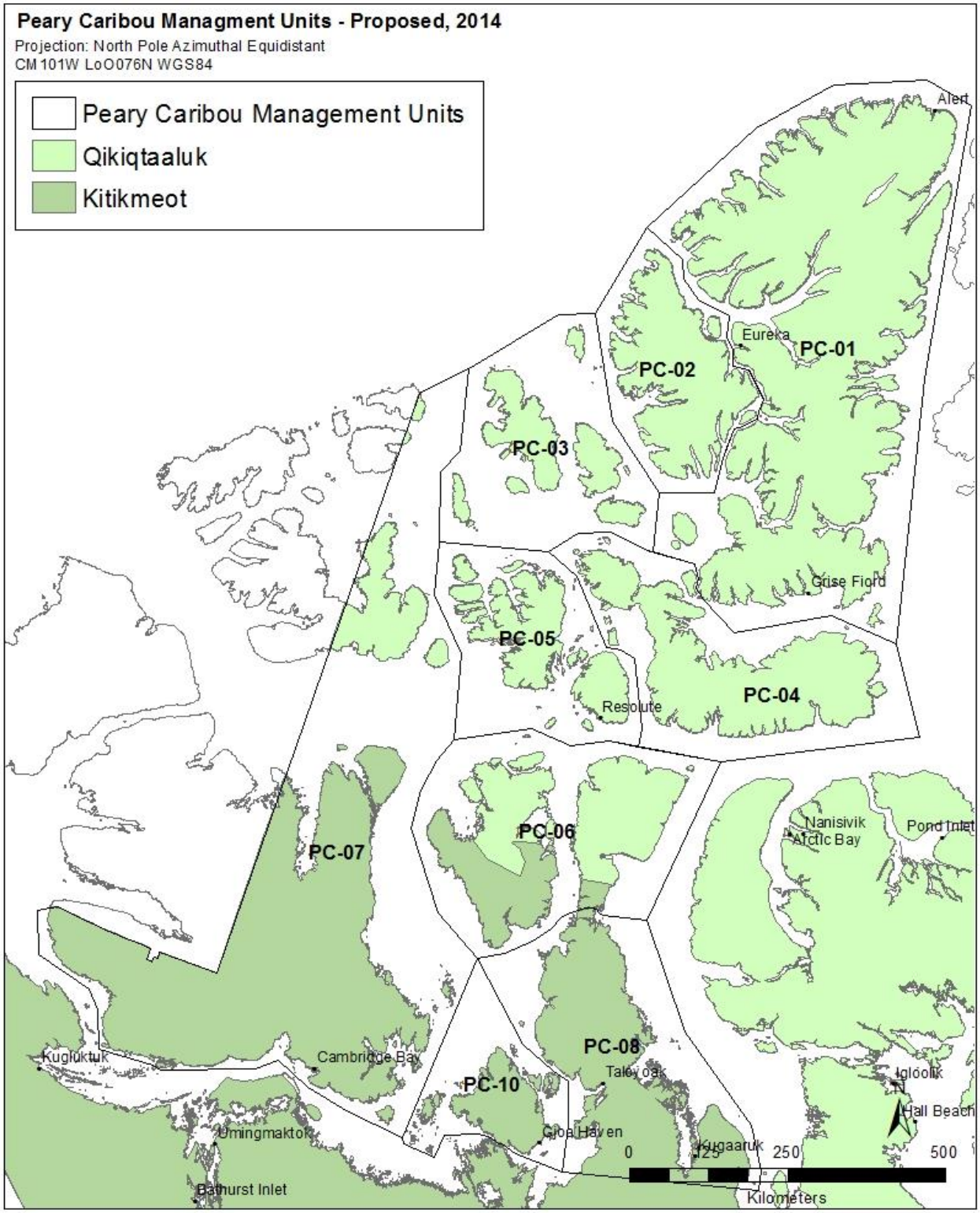

Figure 3. Management units proposed in the Draft Peary Caribou Management Plan for Nunavut, as of 2014 submission to NWMB.

Results

Data Quality

MMUs were generally provided for tags that were used, but in 35 instances (Table 3), the general location, MMU, or geographic coordinates provided were not consistent. Although these records were retained for analyses involving harvest type or community, they were removed from any analyses examining location and are not presented on maps. Harvest year 2005-2006 was particularly bad for these errors, with 28.6% of records having some location inconsistency. Some other errors were more easily remedied – where body condition was classified as 'unknown' but the comments described the animal as 'very fat,' the body condition could be accurately updated. Body condition was also standardized to the 3 categories on the hunter kill return sheets (Poor, Average, Good), excluding inappropriate entries like 'very old' and 'dead,' shown in Table 4.

Table 3. Incongruencies in general location, management unit, or geographic coordinates for muskoxen, 1991-2014 in the High Arctic (no issues in years that are not included here). Tags assigned to natural mortalities are included in total tags here since all entries should have consistent location information regardless of harvest/mortality type.

Harvest Year	Number of Tags	Number of Location Incongruencies	% Location Incongruencies
1994-95	28	1	3.6
1997-98	21	3	14.3
1998-99	43	3	7.0
2000-01	45	3	6.7
2001-02	50	5	10.0
2002-03	25	4	17.4
2003-04	35	5	14.3
2004-05	54	3	5.6
2005-06	21	6	28.6
2006-07	24	2	8.3

Table 4. Body condition descriptors used in the 2015 update of the High Arctic muskox harvest database, with either the original body condition description or a description from the comments section. Unsuccessful hunts and natural mortalities are not included in the table.

Reclassified	**Original descriptor**	**Number of Tags (1990-2015)**
Poor	Skinny, poor, very skinny, very poor	58 (10.1%)
Average	Fair, average	100 (17.4%)
Good	Fat, healthy, good, excellent, very fat	313 (54.5%)
Unknown	Unknown, dead	103 (17.9%)

The comments section for some entries suggests that other fields have not been entered in the most appropriate way. For example, it was not always clear whether hunts were commercial, domestic, or both. A separate hunt type was added for problem animals, which were not consistently categorized otherwise and represent a distinct harvest action. In many instances, it appears as though the outfitter has been entered rather than the hunter for a number of tags, based on different addresses assigned to a single name, but this has not been updated or altered.

In addition to data gaps from incomplete or inaccurate kill return forms, there are also years where the data may be incomplete or unavailable, due in part to high turnover rates in Wildlife Officer positions. Harvest season 2009/10 was not recorded in the database, although a previous harvest report (DOE 2011) mentioned 1 tag used by Grise Fiord in MX/04 (now MX-05 Devon Island) and 5 tags used by Resolute Bay in MX/01 (now MX-05 Bathurst Island). Data is also missing for Resolute Bay for 2010/11 and 2011/12. Data is currently incomplete for 2014/15 and based on personal communication with the Wildlife Officer, who stated that all 4 tags for MX/04 (now part of MX-01 Ellesmere Island) were used and all 4 tags for Devon Island were used. He believed the Devon Island tags were allocated to sport hunts, and 2 records for domestic use on Ellesmere Island are complete in the database. These records may be clarified in the future when hard copy muskox harvest sheets can be located and included in the database, but this information is included recognizing that better information may not become available.

The use of meat and classification of harvests as commercial, domestic, or domestic/commercial appears to be another ambiguous part of the database. Perhaps more notably for determination of community use of muskoxen, however, is the designation of 'commercial' harvest. Commercial harvest, or commercial use of meat, in the communities examined here is on a small scale, with hunters choosing to sell meat to the HTA for distribution. It is not a large-scale harvest like those conducted with Kitikmeot Foods Inc. from Cambridge Bay. For the purposes of this report, we include commercial, domestic/commercial, and domestic under the single classification of 'domestic,' as the primary reason for harvest would be feeding the community.

Peary caribou harvest records are extremely limited. The previous harvest report (DOE 2011) recorded personal communications and reference to other reports to provide some indication of harvest levels, and this report adds anecdotal and voluntary reports of harvest levels. Without mandatory harvest reporting for Peary caribou, the data will continue to be limited.

Muskox Harvest Summary

Use of Quota

Since 1990, muskox harvest has generally fallen below the quotas allocated to each community for each MMU. Although a new muskox management plan was approved by the NWMB to amend muskox management zones and change or remove associated quotas, the regulations were not enforced until September 1, 2015, so the previous MMUs and TAHs were used in the 2014/15 harvest year. Use of tags by community, MMU, and harvest year are summarized in Table 5, Table 6, and Table 7. Summaries refer to the new 2015 MMUs, although the TAHs refer to those in effect for the harvest year (i.e. not the new TAHs in force after September 1, 2015). The TAH for MX-01, Ellesmere Island, was taken as the sum of TAHs assigned to MX/02, MX/03, and MX/04, all of which are managed by Grise Fiord. In some cases, particularly when Arctic Bay hunts on Somerset Island, tags are transferred from the HTA that administers them to another community. These tags are included in the summaries as well, although the receiving community has a no tags or a zero TAH for that MMU.

In some cases, exemptions or special permits can be made to issue tags where a community has no quota. In 1995/96, Resolute received a special permit to hunt 7 muskoxen on Cornwallis Island, which was outside the management zones at the time. In 1998/99, Resolute received another permit to hunt 3 muskoxen on Griffith Island, also outside a management zone. In both cases, tags from Bathurst Island (then MX/01) were used. In 2004/05, a Devon Island tag for Grise Fiord was used on Russell Island, which was included in a different management zone – it is not clear whether this was associated with an exemption. Harvest year 2004/05 also reports 23 tags used for Somerset Island (18 by Resolute, 5 by Arctic Bay), which is 3

tags over the quota for that MMU. This could also be due to an exemption, but there is no additional information in the database on special permits for these harvests.

Table 5. Use of TAH allocated to Arctic Bay by MMU (pre-2014 TAHs are given).

	MX-04 (TAH for MX/05 = 4)				MX-06 (TAH for Arctic Bay = 0)		
	F	M	Total	% TAH Used	F	M	Total
1990/91				0.0%			
1991/92	2	2	4	100.0%			
1992/92				0.0%			
1993/94	1	3	4	100.0%			
1994/95				0.0%			
1995/96				0.0%			
1996/97				0.0%			
1997/98	1		1	25.0%			
1998/99				0.0%			
1999/00				0.0%			
2000/01	2	2	4	100.0%			
2001/02	2	2	4	100.0%			
2002/03		1	1	25.0%			
2003/04				0.0%			
2004/05				0.0%		4	4
2005/06				0.0%			
2006/07				0.0%	2	2	4
2007/08				0.0%			
2008/09				0.0%			
2009/10				0.0%			
2010/11				0.0%			
2011/12				0.0%			
2012/13				0.0%		3	3
2013/14				0.0%			
2014/15				0.0%			
Grand Total	8	10	18	18.0%	2	9	11

Table 6. Use of TAH allocated to Grise Fiord by MMU (TAH based on pre-2014 MMUs).

	MX-01 (TAH for MX/02, MX/03, MX/04 = 74)					MX-04 (TAH for MX/05 = 4)					MX-06 (TAH for Grise = 0)			
	F	M	Unk	Total	% TAH Used	F	M	Unk	Total	% TAH Used	F	M	Unk	Total
1990/91	7	11		18	24.3%	1	3		4	100.0%				
1991/92	7	4		11	14.9%	2	2		4	100.0%				
1992/93	5	15		20	27.0%	2	2		4	100.0%				
1993/94	4	12		16	21.6%		4		4	100.0%				
1994/95	6	17		23	31.1%		4		4	100.0%				
1995/96	1	8		9	12.2%		4		4	100.0%				
1996/97	4	23		27	36.5%		4		4	100.0%				
1997/98		18		18	24.3%		1		1	25.0%				
1998/99		15		15	20.3%	1	4		5	125.0%				
1999/00	4	13		17	23.0%	2	1		3	75.0%				
2000/01	7	15		22	29.7%	1	1		2	50.0%				
2001/02	6	10		16	21.6%	1	3		4	100.0%				
2002/03	2	10		12	16.2%	1	1		2	50.0%				
2003/04	7	20		27	36.5%					0.0%				
2004/05	2	7		9	12.2%					0.0%		1		1
2005/06		6		6	8.1%					0.0%				
2006/07		6	3	9	12.2%					0.0%				
2007/08		5		5	6.8%		1		1	25.0%				
2008/09	5	3		8	10.8%					0.0%				
2009/10					0.0%					0.0%				
2010/11		4		4	5.4%					0.0%				
2011/12		2		2	2.7%	1	1		2	50.0%				
2012/13	2	7	4	13	17.6%	1	3		4	100.0%				
2013/14		3		3	4.1%		4		4	100.0%				
2014/15	1	1	2	4	5.4%					0.0%				
Grand Total	70	235	9	314	17.0%	13	43		56	56.0%		1		1

Table 7. Use of TAH allocated to Resolute Bay by MMU (TAH based on pre-2014 MMUs).

	MX-04 (TAH for MX/05 = 7)					MX-05 (TAH for MX/01 = 40)					MX-06 (TAH for MX/06 = 20)				
	F	M	Unk	Total	% TAH Used	F	M	Unk	Total	% TAH Used	F	M	Unk	Total	% TAH Used
1990/91					0.0%					0.0%		4		4	20.0%
1991/92					0.0%		3		3	7.5%		7		7	35.0%
1992/93					0.0%					0.0%					0.0%
1993/94			4	4	57.1%			5	5	12.5%					0.0%
1994/95					0.0%					0.0%					0.0%
1995/96					0.0%	3	5		8	20.0%					0.0%
1996/97	1			1	14.3%	10	15		25	62.5%	2	3		5	25.0%
1997/98					0.0%					0.0%					0.0%
1998/99					0.0%	2	1		3	7.5%	4	14		18	90.0%
1999/00		2		2	28.6%					0.0%	3	13		16	80.0%
2000/01					0.0%		1		1	2.5%	1	10		11	55.0%
2001/02					0.0%	2	1		3	7.5%		9		9	45.0%
2002/03					0.0%					0.0%	1	1		2	10.0%
2003/04					0.0%	2			2	5.0%	2	4		6	30.0%
2004/05					0.0%					0.0%	2	13	3	18	90.0%
2005/06					0.0%					0.0%		8		8	40.0%
2006/07					0.0%		2		2	5.0%		4		4	20.0%
2007/08					0.0%					0.0%	1	2		3	15.0%
2008/09					0.0%		1		1	2.5%					0.0%
2009/10					0.0%					0.0%					0.0%
2010/11					0.0%					0.0%					0.0%
2011/12					0.0%					0.0%					0.0%
2012/13					0.0%					0.0%					0.0%
2013/14					0.0%					0.0%					0.0%
2014/15					0.0%					0.0%					0.0%
Grand Total	1	2	4	7	4.0%	19	29	5	53	5.3%	16	92	3	111	22.2%

Trends in Harvest Type

Natural mortalities were not included in harvest types, since they do not represent harvest muskoxen. It is not clear why tags are assigned to muskoxen that were not harvested. As a physical representation of the quota, tags should not be assigned to muskoxen found dead. The natural mortalities entered in the database have not been removed, but the largely anecdotal information is not comprehensive enough to draw any conclusions on natural mortality rates or survival of muskoxen in any of the management zones. Of 67 natural mortality records, 46 (68.7%) were horns or skulls of indeterminate age found on the land.

The occurrence of problem muskoxen (animals that act aggressively toward people or dogs, or cannot be driven away from the community or airstrip) appear to be sporadic, although the tags used for problem animals may represent a large proportion of tags used in a given year. These events may have been more common in the last 10-15 years than previously, or they were not reported as problem animals previously – inconsistencies in the dataset make interpretation of trends in problem muskox occurrence difficult.

Domestic and sport hunts have been consistently undertaken since the 1990s, with occasional allocations of tags to other uses (Figure 4). Commercial use was more common in the 1990s and has been almost nonexistent over the past decade, despite high numbers of muskoxen. Domestic/commercial use, generally where a hunter keeps some meat and sells some to the HTO, has also declined.

The domestic harvest category also includes education and training, although this information is only entered as a comment in the database, so many hunts of this type may not be specified. Although it is not treated as a specific kind of hunt in this report, it is worth mentioning that both Resolute and Grise Fiord have used some of their tags for these hunts. Resolute Bay hunted one muskox on southern Bathurst Island in 2001-02 and 2 muskoxen on Somerset Island in 2004-05 for this purpose. Grise Fiord conducted hunts to pass on traditional skills and knowledge in 1993-94 (2 muskox at Anstead Point), 1994-95 (1 muskox at Anstead Point), 1995-96 (2 muskoxen at Fram Fiord), 1996-97 (2 muskoxen at Fram Fiord), 1997-98 (1 muskox at Sor Fiord), and 1999-2000 (2 muskoxen at Anstead Point).

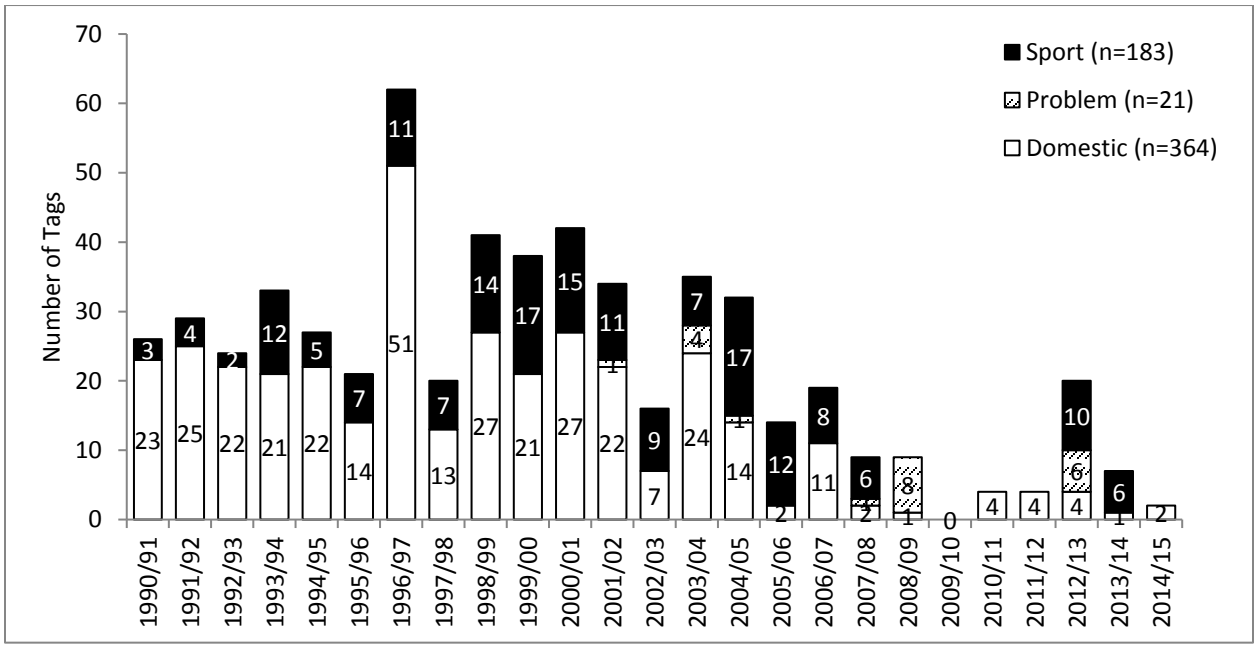

Figure 4. Use of muskox tags by harvest type in the High Arctic. Data is currently missing for harvest from Resolute Bay in harvest years 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

Arctic Bay has used tags for domestic use in the past, although relatively few muskoxen have been harvested (Figure 5). Grise Fiord has used tags for sport and domestic hunts, and was previously responsible for most of the commercial harvest in the 1990s (Figure 6). Grise Fiord has also had to deal with problem muskoxen more often than the other communities. Sport hunts and domestic use by Resolute Bay have declined, with no muskox harvest in the last several years (Figure 7).

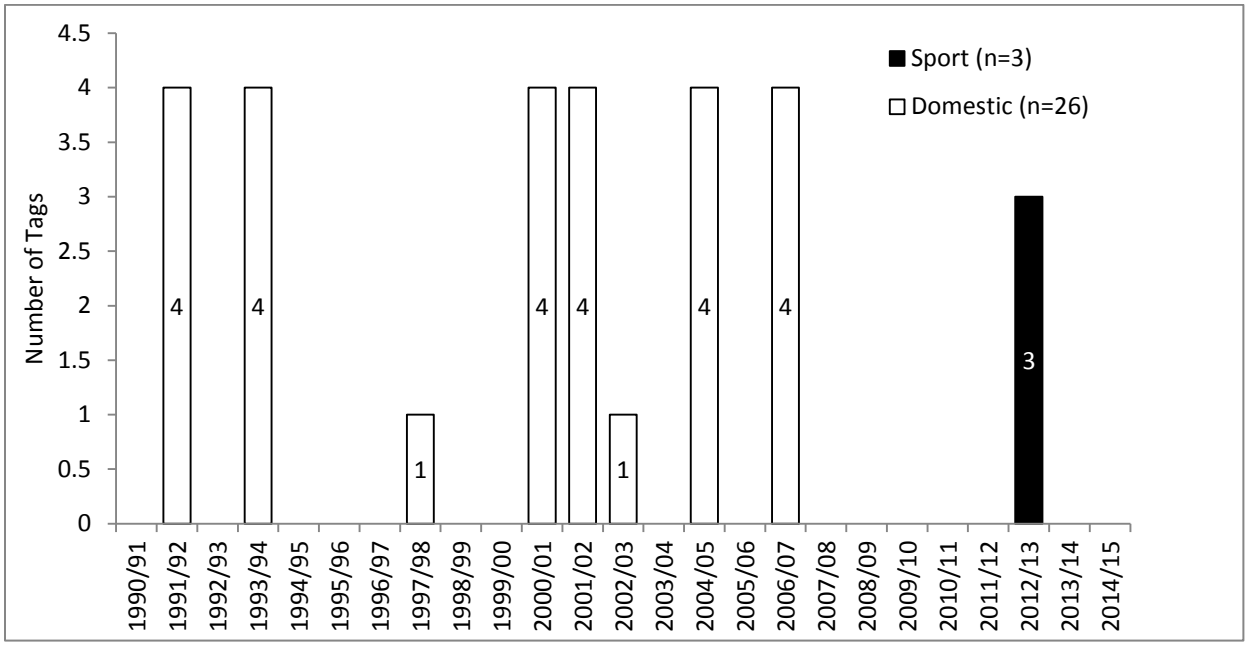

Figure 5. Use of muskox tags by harvest type by Arctic Bay.

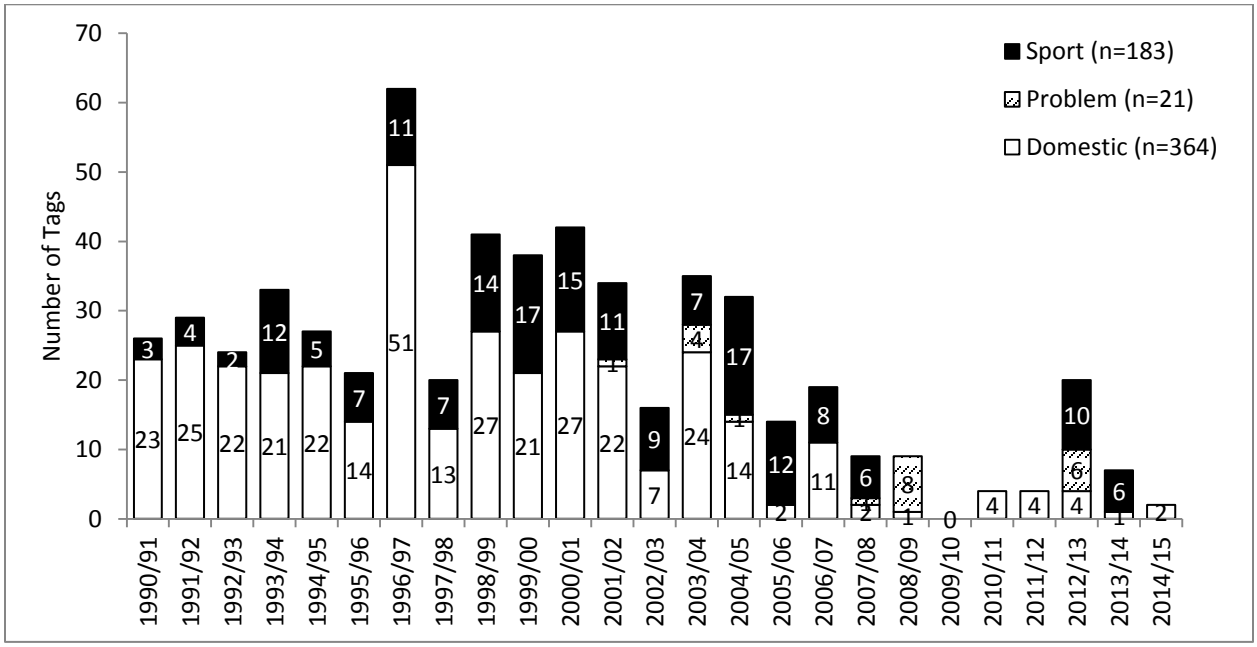

Figure 6. Use of muskox tags by harvest type by Grise Fiord. Data for 2014/15 is incomplete.

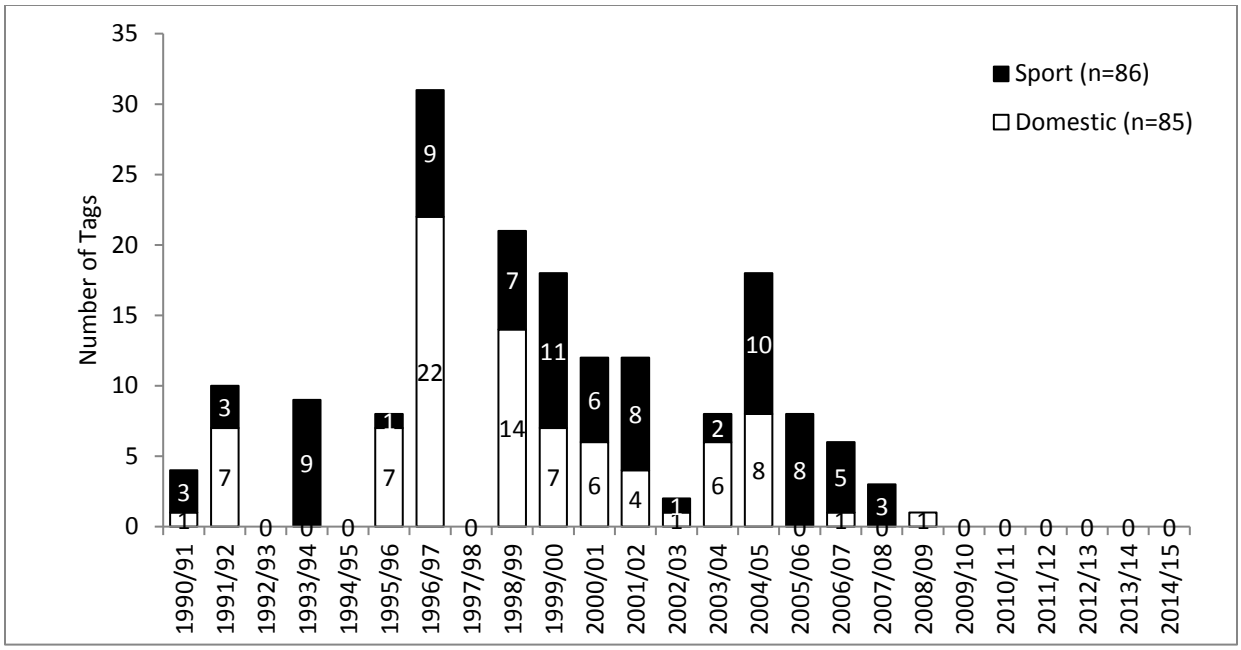

Figure 7. Use of muskox tags by harvest type by Resolute Bay. Data is currently missing for harvest from Resolute Bay in harvest years 2010/11 and 2011/12.

Meat Use

There appear to be inconsistencies in the database regarding how meat was used, where the actual use of the meat is not clear, or multiple uses for the same animal may not be taken into account, particularly for sport hunts where sport hunters may take some meat and give the rest to the community. Meat use was recorded for 426 tags from 1990-2014 for all 3 communities, and 'not used' was recorded for another 64 tags. Some of these animals were either found as bones only or as old carcasses, or the meat was spoiled, but 3 had no explanation as to why the meat was not used. Domestic use (including sport/domestic and commercial/domestic) accounted for 84.0% of tags where the meat use was known. Commercial (including commercial/domestic) use accounted for 17.4% of tags. Sport, sport/commercial, and sport/domestic meat uses accounted for 7.5% of records where meat use was known, but what constitutes a 'sport' use of meat is not clear.

Sex and Age of Harvested Muskoxen

Of 642 muskox tags that were used for a harvested muskox from 1990-2015 in all 3 communities (an additional 21 tags were used to either replace lost tags or for an unsuccessful hunt), 491 (76.5%) had an age class assigned. These were mostly adults (79.4%), with some sub-adults (<4 years old, 16.7%). Yearlings (3.5%) and calves (2, harvested in August and October; 0.4%) were occasionally harvested. Of the yearlings, 2 were problem animals and another was starving. Of the 142 sport hunts where age was recorded, all were adults except 3 sub-adults (2.1% of the sport harvest).

Of the 605 muskox where the sex was recorded, 460 (76.0%) were male. An additional 12 tags were for horns found on the land, which, if they were worth bringing back and getting a tag for, likely represent adult bulls as well. Not surprisingly, most sport hunts harvested males, but 6 muskox cows (4.2% of the females harvested) were also harvested on sport hunts. One of these was a subadult in poor condition.

Harvest Trends by Management Unit

Data is currently missing for harvest from Resolute Bay in harvest years 2010/11 and 2011/12 and is incomplete for Grise Fiord in 2014/15. Most muskox harvest since 1991 has been on Ellesmere Island (MX-

01), from Grise Fiord, followed by harvest on Bathurst Island (MX-05) and Somerset Island (MX-06) by Resolute Bay (Figure 8). Sports hunts have also been mostly on Ellesmere Island and Somerset Island, although sports hunters based out of Grise Fiord also hunt on Devon Island (MX-06; Figure 9). Domestic and commercial (including domestic/commercial) harvest has generally declined in all MMUs, particularly MX-05 and MX-06, where Resolute normally harvests (Figure 10).

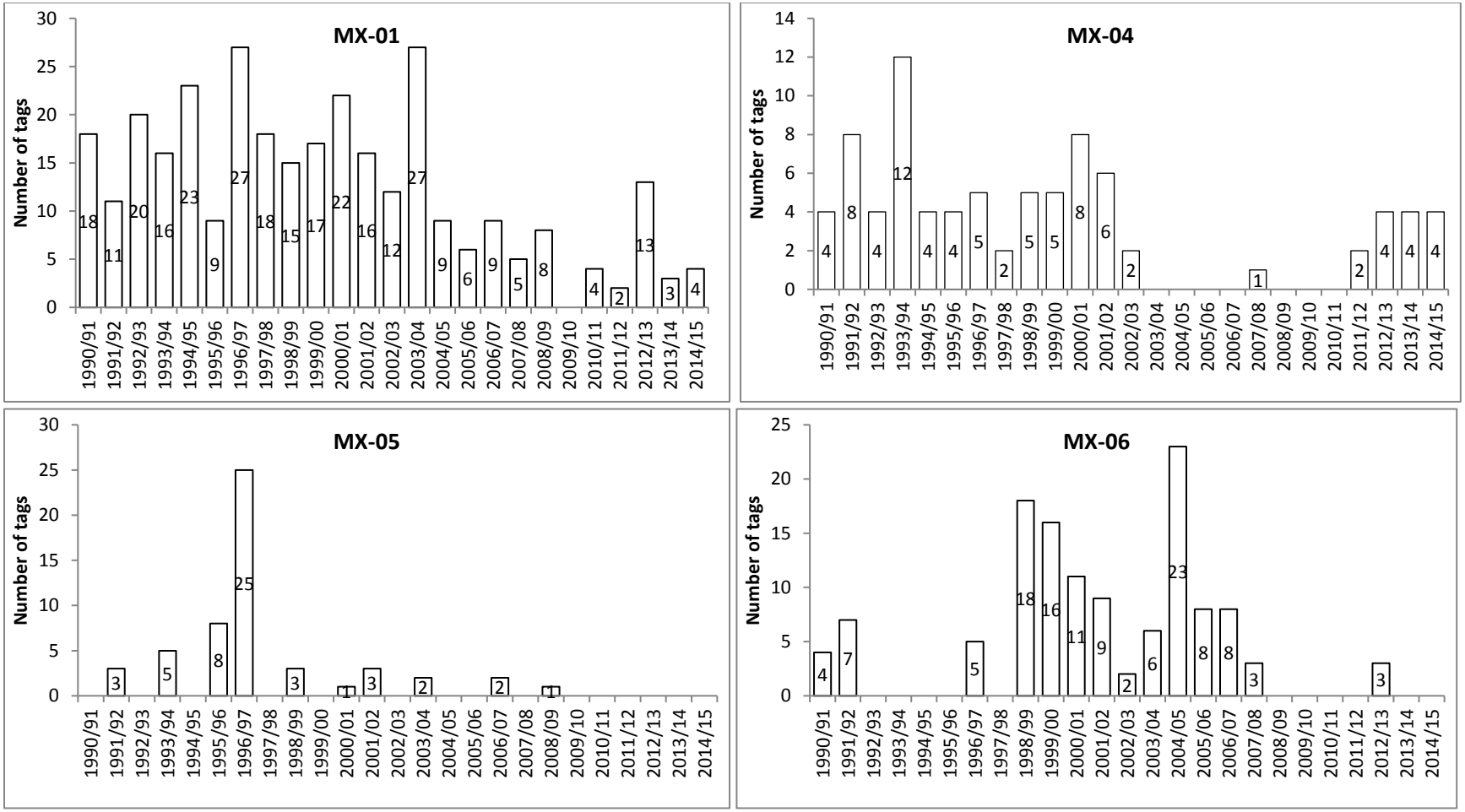

Figure 8. Number of muskox tags used for harvest by management unit. Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15. Unsuccessful hunts and natural mortalities not shown.

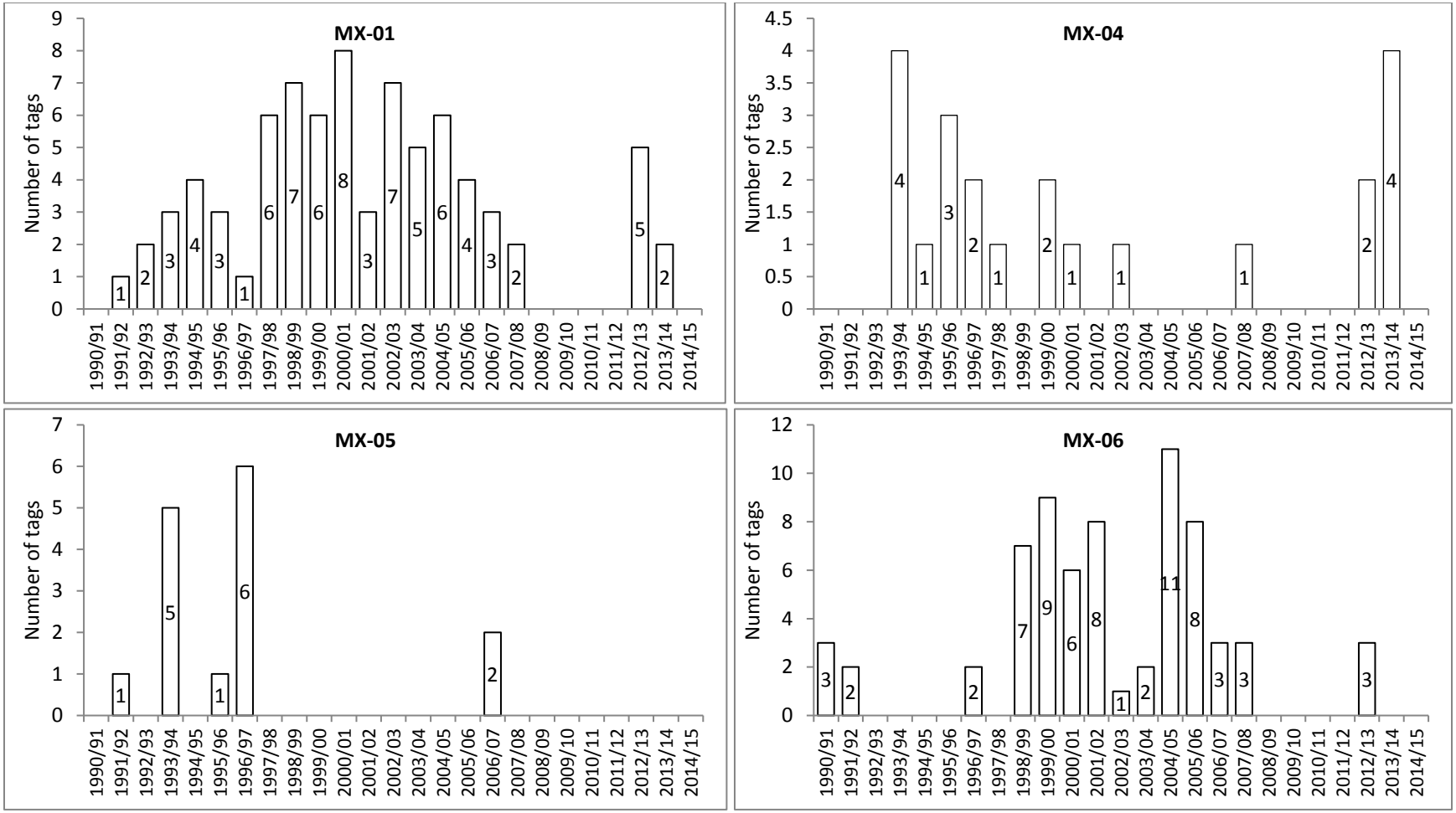

Figure 9. Muskox tags used for sport hunts, by management unit (n=183). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

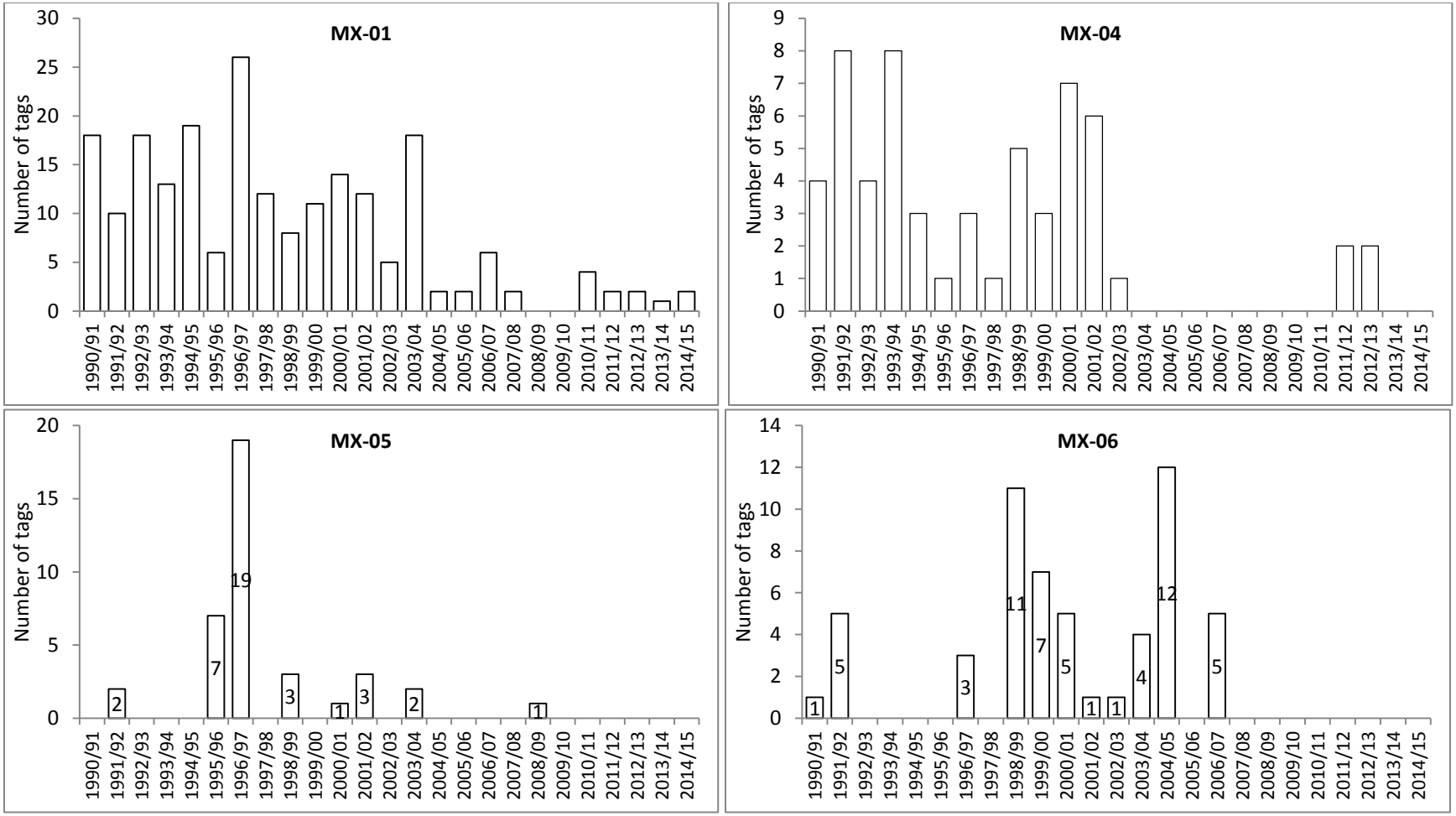

Figure 10. Muskox tags used for domestic and commercial hunts, by management unit (n=364). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

Harvest Trends by Community

Most harvest since 2010 has been concentrated out of Grise Fiord (Figure 11). Sport hunts have been conducted out of Resolute and Grise Fiord previously, although 3 tags for MX-06 were transferred from Resolute to Arctic Bay for sport hunts in April 2013; otherwise sport hunts recently have been conducted from Grise Fiord (Figure 12). Domestic and commercial use has declined noticeably, probably due at least in part to the recovering population of Peary caribou on Bathurst Island, which provides a source of country food preferred over muskoxen (Figure 13). Domestic and commercial harvest from Grise Fiord accounted for most tags from 1990/91 through to 2004/05.

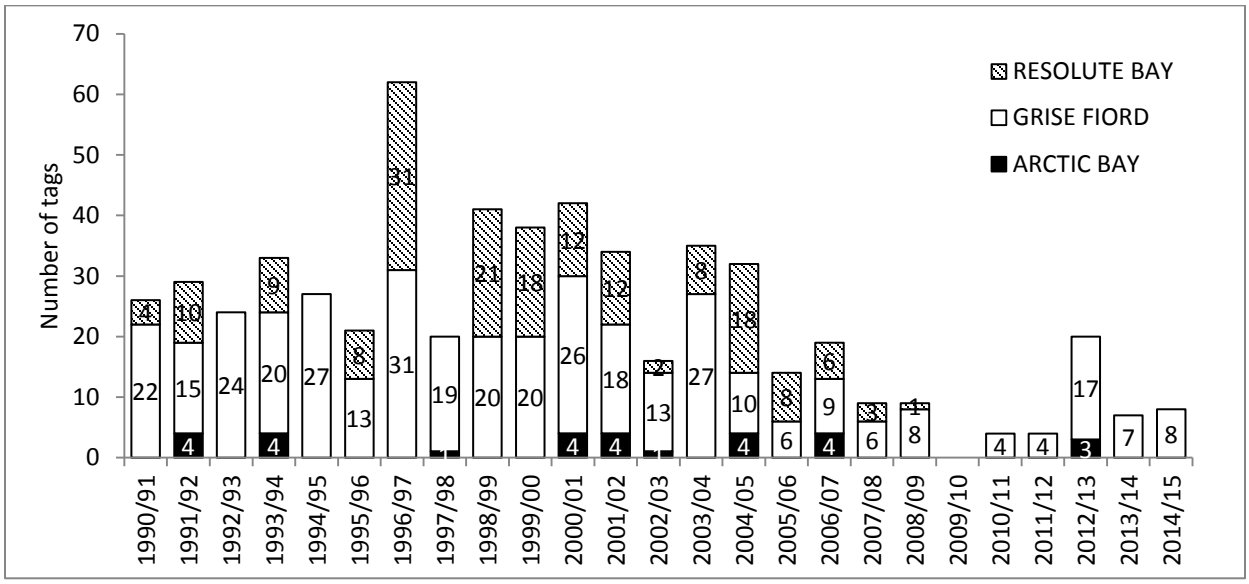

Figure 11. Muskox tags used by the 3 communities harvesting muskoxen in the High Arctic. Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

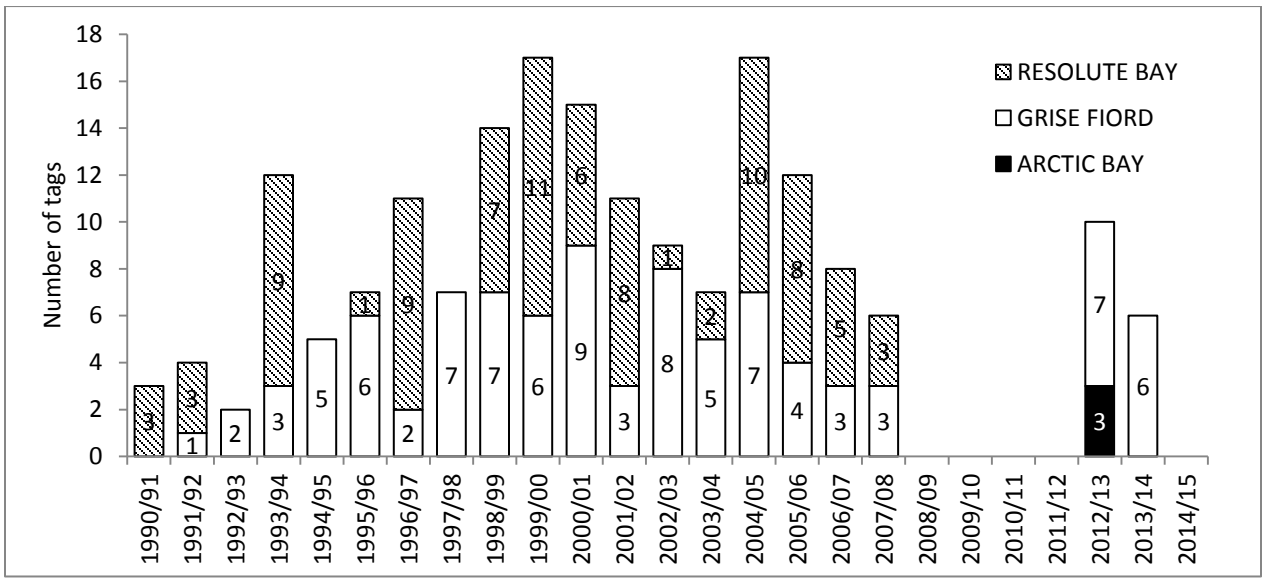

Figure 12. Muskox tags used for sports hunts by the 3 communities harvesting muskoxen in the High Arctic. Data is currently missing for harvest from Resolute Bay 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

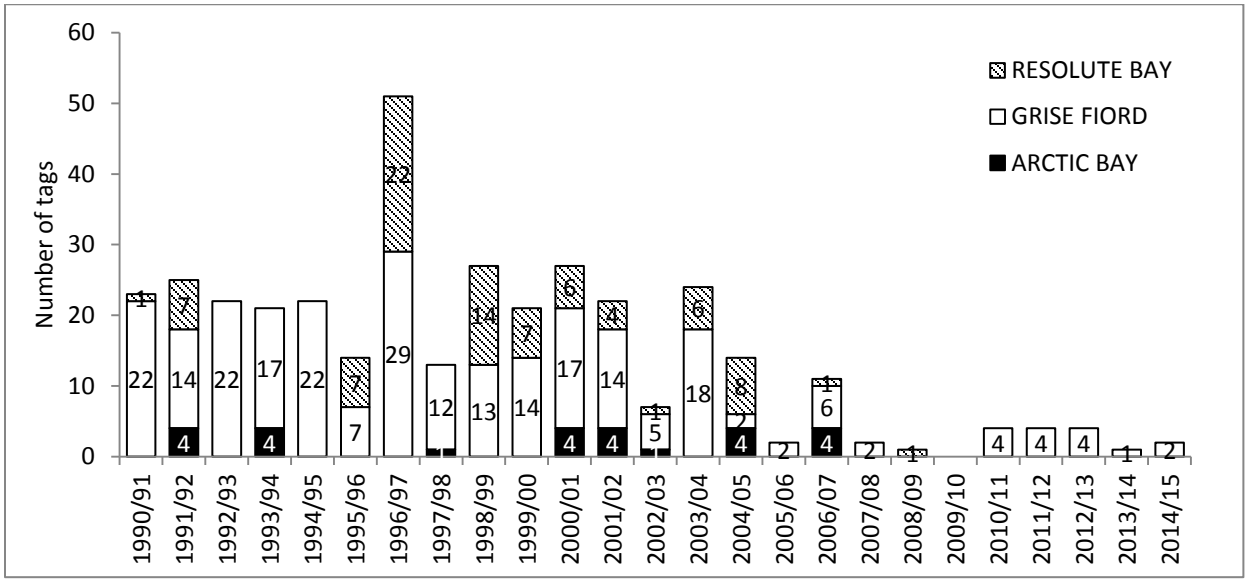

Figure 13. Muskox tags used for domestic and commercial hunts by the 3 communities harvesting muskoxen in the High Arctic. Data is currently missing for harvest from Resolute Bay in harvest years 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

Domestic and commercial harvest from Grise Fiord accounted for most tags from 1990/91 to 2004/05, although harvest has declined (Figure 14). Domestic and commercial use declined since the mid-1990s in Resolute Bay. There were a series of weather-related die-offs of caribou and muskoxen on the Bathurst Island Complex in 1994-1997, decreasing availability of both species. Arctic Bay has also used some tags, but Resolute and Grise Fiord, which can access muskoxen more readily, have consistently harvested muskoxen more often than Arctic Bay. There was a spike in sport hunts from Grise Fiord in MX-01 and MX-06 from 1997/98 to 2004/05, although the significance is not clear, since the number of tags used still remained fairly small.

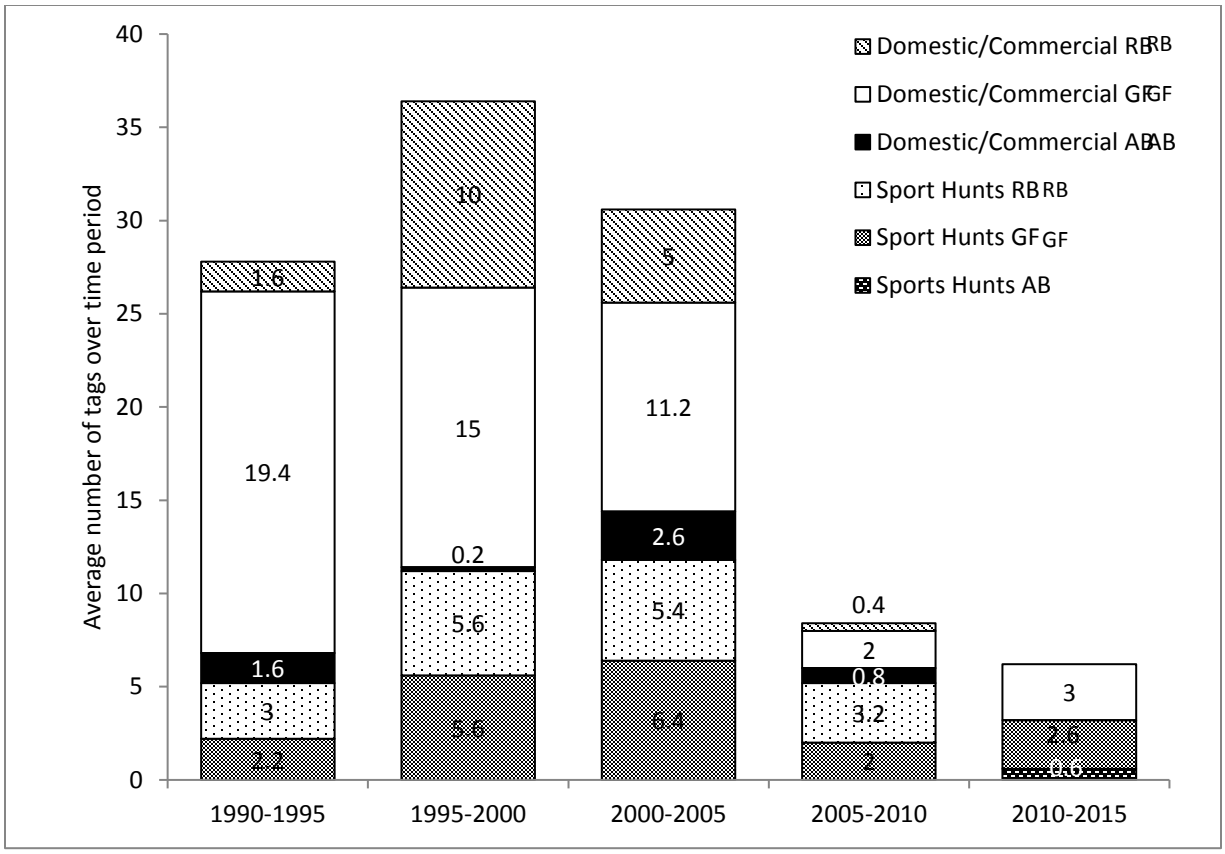

Figure 14. Muskox tags used over 5-year intervals since 1990/91 by hunt type and community (Resolute Bay, RB; Grise Fiord, GF; Arctic Bay, AB). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

Most of the muskox harvest since 2006 has been based in Grise Fiord (Figure 15). The limited harvest from Arctic Bay has been near Croker Bay on southeastern Devon Island, and occasionally on Somerset Island, when the Resolute Bay HTA transfers tags to Arctic Bay (Figure 16). Harvest in Grise Fiord has been focused on the south shore of Baumann Fiord from Sor Fiord to Stenkul Fiord; the area east of Grise Fiord at Anstead Point; Muskox Fiord; near Okse Bay; and northeastern Devon Island along a series of lowlands, particularly near Cape Sparbo (Figure 17). All muskoxen that have been harvested in or near the hamlet of Grise Fiord were harvested because they were problem animals: 5 bulls and a cow in October 2012 that would not leave the airstrip, 3 bulls and 5 cows in October 2008, 1 bull in 2007/08, 1 bull in December 2004, 2 bulls in February 2004, 2 bulls in October 2003, and 1 bull in August 2001 that attacked a girl in town. Hunters from Resolute Bay harvested muskoxen on southern Cornwallis Island, Bathurst Island, and on northern Somerset, Russell, and Prince of Wales islands (Figure 18).

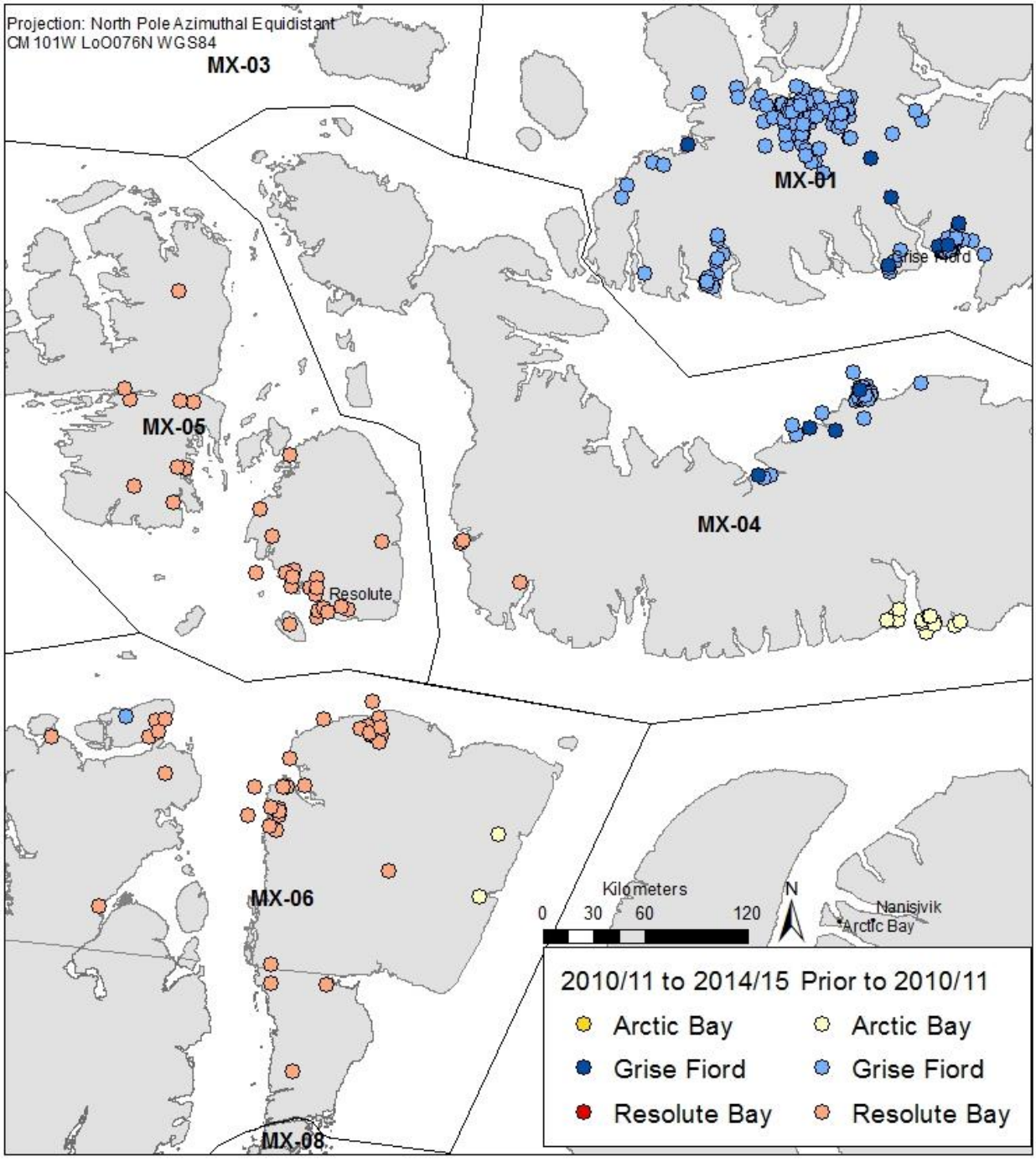

Figure 15. Recent muskox harvest by Arctic Bay, Grise Fiord, and Resolute Bay in the High Arctic (n=579 with coordinates assigned in total, 32 of which are from 2010/11 to 2014/15). Many harvest locations overlap, either because multiple animals were taken in a small area over the time period or because general coordinates approximating the harvest location were inferred from the general location provided (i.e. Anstead Point, Cape Sparbo, etc).

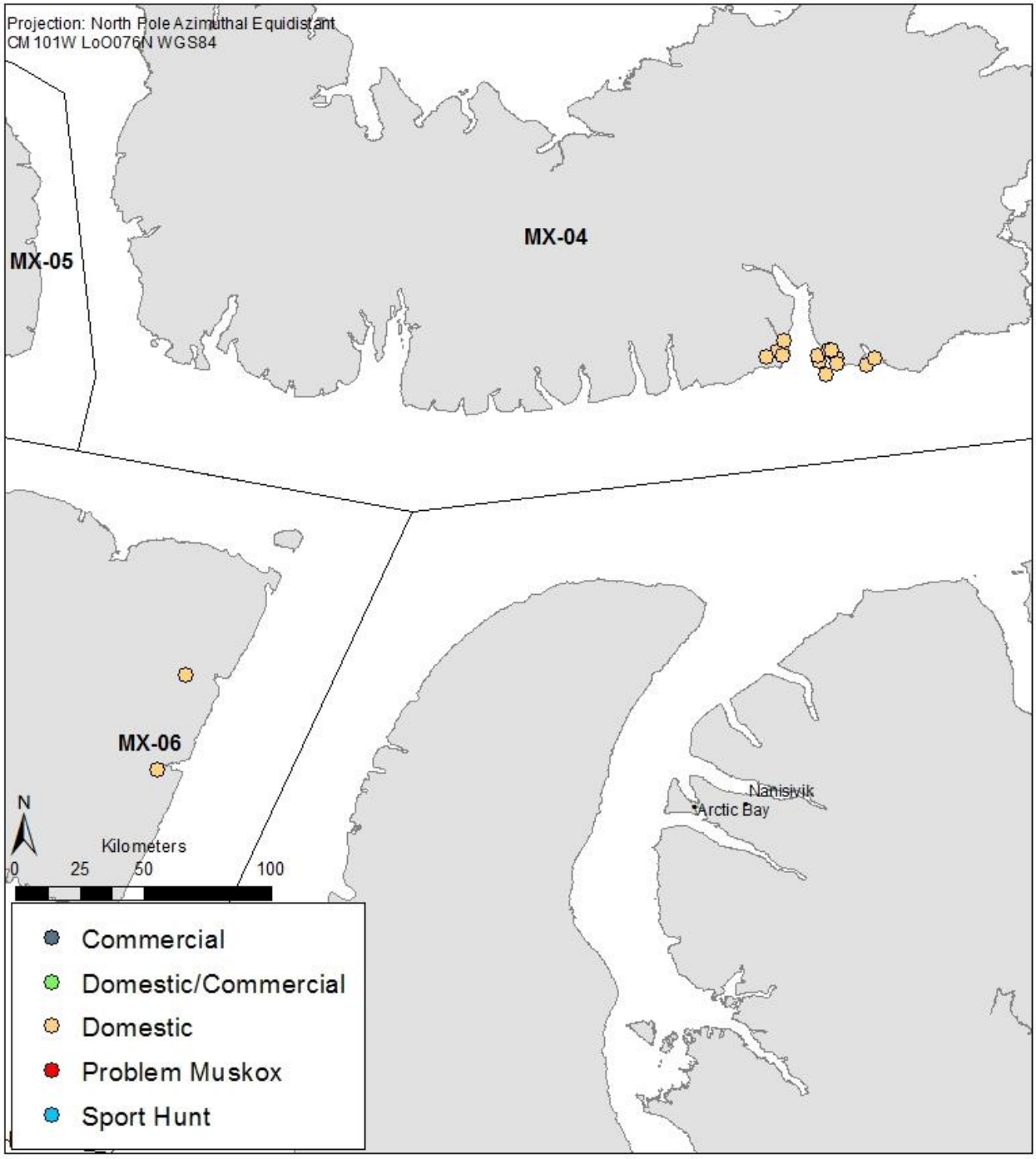

Figure 16. Muskoxen harvested by Arctic Bay, 1990/91 to 2014/15. All 30 harvest records had geographic locations assigned to them.

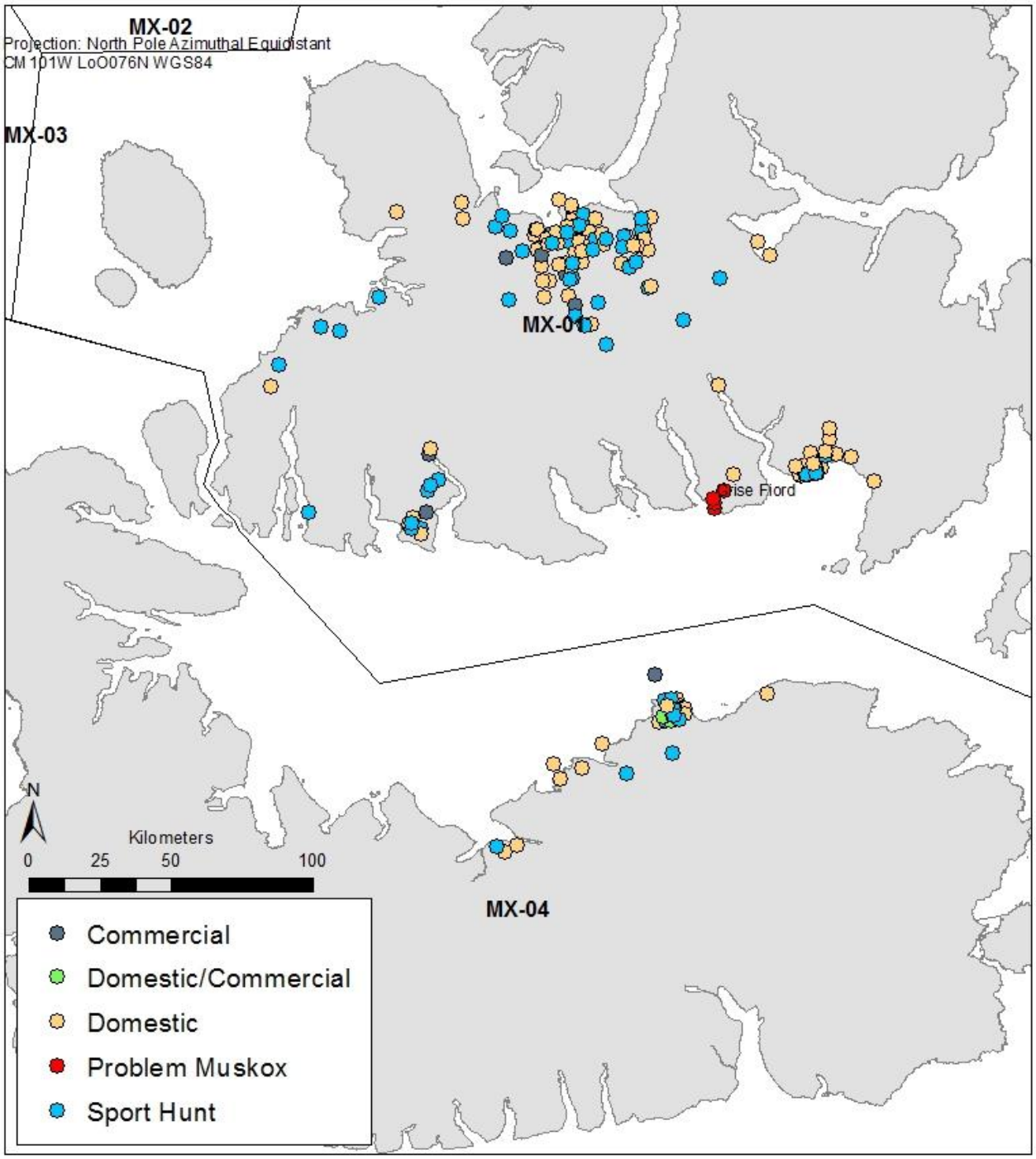

Figure 17. Muskoxen harvested by Grise Fiord, 1990/91 to 2014/15 (420 tags had location coordinates assigned; many of these are overlapping either because of repeated harvests in a small area or because general coordinates were assigned based on the general location given, i.e. Anstead Point).

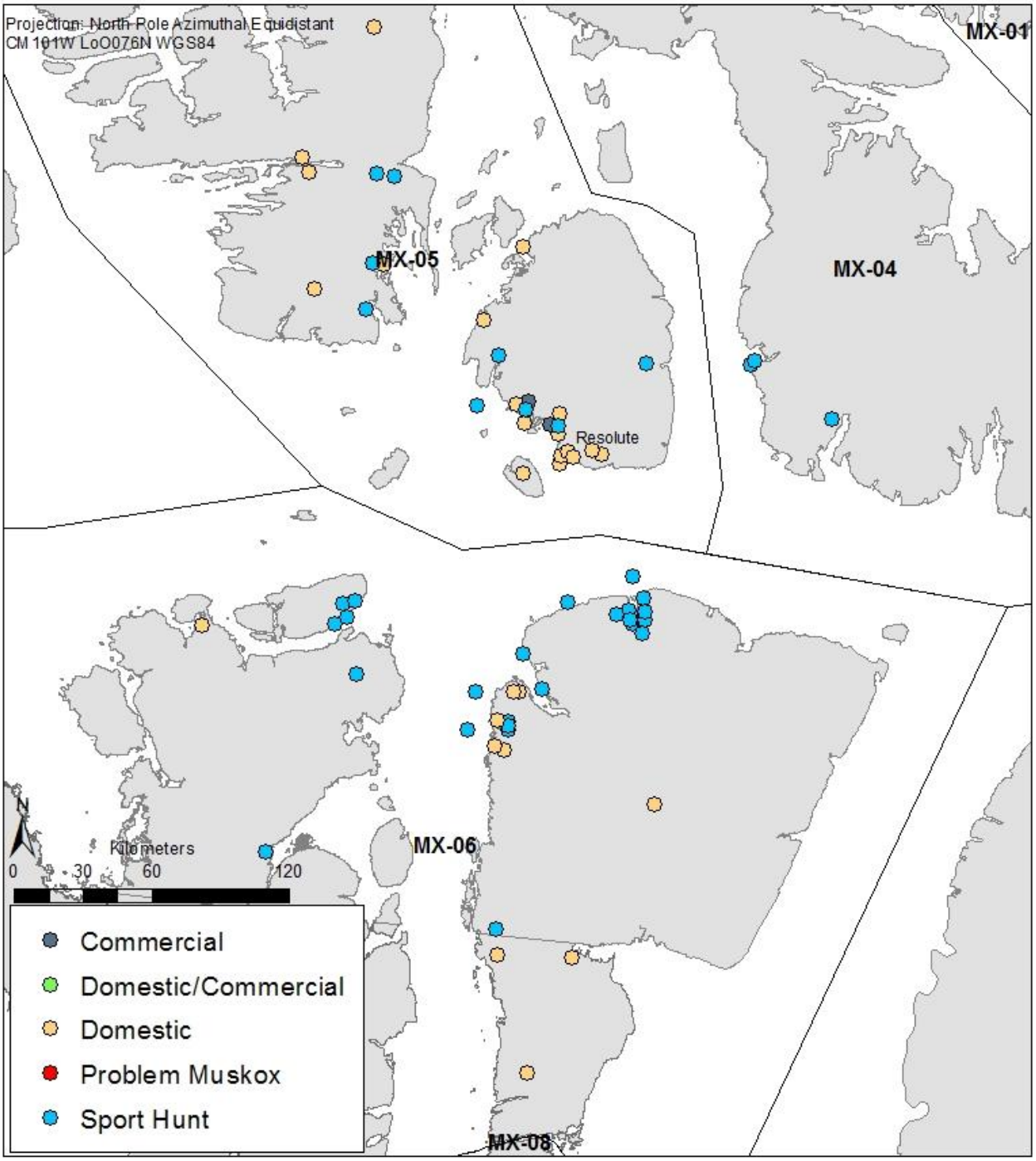

Figure 18. Muskoxen harvested by Resolute Bay, 1990/91 to 2014/15. Data may be missing for 2010/11 and 2011/12. There were 130 tags where coordinates were provided or could be estimated from the general location (i.e. Goodsir Inlet). Repeated harvests in small areas and these general estimated coordinates mean that many points may overlap.

Harvest Trends by Month

Most harvest has been in the late winter and spring, generally February to May (Figure 19). Sport hunts are almost all in March, April, and May, although they have also been conducted in January (Figure 20). No muskox harvest was recorded in June or July (although the Nunavut Wildlife Harvest Study did record occasional harvest during these months which is not reflected by the tags). Most domestic and commercial harvest also occurs February to May, although there is a second smaller peak in the fall, in October, and, with the exception of June and July, harvest for domestic/commercial use is year-round (Figure 21). More than half of the tags used in April were for sport hunts, and close to half the tags used in March and May were for sport hunts as well (Figure 22). All 3 communities harvest in the spring and fall, but Arctic Bay has not harvested muskoxen over the winter (Figure 23).

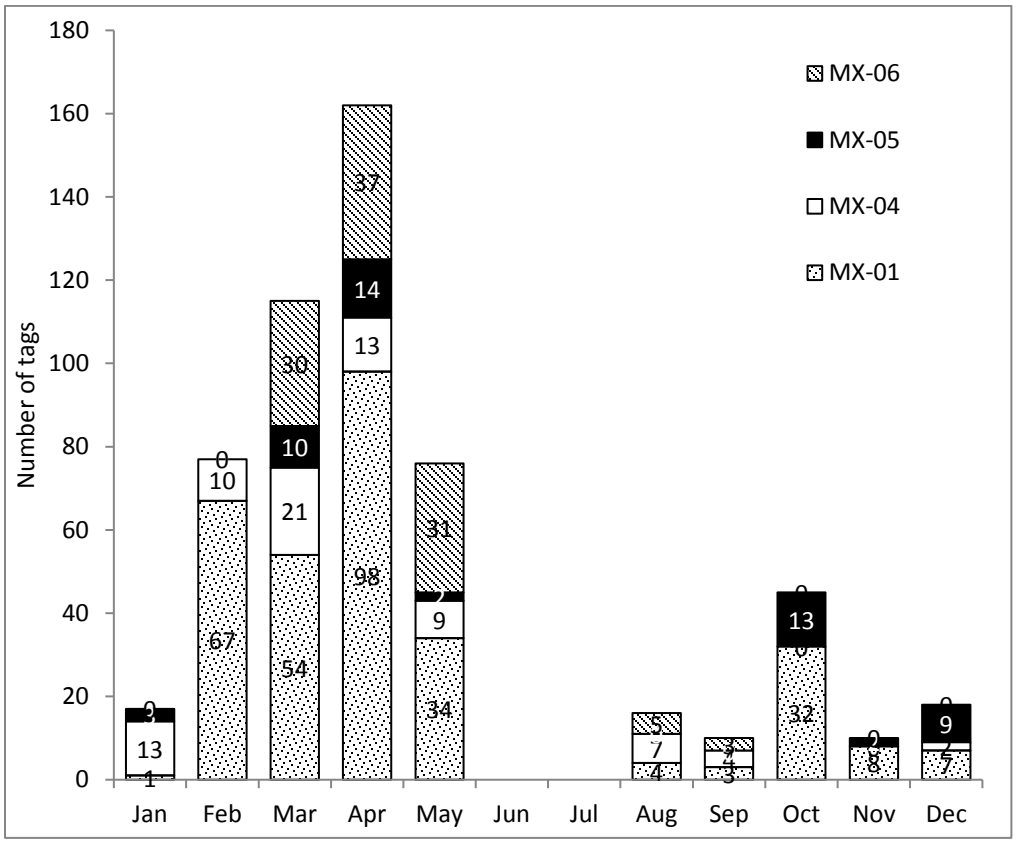

Figure 19. Seasonal patterns of muskox harvest for all harvest types and communities from 1991-2015 (n=546; 28 tags had no month associated). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

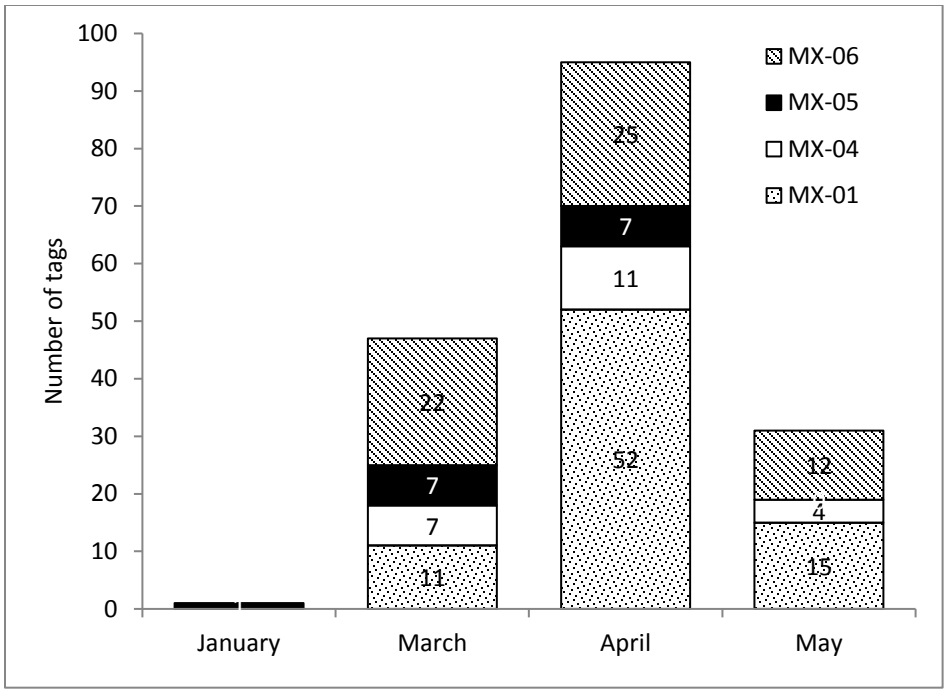

Figure 20. Seasonal patterns of muskox harvest for sport hunts from all communities from 1991-2015 (n= 174; 9 tags in MX-06 had no month assigned). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

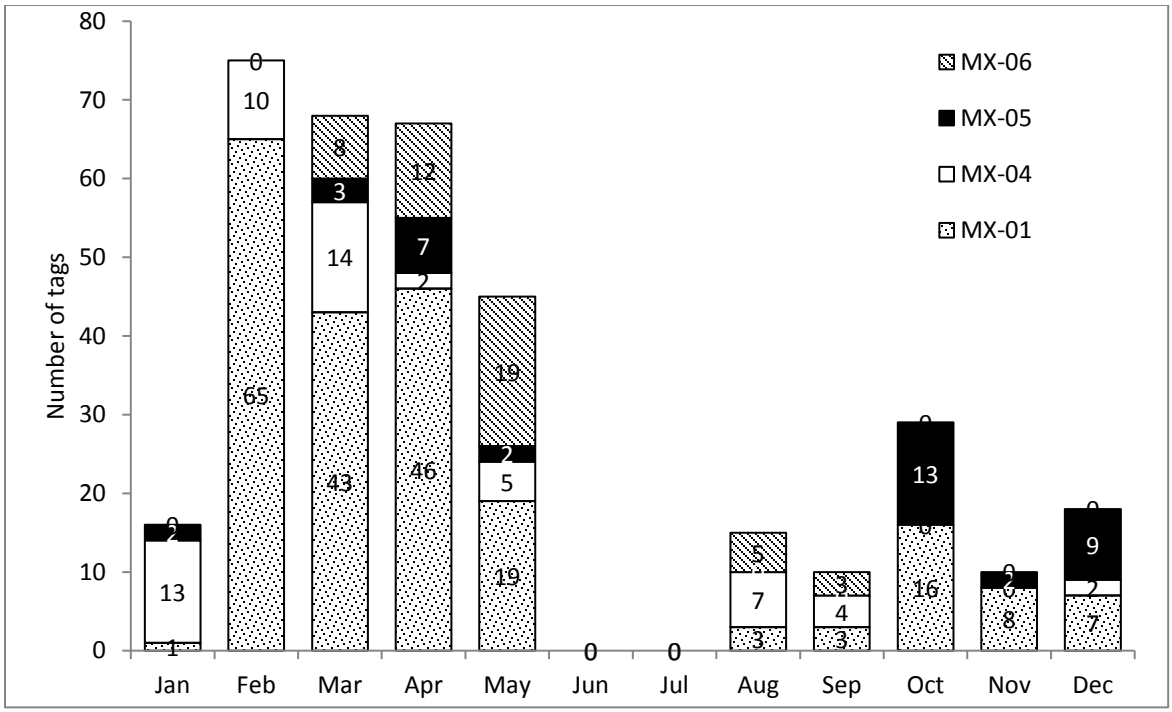

Figure 21. Seasonal patterns of muskox harvest for domestic/commercial hunts from all communities from 1991-2015 (n=353; 8 tags had no month assigned). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

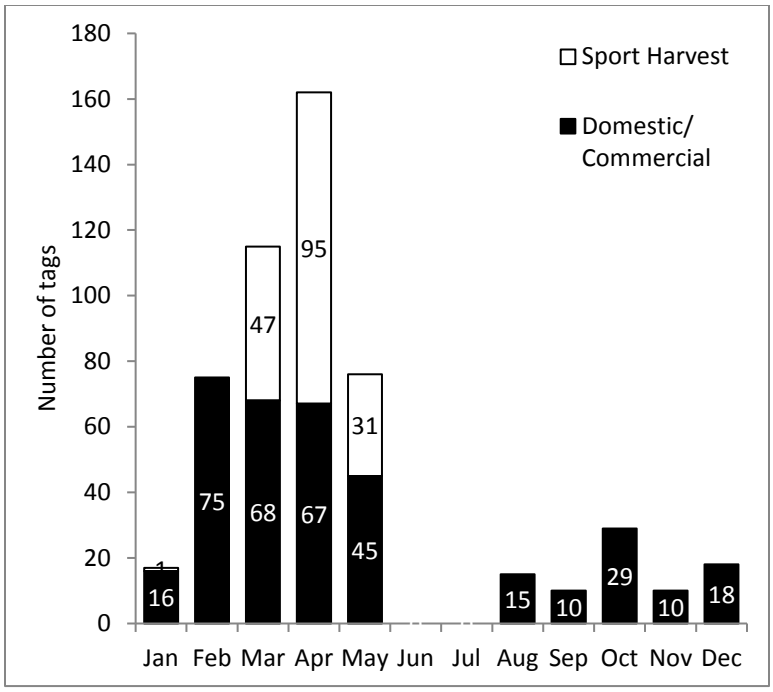

Figure 22. Seasonal patterns of muskox harvest type (n=527; 21 problem muskox tags not shown) from all communities from 1991-2015. Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete for Grise Fiord 2014/15.

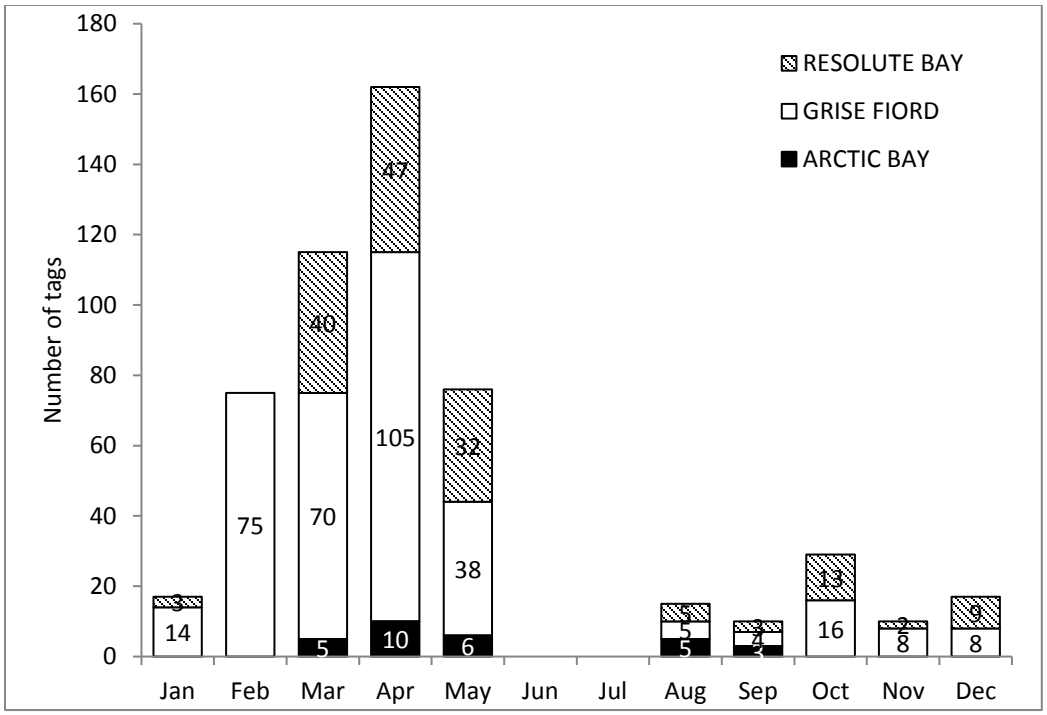

Figure 23. Seasonal patterns of muskox harvest by community from 1991-2015 (n=526; 21 problem muskox tags not shown). Data is currently missing for harvest from Resolute Bay in 2010/11 and 2011/12 and incomplete from Grise Fiord 2014/15.

Harvest and Population Trends

Recent surveys allow us to compare population estimates for island groups with the harvest levels. Harvest has been well below levels expected to have a negative impact on muskox populations. TAHs have been set to ensure sustainable harvest, and most years the TAHs for each community and MMU have not been filled.

Devon Island was most recently surveyed in April and May 2008, with a population estimate of 302-864 muskoxen (95% CI; Jenkins et al. 2011). Grise Fiord harvested the only muskoxen from Devon Island in 2007-08, making harvest 0.1-0.3% of the estimated population for that year. Prince of Wales, Russell, and Somerset islands (MX-06) were surveyed in April 2004, with 1582-2746 muskoxen (95% CI) on Russell, Pandora, and Prince of Wales islands and 962-3792 muskoxen (95% CI) on Somerset Island (Jenkins et al. 2011). Resolute harvested 6 muskoxen from MX-06 in 2003-04, representing about 0.1-0.2% of the population. The May 2005 south Ellesmere Island and Graham Island survey estimated relatively few muskoxen after severe winter conditions in preceding years, 312-670 muskoxen (95% CI; Jenkins et al. 2011). The 28 harvested muskoxen represented 4.2-9.0% of the population. The area was surveyed again in March 2015 with an estimate of 3200±SE602 muskoxen (Anderson and Kingsley 2015), and the 4 tags used by Grise Fiord (minimally) represented 0.1% of the population.

The Bathurst Island Complex was regularly surveyed in the 1990s to track the population dynamics of Peary caribou. The winters of 1993-94, 1994-95, and 1996-97 included icing events that caused widespread movement and mortality for Peary caribou and muskoxen on the Bathurst Island Complex (Miller and Gunn 2003). Many of the unsystematic surveys produced minimum counts for caribou and most provided population estimates for muskoxen. In August 1993, prior to the die-offs, Miller (1995) estimated 1200 muskoxen on the islands. Resolute harvested 5 muskoxen, 0.4% of the estimated population. In June and July 1995, Miller (1998) estimated 980 muskoxen, and Resolute harvested 8 muskoxen that harvest year, 0.8% of the population. In July 1996, Miller (1998) estimated 425±136 (SE) muskoxen. Resolute harvested 25, making up about 3.6-15.8% of the population. The next year, Gunn and Dragon (2002) estimated only 124±45 (SE) muskoxen on the islands, and Resolute did not harvest any muskoxen that year. Hunters harvested 3 in 1998/99 and none in 1999/2000. By May 2001, the population had not recovered, and the survey recorded only a minimum count of 82 muskoxen (Jenkins et al. 2011). The 1 muskox harvested by Resolute in 2000/01 represents 1.2% of the minimum count, which is an underestimate of the actual population. When the island group was most recently surveyed in May 2013, the population had recovered to 909-2867 muskoxen (95% CI; Anderson 2014). As Figure 24 shows, even with limited data on population, the harvest level does not track changes in population in this case, notably increasing briefly during the decline in the mid-1990s, and remaining low to nonexistent as the population grew to its current high abundance. Peary caribou numbers increased in the 2000s as well, and they are preferred by most hunters over muskoxen. Without reliable harvest data for Peary caribou, however, we are unable to evaluate whether harvest rates can be used as an index of abundance for caribou on Bathurst Island.

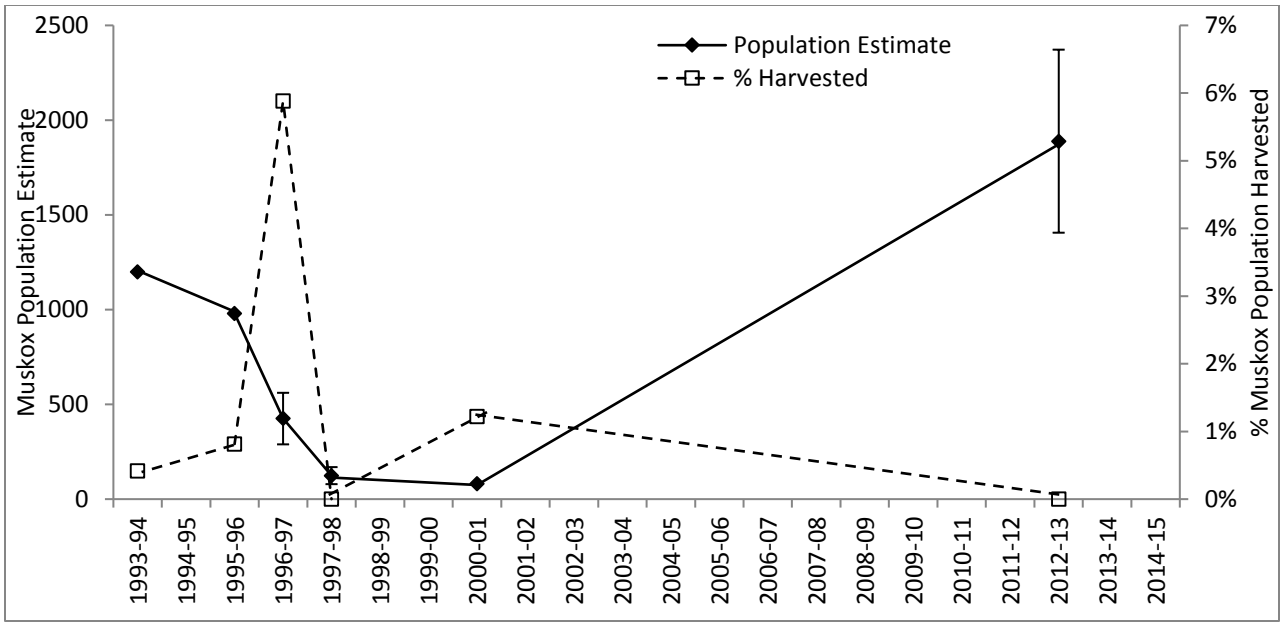

Figure 24. Harvest rates as a percentage of the population for MX-05 Bathurst Island, compared to the total population estimate (error bars represent standard error, where available).

Harvest Estimates versus Mandatory Reporting

It is not often that we have the datasets to evaluate the accuracy of harvest estimates obtained from communities. In the case of muskoxen, there is both the mandatory reporting that is recorded in the harvest database, and a 5-year study conducted by the NWMB from 1996-2001, the Nunavut Wildlife Harvest Study (NWHS, Priest and Usher 2004). The NWHS collected hunter information to assess harvest levels monthly on all harvested species in Nunavut to inform basic needs level calculations under the Nunavut Land Claims Agreement (NLCA; muskoxen, however, are under presumption of need, NLCA Section 5.6.5, and therefore do not have a BNL assigned). In some cases, both data sources (harvest reported in the NWHS and harvest confirmed by tags issued) line up well. For example, in 1996, Resolute Bay reported 12 muskoxen harvested in October, 2 in November, and 3 in December. Tag records for harvested muskoxen indicate the same numbers, with one additional muskox harvested in December. However, for spring 1997, the NWHS estimate was 2 muskoxen harvested, far short of the 13 tags that were issued. In all harvest years for both Grise Fiord and Resolute, the reported harvest underestimated the harvest recorded in the database, with the exception of 1997-98 in Resolute, where one muskox was reported in the NWHS but no tags were issued (Table 8, Table 9, Figure 25, Figure 26). Since hunters may not have considered sport hunts in their reports, the number of tags assigned for only domestic/commercial use is also presented for comparison; again, the NWHS underestimates total harvest. Commercial harvest was not consistently reported in the NWHS (Priest and Usher 2004), but was included here since commercial harvests from these communities were generally small-scale with hunters selling meat to the HTA.

Table 8. Comparison of muskox harvest estimates from the NWHS (Priest and Usher 2004) and the tag records in the muskox harvest database for Grise Fiord.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	Domestic/ Commercial Tags	% of Total Tags	% of Domestic/ Commercial Tags
Reported in NWHS																
1996-97					2				9	8			19		61.3%	65.5%
1997-98					1						1	2	4		21.1%	33.3%
1998-99			1							3	1		5		25.0%	38.5%
1999-00						1			1		3	1	6		30.0%	42.9%
2000-01			1										1		3.8%	5.9%
Actual Tags Issued																
1996-97			1		4				12	10	1	3	31	29		
1997-98					2				1	2	8	6	19	12		
1998-99			1				1			10	6	2	20	13		
1999-00					1				3	1	12	3	20	14		
2000-01			2			1			4	3	12	4	26	17		

Table 9. Comparison of muskox harvest estimates from the NWHS (Priest and Usher 2004) and the tag records in the muskox harvest database for Resolute Bay.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Unk	Total	Domestic/ Commercial Tags	% of Total Tags	% of Domestic/ Commercial Tags
Reported in NWHS																	
1996-97					12	2	3				2			19		61.3%	86.4%
1997-98											1			1			
1998-99											3	5		8		38.1%	57.1%
1999-00										1		2		3		16.7%	42.9%
2000-01										1		5		6		50.0%	100.0%
Actual Tags Issued																	
1996-97					12	2	4			3	4	6		31	22		
1997-98														0	0		
1998-99										5	5	8	3	21	14		
1999-00										5	10	3		18	7		
2000-01												1	11	12	6		

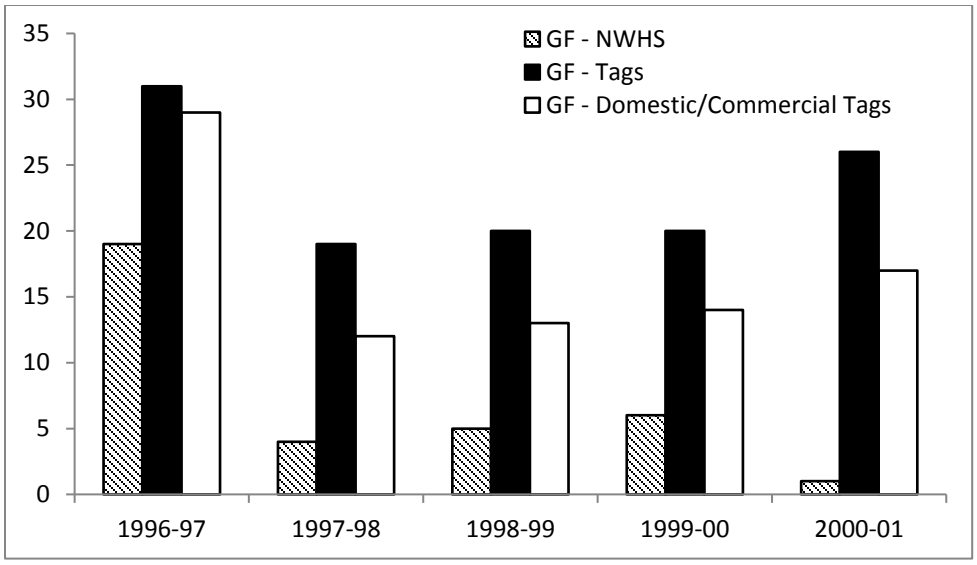

Figure 25. Tags used for all muskox harvest and for domestic/commercial harvest in Grise Fiord, 1996-2001, and muskox harvest estimates from the NWHS.

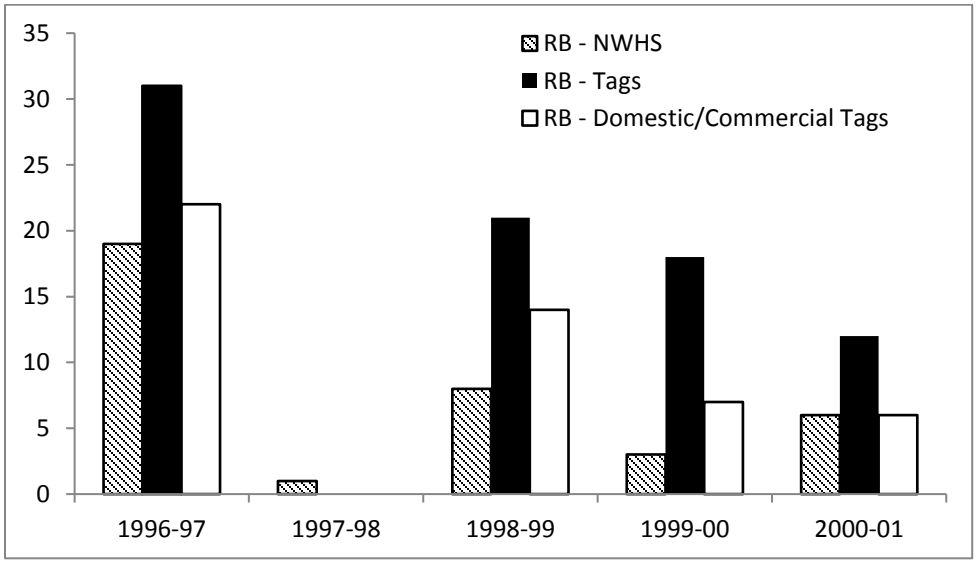

Figure 26. Tags used for all muskox harvest and for domestic/commercial harvest in Resolute Bay, 1996-2001, and muskox harvest estimates from the NWHS.

The harvest estimates provided for each year by Grise Fiord and Resolute to the NWHS (n=10; several tags did not have dates assigned so the total for the harvest year was used) were not particularly good predictors of the total harvest recorded in the database by tags used for the same period (R^2 = 0.4636; Figure 27). The reported harvest was a better predictor of the harvest for domestic/commercial use (R^2 = 0.6293; Figure 27).

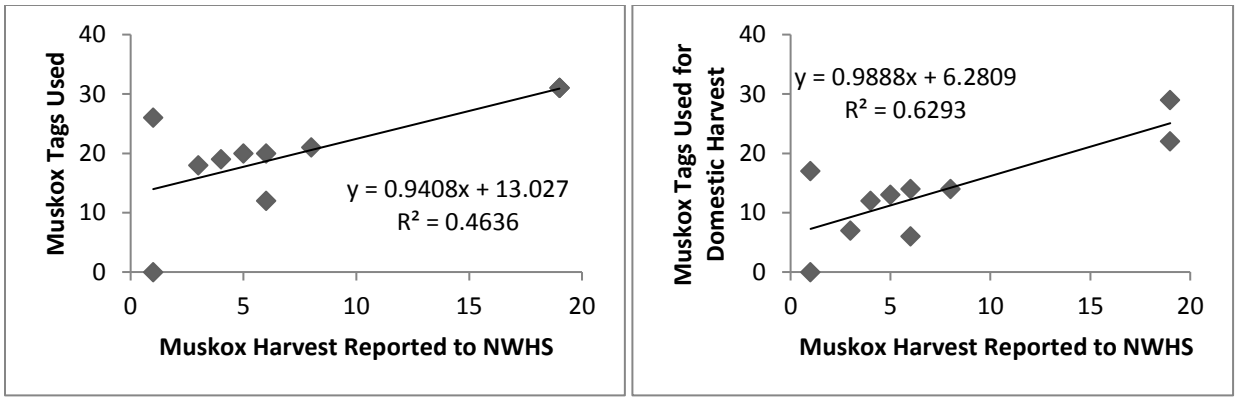

Figure 27. Regression of muskox harvest estimates collected for harvest years 1996-97 to 2000-01, with the number reported by hunters in NWHS as the predictor variable and the number of tags used as dependent variable.

Peary Caribou Harvest Trends

Harvest of Peary caribou has been low in Grise Fiord due to relatively low densities of caribou and the difficulty in accessing them. Some caribou have been harvested recently on Devon Island, not generally an area where they have been predictably found in the past, according to hunters in the community. The recovering population of Peary caribou on the Bathurst Island Complex provides relatively accessible country food for hunters from Resolute. Although hunters still visit Somerset Island, in particular to go fishing, they still report caribou only at low densities and Bathurst Island remains the preferred harvesting area. Some caribou have been seen and harvested on Cornwallis Island and Little Cornwallis Island as well, although it is generally agreed that Little Cornwallis animals are moving between Bathurst and Cornwallis islands and are not resident on Little Cornwallis Island. An in-progress summary of existing anecdotal reports of Peary caribou harvest for the High Arctic is presented in Appendix 3, but it should not be used to draw conclusions on harvest or for the basis of management decisions.

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ᖃᑯᒃᑐᓂᑦ ᑐᑐᓗᐊᖃᑦᑕᖅᓯᒪᙱᑦᑐᑦ ᐊᐅᓱᐃᑦᑐᒥᑦ ᐊᒥᓲᓗᐊᙱᓐᓂᖏᓐᓂᑦ ᐅᖓᓯᓗᐊᕌᓗᖕᓂᖏᓐᓄᓪᓗ. ᐃᓚᐃᓐᓇᖏᓐᓂᑦ ᑐᒃᑐᓯᒪᔪᐃᑦ ᑕᓪᓗᕈᑎᒥᑦ, ᓇᓂᔭᐅᕝᕕᒋᕙᙱᑦᑕᖏᓐᓂᑦ ᖃᖓᑲᓪᓚᒃ, ᐊᖑᓇᓱᒃᑎᑦ ᓄᓇᓕᖕᒥᐅᓂᑦ ᐅᖃᐅᓯᐅᓯᒪᔪᖅ. ᐊᒥᓱᕈᖅᐸᓪᓕᐊᓂᖏᑦ ᖃᑯᖅᑕᐃᑦ ᑐᒃᑯᐃᑦ ᑐᒃᑐᓯᐅᕐᕕᖕᒥᑦ ᐊᑐᐃᓐᓇᖃᕐᕕᐅᕗᖅ ᓂᕿᓪᓚᑦᑖᓂᑦ ᐊᖑᓇᓱᒃᑎᓄᑦ ᖃᐅᓯᐃᑦᑐᖕᒥᑦ. ᓱᓕ ᐊᖑᓇᓱᒃᑏᑦ ᑰᒐᓇᔫᑉ ᓄᓇᖓᓄᐊᖅᐸᒃᑲᓗᐊᖅᑐᑎᒃ ᓱᓕ, ᐱᓗᐊᖅᑐᒥᑦ ᐃᖃᓪᓕᐊᕆᐊᖅᑐᑎᒃ, ᑐᒃᑐᓯᐊᖕᓂᕋᓲᑦ ᐊᒥᓲᙱᑦᑐᓂᑦ ᑕᐃᓐᓇᓗ ᑐᒃᑐᓯᐅᕐᕕᒃ ᐊᖑᓇᓱᒡᕕᓪᓗᐊᑕᕆᔭᐅᓪᓗᓂ. ᑐᒃᑐᓯᐊᕐᓯᒪᔪᐃᑦ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᓕᖅᑐᑎᒃᓗ ᒪᕐᕈᓕᕿᒥᑦ ᒪᕐᕈᓕᕿᕋᓛᒥᓪᓗ, ᐊᖏᕈᑕᐅᓯᒪᓕᕋᓗᐊᖅᑐᓂ ᑖᒃᑯᐊ ᒪᕐᕈᓕᕿᕋᓛᒦᑦᑐᑦ ᐆᒪᔪᑦ ᐅᑎᖅᑕᕋᐅᔭᖕᓂᖏᓐᓂᑦ ᑐᒃᑐᓯᐅᕐᕕᖕᒥᑦ ᒪᕐᕈᓕᕿᒧᓪᓗ ᓄᓇᖃᕋᑎᒃᓗ ᒪᕐᕈᓕᕿᕋᓛᒥᑦ. ᐱᕙᓪᓕᐊᓂᖑᑦ ᓇᐃᓈᖅᓯᒪᔪᑦ ᐅᓂᒃᑳᓕᐊᖑᓯᒫᓂᒃᑐᓂᑦ ᖃᑯᒃᑐᑦ ᑐᒃᑐᑕᐅᕙᒃᑐᓂ ᐅᑭᐅᖅᑕᖅᑐᒥᑦ ᖁᑦᑎᒃᑐᒥᑦ ᓴᖅᑭᓯᒪᕗᖅ ᐅᐃᒍᐊᕈᓯᕐᒥᑦ 3, ᐊᑐᖅᑕᐅᓪᓗᐊᕋᑎᒃᓗ ᖃᓄᐃᓕᐅᕈᑎᒃᓴᓄᑦ ᐊᖑᓇᓱᒐᒃᓴᓄᑦ ᐊᐅᓚᑦᑎᔾᔪᑎᒃᓴᓄᓪᓘᓐᓃᑦ ᐋᖅᑭᒍᑕᐅᙱᓪᓗᓂ.

Discussion

The summary presented here represents an update to a harvest database that continues to be expanded and refined, and subsequent reports will continue to update the status of muskox and Peary caribou harvest in the High Arctic. In general, the mandatory information (date, sex, MMU) has been recorded for used tags, and should continue to be collected, along with any ancillary information that may aid interpretation of harvest trends.

The changes in MMUs over time have complicated long-term analysis of harvest data, except where specific locations have been provided. Whenever possible, a description of location and coordinates should be provided, as MMUs may continue to shift as new information allows us to more accurately define populations. Coordinates, management zones, and general location descriptions should be checked to ensure consistency.

Harvest of muskoxen in all management zones has been low and could be increased in many areas. IQ suggests that when muskox numbers are high, caribou are less likely to increase and may be adversely affected (although the mechanism remains unknown), so in the interests of managing for continued sustainable harvest of Peary caribou, harvesting more muskoxen could be encouraged. The upcoming changes to MMUs may increase harvest rates, as areas closer to Resolute Bay and more accessible from Grise Fiord would be open to harvest. Grise Fiord hunters have participated with high school students in land trips to teach hunting and butchering techniques, and with healthy populations of muskoxen, these opportunities to pass on traditional skills and knowledge should be encouraged. Some muskox populations could potentially sustain limited commercial harvests, but other considerations would have to be taken into account, and careful monitoring would be critical. The transportation, infrastructure, capacity issues, and expense involved in commercial meat production from remote High Arctic communities may be prohibitive.

Overall harvest has also declined in both Resolute Bay and Grise Fiord. Muskox sport hunts are usually tied to polar bear sport hunts, since hunters making a trip as far as Resolute Bay or Grise Fiord usually want to take full advantage of the harvest opportunities that are available. Sport hunts take place primarily in April, although many happen in March and May. Sports hunts have contributed more to muskox harvest in the last 5 years than domestic and commercial hunts, a marked shift from the late 1990s, when most harvest was for domestic and commercial use. Domestic and commercial hunts generally happen between February and May, although they take place throughout the year with the apparent general exception of June and July, when accessing harvest areas is more difficult. Whether harvest increases out of Arctic Bay for muskoxen on Devon and Somerset islands to offset the lack of Baffin Island caribou remains to be seen.

The distribution of natural deaths that were assigned tags does not inform our evaluation of harvest rate or details about harvested animals, but it does provide information regarding areas where muskox are present and where people are travelling. Some of tags assigned to skulls found on the land are near field camps where researchers are working, and do not represent harvesting areas. Reports of starving muskoxen can inform timing and extent of die-offs when these occur, but must be corroborated with other information. Notably, die-offs on Bathurst Island in the mid-1990s are not represented by the natural mortalities in the harvest database, since no tags were issued for collected carcasses or horns out of Resolute. Many people may collect horns on the land and not get tags for them. As a physical representation of the muskox quota, it is unclear why skulls and horns found on the land would be issued a tag, since the animal was not removed from the population by harvest activities, and in many cases likely died several years prior to the horns being collected and the tag being issued. Since muskox harvest has generally been far below the TAH set for the MMUs, using tags for natural mortalities has not impacted harvest levels.

The records of unsuccessful hunts are interesting, and could provide a metric of harvest effort is reliably recorded, but most unsuccessful hunts, particularly hunts for domestic use, are not recorded. There is currently no specification as to whether muskoxen were the primary species being hunted, or whether the muskox hunt is incidental to hunting another species. The area visited and duration of hunts are not recorded either, so it cannot be used to quantify hunting effort. Hunter harvest data can be difficult to accurately collect and quantify, but hunter effort data is much more difficult to collect and quantify and probably not a realistic goal at present.

Acquiring timely and accurate harvest data is difficult for a number of reasons, many of which are beyond the control of the Department. Once that data is acquired, however, database management can also be an issue, one which the Department can control. Some entries have general descriptions of areas that do not match the coordinates provided. While we are limited to a certain extent by the quality control and data available from previous years, in future, measures to ensure data integrity should be strictly adhered to at all stages of the process. Part of the issue is undoubtedly the high turnover in Wildlife Officer positions, which may remain vacant for months or years in some communities, since collecting harvest reports generally falls to Wildlife Officers. Good communication and training with the Wildlife Research Section on the kinds of information required is helpful when officers are present in the community.

Despite the limitations of the harvest database, the harvest records associated with tags and mandatory reporting appear to be a more reliable source of information than harvest estimates, even when estimates are collected monthly from many people who hunt regularly. The NWHS details the sources of error in harvest estimates, including non-response bias, recall time, survey coverage (missed hunters), strategic response bias, and measurement issues (Priest and Usher 2004). Voluntary and anecdotal information on harvest is often limited to relative terms like 'some,' 'few,' or 'many,' which vary depending on the experience of the observer, the local conditions, the community, season, population cycle, and area and period of observation. This further complicates interpretation of what little information is available. The NWHS was a massive project, involving a territorial coordinator, regional liaison officers, community fieldworkers, and monthly harvest reporting by over 6000 Inuit hunters across Nunavut, including 75 hunters in Resolute and 73 hunters in Grise Fiord (Priest and Usher 2004). Only 1 hunter in Grise Fiord and 2 in Resolute consistently refused to participate in the study, although 19% of hunters were estimated to have been missed in Grise Fiord (Priest and Usher 2004). No hunters were believed to have been missed in Resolute (Priest and Usher 2004). The occurrence of harvest reports in the NWHS in months when no tags were recorded as being used, however, suggests that an unknown proportion of that harvest may have been missed in the harvest database. It is also possible that those events represent an error in the NWHS - the monthly reporting schedule would have minimized recollection error, but long hunting trips or harvests near the beginning or end of the month could make it difficult to assign a harvest to one month or the other. It is likely that recent Peary caribou harvest estimates, which are based on best guesses by Wildlife Officers and represent a far less intensive data collection process, are much less accurate than estimates from the NWHS. No mandatory harvesting is required under the Nunavut Land Claims Agreement for non-TAH species for wildlife management purposes.

The inaccuracy of harvest data underscores a data deficiency with specific implications for Nunavut, since harvest data is used to determine basic needs levels (BNLs). Under the Nunavut Land Claims Agreement, BNL is established by the NWMB, which "shall constitute the first demand on the total allowable harvest. Where the total allowable harvest is equal to or less than the basic needs level, Inuit shall have the right to the entire total allowable harvest" (Section 5.6.20). Clearly, establishing an accurate BNL can have implications for beneficiary allocations and harvest. A BNL is not set for muskoxen, since they are under Presumptions as to Needs, Section 5.6.5: "the NWMB shall presume as a matter of fact and without further evidence that Inuit need the total allowable harvest established by the NWMB." Tags can still be allocated by the HTA/HTO for sport hunts. If populations increase, presumption of need can be re-evaluated under Section 5.6.6.

Harvest information may not reflect changes in populations in all circumstances either. Bathurst Island, MX-05, is currently the only MMU with enough data on harvest and muskox abundance to start examining these trends, and it highlights the importance of other factors that drive harvest, besides abundance of the target species. In the case of MX-05, harvest has often been fairly low, and increasing harvest from 1 muskox to 3 muskox is insignificant in terms of detecting a real trend in harvest. During the population crash in the

1990s, harvest was generally low, but the highest harvest recorded for MX-05 was in 1996-97, the last year of the crash. The population has since rebounded, but muskox harvest has been low since the late 1990s. Part of the reason the harvest numbers fail to track population numbers could be switching by hunters from muskoxen to Peary caribou, which are preferred when they are available, and which have also recovered following the 1990s die-offs. Without reliable harvest numbers for Peary caribou though, we are unable to examine whether the harvest more closely follows their population changes.

This report should be viewed as a summary of the harvest database to date, however, because reporting has been inconsistent and because of the numerous data quality issues, more information may become available for previous harvest years covered here. Subsequent harvest reports will hopefully address some data gaps if the missing data can be retrieved, as well as providing updates on recent harvesting trends.

It should also be noted that the High Arctic presents a relatively simple harvest region, where 1-3 communities may use a management unit and where mandatory reporting was, until 2015-16, required for muskoxen in all MMUs. Communities are small, HTAs are engaged and active, and capable Wildlife Officers have been present over much of the time period presented here, Sales and shipment of caribou and muskox meat through social media has not been an issue, but it may become one. In contrast, other regions have larger communities, overlapping hunting areas, high turnover in Wildlife Officers and HTO boards, and sometimes no established harvest reporting, In addition, the sale and shipment of caribou is hotly debated in many communities as caribou herds cycle down, while the human population of Nunavut, and the demand for country food, continues to grow, Data quality issues presented here for the High Arctic harvest will only be magnified for harvest in the Kivalliq, Kitikmeot, and on Baffin Island.

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ᓇᐃᓈᖅᓯᒪᔪᑦ ᓴᖅᑭᑕᐅᔪᑦ ᐅᕙᓂ ᓄᓇᑖᖑᓇᐊᖅᓯᕚᑦ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓂᑦ ᐊᒃᑭᓪᓕᕆᐊᒃᑭᓐᓇᖅᑐᑦ ᐱᐅᓯᕆᐊᖅᑕᐅᒃᑭᓐᓇᖅᓱᓂᓗ, ᑭᖑᓂᐊᒍᓪᓗ ᐅᓂᒃᑳᓕᐅᖅᑲᑦᑕᖅᓂᐊᖅᓱᑎ ᓄᑖᓂᑦ ᐅᒥᖕᒪᓄᑦ ᖃᑯᖅᑕᐃᑦ ᑐᒃᑐᓂᑦ ᐱᔭᐅᔪᓂᑦ ᖁᑦᑎᒃᑐᒥᑦ. ᑎᑎᕋᖅᑕᐅᙱᓐᓇᓚᕆᐊᓖᑦ ᖃᐅᔨᒪᔅᓴᐃᑦ (ᐅᓪᓗᖓ, ᑭᓲᓂᖓ, ᐅᒥᖕᒪᖕᓂᑦ ᐊᐅᓚᑦᑎᔾᔪᑦ) ᐊᑐᖅᑕᐅᔪᓄᑦ ᓂᕈᙵᑕᕐᓂ, ᓄᐊᑕᐃᙱᓐᓇᓪᓗᐊᖅᓱᑎᒃᑯ, ᐃᓚᖅᑲᕐᓗᓂ ᖃᐅᔨᒪᔅᓴᓂᑦ ᐋᑎᐅᑐᐃᓐᓇᓇᐊᓖᑦ ᑐᑭᓕᐊᖑᓂᖅᑭᓐᓄᑦ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓂᑦ.

ᐊᓯᔾᔨᖅᐸᓪᓕᐊᖅᑕᑦᑕᖅᓂᖅᑭᑦ ᐅᒥᖕᒪᖕᓂᑦ ᐊᐅᓚᑦᑎᔾᔪᑎᒥᑦ ᐱᑐᐃᓐᓇᕈᕈᑕᐅᓯᒪᓚᖕᒋᑦᓚᖅ ᐊᑯᓂᐅᔪᒧᑦ ᖃᐅᔨᓴᐃᓂᖕᓄᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ, ᑭᓯᐊᓂᓕ ᓇᑭᓪᓚᑦᑖᖑᓂᖅᑭᑦ. ᐊᔪᖅᓇᙱᒃᑳᕐᓚ, ᓇᓗᓇᐃᔭᖅᓯᒪᔪᒥᑦ ᓇᒦᒪᕐᓛᕐᓚᓐᓂᑦ ᓄᓇᙳᐊᓂᓪᓗ ᐱᑎᑕᐅᓪᓗᖅᑐᑦ, ᑖᒃᑯᐊ ᐅᒥᖕᒪᖕᓂᑦ ᐊᐅᓚᑦᑎᔾᔪᑦ ᐊᓯᔾᔩᓐᓇᐅᔭᑐᐃᓐᓇᓇᐊᖅᑲᖕᒪᑕ ᓄᑖᓂᑦ ᑐᓴᖅᐸᓪᓕᐊᓗᑕ ᓇᐃᓴᐃᑦᑎᐊᕈᓐᓇᖅᓯᓗᑕ ᖃᔾᔨᐅᓂᖅᑭᓐᓂᑦ. ᓄᓇᖑᐊᑦ, ᐊᐅᓚᑦᑎᕕᐅᔪᑦ, ᓇᒦᓐᓂᖅᑭᓪᓗ ᖃᐅᔨᓴᖅᑕᐅᖃᑦᑕᓪᓗᐊᖅᑐᑦ ᐊᔾᔨᒌᕐᕆᓐᓇᖁᓪᓗᑎᑦ.

ᐅᒥᖕᒪᒃᑕᐅᖅᑕᑦᑕᖅᑐᑦ ᐊᐅᓚᑦᑎᕕᐅᔪᓂᑦ ᐊᒥᓲᓗᐊᙱᓚᑦ ᐃᒻᒪᖅᑲᓗ ᐊᓯᐊᒍᑦ ᐊᒥᓯᑭᖅᓯᒪᑐᐃᓐᓇᓇᐊᓖᑦ. ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖅᑲᖏᑎᒍ ᐅᒥᖕᒪᖅᑲᐅᓗᐊᓕᕿᖓ, ᑐᑐᒃᑐᐃᑦ ᐊᒥᓯᑯᓗᐊᑭᓐᓇᙱᓚᑦ ᐊᒃᑐᖅᑕᐅᑐᐃᓐᓇᓇᐊᖅᑲᖅᓱᑎᒃᑯ (ᐱᔾᔪᓯᖏᑦ ᓯᓚ ᓇᓗᔭᐅᓪᓗᑎᒃ), ᐃᓱᒪᒋᓪᓗᒋᑦ ᐊᐅᓚᑎᓂᖅ ᓄᖑᕋᐃᓗᐊᙱᓐᓂᒃᑯᑦ ᑐᒃᑐᓐᓇᓱᒃᑕᑦᑕᖅᓂᖅ ᖃᑯᖅᑕᑯᓗᖕᓂᑦ, ᐅᒥᖕᒪᖕᓂᖅᓴᐅᖃᑦᑕᖁᔨᓪᓗᐊᖅᑐᑦ. ᐊᒡᒋᖅᑐᑦ ᐊᓯᔾᔨᕆᑏᑦ ᐅᒥᖕᒪᖕᓂᑦ ᐊᐅᓚᑦᑎᓃᑦ ᐊᒥᓱᓂᑦ ᐱᔭᓇᖕᓂᖅᓴᐅᑐᐃᓐᓇᓇᐊᖅᑲᖅᐳᑦ, ᖃᓐᓂᓂᖅᓴᓄᑦ ᖃᐅᓯᐃᑦᑐᖅ ᐊᑐᐃᓐᓇᐅᓕᕐᓗᑎᓪᓗ ᐊᐅᓯᐃᑦᑐ ᐅᒃᑯᐃᖓᓕᕐᓗᓂ ᐊᖑᓇᓱᒃᑕᐅᓂᖅᓴᒧᑦ. ᐊᐅᓯᐃᑦᑐᒥᐅᑦ ᐊᖑᓇᓱᒃᑎᖏᑦ ᐃᓚᐅᖃᑦᑕᖅᓯᒪᔪᑦ ᖁᑦᑎᖕᓂᖅᓴᓂᑦ ᐃᓕᓐᓂᐊᕐᑎᓂ ᐊᐅᓪᓚᖅᑎᓪᓗᒋᑦ ᐃᓕᓐᓂᐊᕐᑎᑕᐅᓪᓗᑎᒃ ᐊᖑᓇᓱᖕᓂᖕᓂᒥᑦ ᐋᒃᑐᐃᓂᖕᒥᒡᓗ, ᐊᒥᓲᓪᓗᑎᒡᓗ ᐅᒥᖕᒪᐃᑦ, ᑕᒪᒃᑯᐊ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐱᖅᑯᓯᑐᖃᐃᑦ ᖃᐅᔨᒪᔾᔪᓗ ᐊᔭᐅᖅᑐᖅᑕᐅᓗᐊᖅᑐᑦ. ᐃᓚᖏᑦ ᐅᒥᖕᒪᑦ ᐊᒥᓲᓂᖏᑦ ᐃᓯᓕᖕᓂᑦ ᓄᖑᕋᐃᓗᐊᖏᑦᑐᒃᑯᑦ ᐱᔭᐅᔪᓇᖅᑐᑦ, ᑭᓯᐊᓂᓕ ᐊᓯᖏᓐᓂᑦ ᐃᓯᒪᒋᔭᖃᓇᐊᖅᑲᖅᓂᐊᖅᑐᑦ, ᖃᐅᔨᓴᕐᑎᐊᒻᒪᓇᕆᐊᖅᑲᖅᓱᑎᒡᓗ. ᐃᖏᕐᓃᑦ, ᐱᔪᓰᑦ, ᐱᓕᓇᔪᑎᓄᑦ ᐊᑲᐃᓪᓕᐅᕈᑏᑦ, ᐊᑮᓪᓗ ᓂᐅᕕᐊᒃᓴᓂᑦ ᓂᖅᑭᓕᓇᓂᖅᓂᑦ ᐅᖓᓯᒃᑐᒦᑦᑐᓄᑦ ᖁᑦᑎᒃᑐᒥᑦ ᓄᓇᓖᑦ ᐊᔪᖅᑎᑕᐅᑐᐃᓐᓇᓇᐊᓖᑦ.

ᐅᒥᖕᒪᓚᓯᓗᐊᖅᓯᒪᙱᑦᑐᑦ ᑕᒪᐃᓐᓂᒃ ᖃᐅᓯᐃᑦᑐᒥᑦ ᐊᐅᓯᐃᑦᑐᒥᓪᓗ. ᑲᔾᔮᓴᖕᓂᒃᑯᑦ ᐅᒥᖕᒪᓚᓯᖕᓃᑦ ᐊᑕᐅᑦᑎᒃᑯᓚᔪᖅᑕᑦᑕᖅᑐᑦ ᑲᔾᔮᓴᖕᓂᒃᑯᑦ ᓇᓐᓄᓚᓯᒃᑎᓪᓗᒋ, ᑖᒃᑯᐊ ᐊᖑᓇᓱᒃᑏᑦ ᐅᖓᓯᒃᑐᑲᐊᖅᓯᒪᑎᓪᓗᒋᑦ ᖃᐅᓯᐃᑦᑐᖕᒧᑦ ᐊᐅᓯᐃᑦᑐᖕᒧᓪᓗ

ᐊᑲᖅᖀᑎᖅᑲᕈᒪᕙᖕᒪᑕ ᐊᖑᓇᓱᒍᓐᓇᖕᓂᓕᒫᓂᑦ ᐊᑐᐃᓐᓇᐅᔪᓂᑦ. ᑲᔾᔭᐅᓴᖕᓂᒃᑯᑦ ᐊᖑᓇᓱᒐᔪᒃᑐᑦ ᐊᐃᓇᓕᒥᑦ, ᐃᓛᓐᓂᒃᑯᑦ ᒫᕐᓯᒥ ᒪᐃᒥᓪᓗ. ᑲᔾᔭᐅᓴᖕᓂᒃᑯᑦ ᐊᖑᓇᓱᖕᓃᑦ ᐅᒥᖕᒪᖕᓂᖅᓴᐅᔾᔪᑕᐅᓯᒪᔪᑦ ᐊᕿᒍᑦ ᑕᓪᓕᒪᐅᓕᖅᑐᑦ ᓂᕆᔭᒃᓴᒨᖅᑎᒃ ᑮᓇᐅᔭᓕᐅᕈᑕᐅᓇᓱᒐᑎᒃᓗ, ᐊᓯᔾᔨᖅᐸᓪᓕᐊᓕᓚᐅᖅᑐᑦ ᓄᙳᐸᓗᐊᓂᑦ 1990–ᖏᓐᓂᑦ, ᐊᖑᓇᓱᖕᓂᖅᓴᐅᕙᓚᐅᖅᓯᒪᒐᓗᐊᖅᑐᑎᒃᓕ ᓂᕆᔭᒃᓴᓂᑦ ᓂᐅᕕᐊᒃᓴᒃᓴᓂᓪᓗ. ᓂᕆᔭᒃᓴᓄᑦ ᓂᐅᕕᐊᒃᓴᒃᓴᓄᓪᓗ ᐊᖑᓇᓯᓲᖑᒐᓗᐊᑦ ᒦᓂ ᕖᕝᕗᐊᕆ ᒪᐃᓪᓗ ᐊᑯᙵᓐᓂᑦ, ᐊᕿᒍᓕᒫᖅᐸᒃᑲᓗᐊᖅᑐᑎᒃ ᑭᓯᐊᓂᓕ ᔫᓐᒥᑦ ᔪᓚᐃᒥᓪᓗ ᐋᒃᑲ, ᐱᓇᓱᒃᓱᒋᑦ ᐊᔪᖅᓇᓗᐊᖅᑎᓪᓗᑦ. ᐱᓇᓱᖕᓂᖅᓴᐅᓕᖅᐸᑕ ᐃᒃᐱᐊᕐᔪᖕᒥᑦ ᐅᒥᖕᒪᓂᑦ ᑕᓪᓗᕈᑎᓂᑦ ᑰᒐᓇᔩᑉ ᓄᓇᖕᒐᓐᓂᒡᓗ ᐋᖅᑭᐅᑎᔾᔪᑎᕆᓇᓱᓪᓗᑎᑦ ᕿᑭᖅᑖᓗᑉ ᑐᒃᑐᖏᓐᓂᑦ ᑕᑯᓇᒃᑕᐅᓯᒪᔪᖅ.

ᑐᖁᑐᐃᓐᓇᖅᑐᕕᓃᑦ ᓂᕕᖕᒐᐅᒃᑯᑕᓖᑦ ᑐᓴᐅᒪᔾᔪᑎᒋᙱᓚᕗᑦ ᖃᐅᔨᓴᕈᑎᑦᑎᓐᓂᑦ ᐱᔭᐅᔪᓂᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᓇᑎᒡᓘᓐᓃᑦ ᐆᒪᔪᖅᑕᐅᔪᓂᑦ, ᑭᓯᐊᓂᓕ ᑐᑭᓯᐋᖅᓕᕈᑕᐅᓲᑦ ᓇᒦᒻᒪᖔᖏᑦ ᐅᒥᖕᒪᐃᑦ ᓇᐅᒃᑯᓪᓗ ᐃᓄᐃᑦ ᐊᐅᓪᓚᖅᐸᖕᒪᖔᖏᓐᓂᑦ. ᐃᓚᖏᑦ ᓂᕕᖕᒐᐅᒃᑯᑏᑦ ᓂᐅᖅᑯᐃᓐᓇᖕᓄᑦ ᓇᓂᔭᐅᓯᒪᔪᑦ ᓄᓇᒥᑦ ᐊᐅᓪᓛᖅᕕᐅᕙᒃᑐᑦ ᖃᓂᒌᔭᓂᑦ ᖃᐅᔨᓴᖅᑎᑦ ᐱᓕᕆᑎᓪᓗᒋᑦ, ᑭᒡᓕᖅᑐᐃᙱᓚᑦ ᐊᖑᓇᓱᒡᕕᐅᕙᒃᑐᓂᑦ. ᐅᖃᐅᓯᐅᓯᒪᔪᑦ ᐱᖅᓕᖅᑐᑦ ᐅᒥᖕᒪᐃᑦ ᖃᓂᐅᖕᒐᓂ ᖃᐅᔾᔪᑕᐅᔪᓐᓇᖅᑐᑦ ᖃᓄᑎᒋᓗ ᑐᖁᓴᖕᒪᖔᖏᑦ, ᑭᓯᐊᓂᑦᑕᐅᖅ ᐊᓯᖏᓐᓂᑦ ᑎᑎᖅᑲᓂᑦ ᐊᑐᓇᐊᖅᑲᓇᓪᓗᑎᒃ. ᐱᓗᐊᖅᑐᒥᑦ, ᑐᖁᓴᖅᑐᑦ ᕿᖑᐊᓂ ᕿᑎᐊᓂᑦ-1990 ᑭᒡᓕᖅᑐᖅᑕᐅᙱᓚᑦ ᑐᖁᑐᐃᓐᓇᖅᐸᒃᑐᓂ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓄᑦ ᑎᑎᖅᑲᓂᑦ, ᓂᕕᖕᒐᐅᒃᑯᑎᖅᑕᐅᓚᐅᖏᑦᑐᑦ ᓄᐊᑕᓄᑦ ᓂᕿᓂᑦ ᓇᓪᔪᓂᓪᓘᓐᓃᑦ ᖃᐅᓯᐃᑦᑐᒥᑦ. ᐊᒥᓱᑦ ᑲᑎᖅᓱᐃᔪᓐᓇᑐᑦ ᓇᓪᔪᓂᑦ ᓄᓇᓂᑦ ᓂᕕᖕᒐᐅᒃᑯᑕᖅᑖᕈᑎᒋᙱᑦᑐᒋᓪᓗ. ᐅᒥᖕᒪᑦ ᐊᙳᑕᒃᓴᐅᓪᓗᑎᒃ, ᓇᓗᓇᖅᑐᖅ ᖃᓄᐃᓪᒪᑦ ᓂᐅᖅᑯᐃᑦ ᓇᓪᔪᐃᓪᓗ ᓇᓪᔪᖅᑖᖑᔪᑦ ᓂᕕᖕᒐᐅᒃᑯᑦᑎᖅᑕᐅᓇᔭᖅᒪᖕᒪᖔᖏᑦ, ᑖᒃᑯᐊ ᐊᖑᓇᓱᒃᑕᐅᓯᒪᓇᑎᒃ, ᐃᓛᓐᓂᒃᑯᓪᓗ ᑐᖁᓯᒪᔪᑐᖅᑕᐅᓕᖅᓴᑐᑦ ᐊᕿᒍᓕᓴᖕᓂᑦ ᓇᓪᔪᖅᑖᖑᔪᑦ ᓇᓪᔪᖅᑖᖑᓕᖅᓴᑐᑦ ᓂᕕᖕᒐᐅᒃᑯᑦᑎᖅᑕᐅᓕᖅᓴᑐᑎᒃᓗ. ᐅᒥᖕᒪᒐᓱᑐᐊᖅᓯᒪᙱ48ᖅᓱᑎᒃ ᑲᑎᓪᓗᒋᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᑦ ᑐᙶᓂᓪᒪᓇᒃ ᐋᖅᑭᒃᑕᐅᓯᒪᔪᑦ ᐅᒥᖕᒪᖕᓂᑦ ᐊᐅᓚᑦᑎᔨᒃᑯᓐᓄᑦ, ᓂᕕᖕᒐᐅᒃᑯᑦᑎᓇᓂᖅ ᑐᖁᑐᐃᓐᓇᖅᓯᓄᑦ ᐊᒃᑐᐃᓂᖅᑲᙱᑦᑐᖅ ᐊᙳᑕᐅᔪᓐᓇᖅᑐᓂᑦ.

ᐊᖑᓇᓱᒃᑎᑦ ᐱᙱᒃᑳᖕᒐᒥᒃ ᐃᓱᒪᓇᖅᑐᑦ, ᓴᖅᑭᑎᑦᑎᓇᔭᖅᑐᐊᖅᓗᓂ ᐱᓇᔪᖕᓂᓂᑦ ᑎᑎᖅᑕᐅᑦᑎᐊᖅᑲᑦᑕᖅᐸᑕ, ᑭᓯᓂᓕ ᐱᙱᑦᑐᑦ, ᐱᓗᐊᖅᑐᒥᑦ ᓂᕆᔭᒃᓴᓂᑦ, ᑎᑎᖅᑕᐅᙱᓪᒪᑕ. ᓇᓗᓇᐃᔭᖅᓯᒪᔪᖅᑲᙱᓪᒪᑦ ᐅᒥᖕᒪᐃᑦ ᐊᖑᓇᓱᒃᑕᐅᓪᓗᐊᑕᖕᒪᖔᖏᓐᓂᑦ, ᐅᕙᑐᖓᓂᑦ ᐅᒥᖕᒪᒐᓱᖕᓂᖅ ᑭᖑᕙᐃᑕᐅᓯᒍᖕᒪᖔᑕ ᐊᓯᖏᓄᑦ ᐆᒪᔪᓂᑦ. ᐅᐸᒃᑕᐅᖅᑲᑦᑕᖅᑐᑦ ᖃᓄᓯᐅ ᐊᑯᓂᐅᑎᒋᔪᖅᓴ ᐊᖑᓇᓱᒃᓯᒪᖅᑲᑦᑕᖕᒪᖔᖏᑦ ᑎᑎᖅᓯᒪᙱᓪᒪᔪᑦ, ᐊᑐᖅᑕᐅᔪᓐᓇᙱᑕ ᑕᐃᒫᒃ ᐊᖑᓇᓱᖕᓂᐅᕙᒃᑐᓄᑦ. ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑲᓯᐅᓪᓗᑎᒃ ᐊᔪᖅᓇᖅᑲᔭᖅᑐᖅ ᓄᐊᑦᑎᑦᑎᐊᓇᐊᖅᓴᖅ ᓇᐃᓴᓇᐊᖅᓴᖅᓗ, ᑭᓯᐊᓂᑦᑕᐅᖅ ᐊᖑᓇᓱᒃᑎᑦ ᐱᓇᔪᒃᑕᖅᑐᖅᓇᓄᑦ ᑎᑎᖅᓴᒃᓴᐅᓪᓗᐊᙱᑕ ᓄᐊᒥᐊᒃᓴᖅ ᓇᐃᓴᓇᐊᒃᓴᖅᓗ ᒫᓐᓇᓗ ᐱᓇᓱᒃᓴᐅᓗᐊᖅᓯᖅᓱᐊᓇᓂ.

ᑭᖑᕙᓯᒪᙱᑦᑐᒥᑦ ᑕᒻᒪᖅᓯᒪᙱᑦᑐᒥᓗ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑐᐃᔭᓇᐊᒃᓴᖅ ᐊᔪᖅᓇᖕᒪ ᐊᒥᓱᓄᑦ ᐱᔾᔪᑎᖃᖅᑐᖅᓗᓂ, ᐊᒥᓱᐃᓪᓗ ᐊᐅᓚᑕᐅᔪᓐᓇᖅᑕᕕᑦ ᐱᓕᕆᐊᖃᖅᑕᖏᑦ. ᑖᒃᑯᐊ ᑕᒻᒪ ᑎᑎᖅᑲᑦ ᐱᔭᐅᓗᐊᖅᒥᒍᑎᑦ, ᑭᓯᐊᓂ, ᑎᑎᖅᑭᓂᖅᓄᑦ ᐊᐅᓚᑦᑎᔨᒃᑯᓐᓄᑦ ᐱᔾᔪᑎᖃᐅᑎᑦᑎᓇᔭᖅᓱᑎᒃ, ᑕᒪᓐᓇ ᐱᓕᕆᐊᕆᓇᓱᒃᑕᖓ ᐊᐅᓚᑦᑎᓂᖅ. ᐃᓚᖏᑦ ᑎᑎᖅᑕᐅᕙᒃᑐᑦ ᐊᔾᔨᒌᙱᑦᑐᑦ ᑎᑎᖅᓯᒪᔪᓂ. ᑐᓴᖅᑕᐅᖃᑦᑕᖅᑐᑦ ᐱᐅᓂᖅᐹᖑᔪᑦ ᐊᑐᕐᓗᒋᑦ ᑎᑎᖅᑲᓂᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐊᓯᔾᔨᖅᐸᓪᓕᐊᔪᑦ ᓯᕗᓂᖓᓂ, ᖃᐅᔨᓴᖅᑎᓐᓂᒃ ᒪᓕᒋᐊᖃᖅᑕᖏᑦ ᐊᑐᖅᑕᐅᔪᑦ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑐᐃᔭᖅᑐᐃᓐᓇᖅᑎᓂᑦ ᑖᒃᑯᐊ ᐊᖑᓇᓱᒃᑎᑦ ᐃᓚᒋᔭᐅᓪᓗᑎᒃ ᐊᑐᖅᑕᐅᓯᒪᔪᑦ.

ᐱᑕᖃᕐᓂᖅᓴᐅᖏᓐᓇᕋᓗᐊᖅᑐᑦ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓄᑦ ᑎᑎᖅᑲᓂᑦ, ᑖᒃᑯᐊ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᑦ ᓂᕕᖕᒐᐅᒃᑯᑦᑕᖅᑖᕈᑎᒋᔭᐅᕙᒃᑐᑦ ᐅᖅᑲᐅᓯᐅᔪᖅ ᐊᖑᔭᖅᑐᐃᓐᓇᖅᑐᑦ ᐊᖑᓇᓱᒃᑎᑦ ᑐᖁᑦᑎᓂᖏᑦ, ᓇᓚᐅᑦᑖᖅᓯᒪᔪᑦ ᐊᖑᓇᓱᒃᑕᓂᑦ, ᓇᓚᐅᑦᑖᖅᓯᒪᔪᑦ ᑕᖅᑭᖓᓂ ᐱᓕᕆᐊᒃᓴᓕᕈᑎᐅᔪᑦ ᐊᓯᓪᓗ ᐊᖑᓇᓱᒃᑎᓂᑦ. ᑖᒃᑯᐊ ᓄᓇᕗᒻᒥᑦ ᐃᒪᖅᓂᑦ ᐱᔭᐅᔪᑦ ᖃᐅᔨᓴᖅᑏᑦ ᓇᓗᓇᐃᔭᖅᓯᒪᔪᑦ (ᑕᑯᔭᐅᖃᑦᑕᖅᑐᑦ ᐊᖑᓇᓱᒃᑏᑦ), ᐅᐸᓗᖕᓂᐊᖅᓯᒪᔪᓄᑦ ᑭᒍᓯᑦ, ᐆᒃᑐᕋᐅᑎᓄᓪᓗ ᐊᑲᐃᓕᐅᕈᑏᑦ (Priest and Usher 2004). ᐃᓱᒪᒥᓂᒃ ᑐᓴᐅᒪᑎᑦᑎᓂᑦ ᐊᖑᓇᓱᒃᑕᓂᑦ ᑭᓕᕐᑲᓗᐊᕐᒪᑕ ᐅᖅᑲᐅᓯᖏᑦ ᓱᖅᓱ ‘ᐃᓚᖏᑦ’, ‘ᖃᔅᓯᐊᖅᔪᐃᑦ’, ‘ᐊᒥᓱᑦ’–ᔫᓐᓃᑦ, ᐊᔾᔨᒌᒃᐸᓗᓂᑦ ᑕᑯᔪᒃ ᒪᓕᒃᓗᒋᑦ, ᓄᓇᓕᖕᓂᑦ ᖃᓄᐃᓐᓂᖏᑦ, ᓄᓇᓖᑦ, ᓯᓚᐅ ᓇᓕᐊᖑᓂᖓ, ᐃᓄᒋᐊᒃᓯᕙᖕᓂᑦ, ᓇᒦᒻᒪᖔᑦ ᖃᖓᐅᖕᒪᖔᓪᓗ ᖃᐅᔨᔪᒃ. ᑕᒪᓐᓇ ᐱᑐᐃᓐᓇᐅᔭᓐᓂᖅᑕᐅᕙᒃᐳᖅ ᑐᑭᓕᐊᖑᓕᖃᖓ ᑐᓴᐅᒪᓗᐊᙱᑎᓪᓗᒋᑦ. ᑖᒃᑯᐊ ᓄᓇᕗᒻᒥᑦ ᐃᒪᖅᓂᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᖃᐅᔨᓴᖅᑐᓂᑦ ᐱᓇᓱᒃᓯᐊᕐᓂᖅᓴᖅᓯᓕᕐᑐᐃᓐᓇᕐᓗᑎᒃ, ᐱᓇᓱᒃᑐᑎᒃ ᓄᓇᕗᒻᒥᑦ ᑐᑭᒧᐊᒃᑎᑦᑎᔾ, ᐊᕕᒃᑐᖅᓯᒪᔪᓂᑦ ᑐᑦᑕᐅᕕᐅᔪᑦ, ᓄᓇᓕᖕᓂᑦ ᐃᖅᑲᓇᐃᔭᖅᑏᑦ, ᑕᖅᑭᖓᓂ ᐅᓂᒃᑳᖅᓯᐅᖅᑐᓂᑦ ᐅᑯᓇᖓᑦ 6000 ᐅᖓᑖᓂᑦ ᐊᖑᓇᓱᒃᑎᓂᑦ ᓄᓇᕗᒻᒥᒥᑦ, ᐃᓚᐅᓪᓗᑎᒃ 75 ᐊᖑᓇᓱᒃᑏᑦ ᖃᐅᔨᓴᖅᑕᐅᓯᒪᔪᑦ 73–ᓗ ᐊᖑᓇᓱᒃᑏᑦ ᐊᐅᓯᐊᑦᑐᒥᑦ (Priest and Usher 2004). ᐊᑕᐅᓯᑐᐊᑦᑎᐊᖅ ᐊᖑᓇᓱᒃᑎᑦ

ᐊᐅᓱᐃᑦᑐᒥᑦ ᒪᕐᕉᒃᑐ ᖃᐅᓱᐃᑦᑐᒥᑦ ᐃᓚᐅᔪᒪᖃᑦᑕᓚᐅᙱᑦᑐᑦ ᖃᐅᔨᓴᕐᓂᕐᓂᑦ, 19% ᐊᖑᓇᓱᒃᑏᑦ ᑭᑭᑕᐅᓯᒪᓇᓱᒋᔭᐅᔪᑦ ᐊᐅᓱᐃᑦᑐᒥᑦ (*Priest and Usher 2004*). ᑭᑭᑕᐅᓯᒪᔪᖅᑲᕐᓱᒋᔭᐅᓇᑎᒡᓕ ᖃᐅᓱᐃᑦᑐᒥᑦ (*Priest and Usher 2004*). ᐊᖑᓇᓱᒃᑕᓄᑦ ᐅᓂᒃᑳᓕᐊᑦ ᓄᓇᕗᒻᒥᑦ ᐆᒪᔪᖕᓂᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᖃᐅᔨᓴᕐᓂᕐᓂᑦ ᑕᖅᑭᓂᑦ ᓂᕈᐊᕐᒐᐅᒃᑯᑕᑎᑦ ᑎᑎᕋᖅᓯᒪᔪᖅᑲᕋᓂᑦ ᐊᑐᖅᑕᐅᓪᓗᑎ, ᑭᓯᐊᓂᑦ, ᓇᓗᔭᐅᔪᓂᑦ ᐊᖑᓇᓱᒃᑕᓂᑦ ᑎᑎᕋᕐᓂᙱᓚᑦ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᕋᕐᕕᒃᓴᕐᒥᓐᓄᑦ. ᐃᒻᒪᖄᓘᓐᓃᑦ ᑖᒃᑯᐊ ᑕᒻᒪᖅᓯᒪᑐᐃᓐᓇᕆᐊᓖᑦ ᓄᓇᕗᒻᒥᑦ ᐆᒪᔪᖕᓂᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᖃᐅᔨᓴᕐᓃᑦ - ᑕᖅᑭᒧᑦ ᐅᓂᒃᑳᓕᐅᕐᓂᓕᕆᔾᔪᑖ ᒥᒃᓱᕆᐊᖅᓯᒪᑎᑦᑎᓇᔭᓚᐅᖅᑐᖅ ᑕᒻᒪᖅᓯᒪᔪᓂᑦ ᓄᐊᑕᐅᒃᑲᓐᓂᖅᑐᓂᑦ, ᑭᓯᐊᓂᓕ ᐊᑯᓂᐊᓗᑦ ᐊᖑᓇᓱᕐᓃᑦ ᐱᔭᐅᔪᓪᓘᓐᓃᑦ ᐱᒥᐊᕐᓂᐸᓗᐊᓂᑦ ᐃᓱᐊᓂᒡᓘᓐᓃᑦ ᑕᖅᑭᒥᑦ ᐊᔪᕐᓇᕈᑕᐅᑐᐃᓐᓇᓇᐊᖅᑲᕐᒪᑦ ᐊᖑᓇᓱᒐᒃᓴᓂᑦ ᑕᖅᑭᒧᑦ ᐊᑕᐅᓯᕐᒧᑦ ᐊᓯᐊᓄᓪᓘᓐᓃᑦ. ᐃᒻᒪᖄ ᑖᒃᑯᐊ ᖃᑯᖅᑕᐃᑦ ᑐᒃᑐᑕᐃᑦ ᒫᓐᓇᓵᐸᓗᒃ ᓇᓚᐅᑦᑖᖅᑕᑦ, ᓇᓚᐅᑦᑖᖅᑕᐅᓯᒪᓪᓗᑎᒃ ᐆᒪᔪᕐᓂᐊᖅᑎᒃᑯᐊᓂᑦ ᐱᓚᓇᑐᓗᐊᙱᑦᑐᑦ ᑎᑎᖅᑲᑎᒍᑦ, ᓇᓚᐅᓐᓂᖅᓴᐅᓰᑦ ᓇᓚᐅᑦᑖᓚᓂᑦ ᓄᓇᕗᒻᒥᑦ ᐆᒪᔪᖕᓂᑦ ᐱᔭᐅᕙᒃᑐᓂᑦ ᖃᐅᔨᓴᕈᑎᓂᑦ. ᓄᓇᕗᒻᒥᑦ, ᑎᑎᕋᐅᓯᖅᑲᕐᓂᖅ ᐱᔭᓇᐊᖅᑲᙱᒻᒪ ᑕᒪᒃᑯᓄᑦ ᑲᑎᓪᓗᒥᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᓂ ᐆᒪᔪᖕᓂᑦ ᐆᒪᔪᖕᓂᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᖓᔪᓂᑦ.

ᑕᒻᒪᓯᒪᑎᓪᓗᒥᑦ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑲᕐᒥᑦ ᑐᖓᐅᑦᑐᓂᑦ ᑎᑎᖅᑲᓂᑦ ᓈᒻᒪᕐᒥᑦᑐᓂᑦ ᖃᓄᐃᓕᐅᕐᑯᔨᔪᓂᑦ ᓄᓇᕗᒻᒧ, ᑖᒃᑯᐊ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑲᐃᑦ ᐊᑐᖅᑕᐅᕙᕐᒪᑕ ᐋᖅᑭᒍᑕᐅᓪᓗᑎᒃ ᓂᕐᔪᑏᑦ ᐊᓇᐅᒪᔾᔪᑎᒋᓇᓱᐊᕐᓗᒥᑦ ᓈᒻᒪᕐᓂᖅᑕᐅᓂᕐᒥᓐᓄᑦ. ᓄᓇᕗᒻᒥᑦ ᓄᓇᑖᕈᑎᓄᑦ ᐊᕐᒥᕈᑎᓂᑦ, ᓂᕐᔪᑏᑦ ᐊᓇᐅᒪᔾᔪᑎᒋᓇᓱᐊᕐᓗᒥᑦ ᓈᒻᒪᕐᓂᖅᑕᐅᓂᕐᒥᑦ ᐋᖅᑭᒃᑕᐅᕙᕐᒪᑕ ᓄᓇᕗᒻᒥᑦ ᐆᒪᔾᔭᓇᐃᖅᓱᐊᑦ ᑲᑎᒪᔩᕐᒥᓐᓄᑦ, ᐃᒪᐃᓕᖓᔪᖅ "ᐋᖅᑭᒍᑕᐅᑐᐃᓐᓇᐊᓕᒃ ᓯᕗᓪᓕᖅᐹᒥᑦ ᐱᔭᐅᔪᒪᒧᓂᑦ ᑲᑎᓪᓗᒥᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᓂᑦ. ᑖᒃᑯᐊᓕ ᑲᑎᓪᓗᒥᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᑦ ᓇᓕᒧᑉᐸᑦ ᑐᖑᓃᑉᐸᓪᓗᓃᑦ ᓂᕐᔪᑏᑦ ᐊᓇᐅᒪᔾᔪᑎᒋᓇᓱᐊᕐᓗᒥᑦ ᓈᒻᒪᕐᓂᖅᑕᐅᓂᕐᒥᓐᓂᑦ, ᐃᓄᐃᑦ ᐱᔪᓇᕐᓂᖅᑲᕐᓂᐊᖅᐸᑦ ᑕᒪᐃᓐᓄᓕᒫᖅ ᑲᑎᓪᓗᒥᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓐᓇᖅᑐᑦ" (ᐃᓗᐊᓂᑦ 5.6.20). ᓇᓗᓇᙱᓪᓗᓂ, ᐋᖅᑭᒃᓯᓂᖅ ᐋᖅᑭᑦᑎᐊᖅᓯᒪᔪᓂᑦ ᓂᕐᔪᑏᑦ ᐊᓇᐅᒪᔾᔪᑎᒋᓇᓱᐊᕐᓗᒥᑦ ᓈᒻᒪᕐᓂᖅᑕᐅᓂᕐᒥᑦ ᐊᒃᑐᐃᓂᖅᑲᖅᔭᖅᑐᑦ ᓄᓇᑖᖅᓯᒪᔪᓄᐊᖅᑎᖅᑕᐅᓂᕐᒥᓐᓂ ᐊᖑᓇᓱᕐᒥᒃᓴᓂᓪᓗ. ᓂᕐᔪᑏᑦ ᐊᓇᐅᒪᔾᔪᑎᒋᓇᓱᐊᕐᓗᒥᑦ ᓈᒻᒪᕐᓂᖅᑕᐅᓂᕐᒥᑦ ᐋᖅᑭᒃᓯᒪᙱᓚᑕ ᐅᒥᕐᒪᕐᓄᑦ, ᐊᑖᓃᓐᓂᕐᒥᓐᓄᑦ ᐃᓱᒪᒋᔭᐅᓯᒪᔪᓂᑦ ᐱᔭᓇᐊᖅᑲᕐᒥᓐᓂᕐᒥᐅᓇᓂ, ᐃᓗᐊᓂᑦ 5.6.5: "ᓄᓇᕗᒻᒥᑦ ᐆᒪᔾᔭᓇᐃᖅᓱᐊᑦ ᑲᑎᒪᔩᕐᒥᑦ ᓱᓕᕓᑎᓪᓗᒍ ᒪᓕᒃᑦᑕᖅᓂᐊᖅᐳᑦ ᑕᑯᓐᓴᐅᑎᖅᓯᓗᑎᓪᓗ ᐃᓄᐃᑦ ᐃᓅᔾᔪᑎᒋᔭᕆᐊᖃᖅᑕᕐᒥᓐᓂᒃ ᐱᔭᕆᐊᖅᑎᑉᔭᕐᒥᓐᓂᒃ ᒪᓕᓪᓗᒥᑦ ᐋᖅᑭᑦᑕᐅᓯᒪᓪᓗᑎᒃ ᓄᓇᕗᒻᒥ ᐆᒪᔾᔭᓇᐃᖅᓱᒧᑦ ᑲᑎᒪᔩᕐᒥᑦ." ᓂᕈᐊᕐᒐᐅᒃᑯᑏᑦ ᐱᔭᐅᔾᔭᖅᑐᐃᑦ ᓱᓕ ᐊᖑᓇᓱᒃᑐᓕᕆᔨᒃᑯᑦ ᑲᑐᔾᔨᖅᑲᑎᒌᒃᑯᓐᓂᑦ ᑭᐱᖑᐃᔭᕐᓂᕐᒧᑦ ᐊᖑᓇᓱᕐᓂᕐᓄᑦ. ᐊᒥᓲᓕᖅᐸᑕ, ᑖᒃᑯᐊ ᐃᓱᒪᒋᔭᑦ ᐱᔭᐅᔭᕆᐊᖅᑲᕐᓂᕐᒧᑦ ᖃᐅᔨᓴᖅᑕᐅᒃᑲᓂᕈᓇᖅᑐᑦ ᒪᓕᒃᖢᒍ ᑎᑎᖅᑲᖅᓯᒪᔪᖅ ᐃᓗᐊᓂᑦ 5.6.6.

ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑲᖅᓯᒪᔪᑦ ᐊᑐᐃᓐᓇᕈᑎᐅᓇᓱᐊᖅᑐᑦ ᐊᓯᔾᔨᕐᓂᐅᔪᓂᑦ ᐊᒥᓲᓂᕐᒥᓐᓂᑦ ᖃᓄᐃᓐᓇᖅ. ᕿᕐᒍᐊᒃ, MX-05, ᒫᓐᓇᐅᔪᖅ ᐅᒥᕐᒪᕐᓂᑦ ᐊᐅᓚᑦᑎᔾᔪᑦ ᑎᑎᖅᑲᖅᑲᑦᑎᐊᖅᑐᑦ ᐊᖑᓇᓱᒃᑕᐅᔪᓂᑦ ᐊᒥᓲᓂᕐᒥᓐᓂᓗ ᑕᒪᒃᑯᐊ ᖃᐅᔨᓴᖅᐸᓪᓕᐊᓕᕐᓗᒥᑦ, ᓇᓗᓇᐃᖅᓯᓯᒪᓪᓗᓂᓗ ᐱᓕᒪᓇᐅᓂᕐᒥᑦ ᐊᓯᕐᒥᑦᑕᐅᖅ ᐊᖑᓇᓱᒍᑕᐅᓲᑦ, ᓴᓂᐊᒍᑦ ᐊᒥᓲᓂᑦ ᐱᔭᐅᓇᓱᐊᖅᑐᑦ. ᐅᕙᓂ ᐱᓕᕆᐊᒥᑦ MX-05, ᐱᔭᐅᓗᐊᖅᑲᑦᑕᕆᑦᑐᑦ, ᐊᒥᓱᕈᕆᐊᕐᓗᒍ ᐅᒥᕐᒪᒃᑕᐅᒧ49ᓇᖅᑐᑦ 1–ᒥᑦ 3–ᒧᑦ ᐊᑐᐃᓂᖅᑲᓗᐊᕆᑦᑐᖅ ᐊᑐᑦᑎᐊᖅᓗᓂ ᖃᓄᐃᓪᓚᑦᑖᕐᓂᐅᔪᓂᑦ ᐊᖑᓇᓱᕐᓂᕐᓂᑦ. ᐊᒥᓲᔪᓐᓃᖅᑐᐊᔫᑎᓪᓗᒥᑦ 1990–ᕐᒥᓂᑦ, ᐊᒥᓲᓗᐊᕆᑦᑐᓂᑦ ᐅᒥᕐᒪᖅᑲᑦᑕᓚᐅᖅᑐᑦ, ᑭᓯᐊᓂᓕ ᐊᒥᓲᓚᑦ ᑎᑎᖅᑲᖅᑕᐅᓯᒪᔪᑦ ᐅᒥᕐᒪᒃᑕᐅᓯᒪᔪᑦ MX-05–ᒥᑦ 1996-97–ᒥᐅᓚᐅᖅᓯᒪᕗᖅ, ᑭᕐᒍᓪᓕᖅᐹᕐᓯᓂᑦ ᐊᕿᒍᒥᑦ ᐊᒥᓲᔭᓐᓂᖅᑎᓪᓗᒥᑦ. ᐊᒥᓱᕈᖅᐹᓪᓕᖅᓯᒪᓕᖅᑐᑦ ᑕᐃᒪᕐᓯᓂᑦ, ᐅᒥᕐᒪᓯᓱᓗᐊᖅᑲᑦᑕᖅᓯᒪᕆᑦᑐᑦ ᑕᐃᑲᕐᓯᓂᓂᑦ 1990–ᕐᒥᓂᑦ. ᐃᓚᕐᓯᑦ ᐱᔾᔪᑕᐅᔪᖅ ᐊᖑᓇᓱᒃᑕᑦ ᐊᒥᓲᓂᕐᒥᑦ ᑎᑎᖅᑲᖅᑕᐅᔪᓇᕆᔾᔪᑎᒋᔭᕐᒥᑦ ᐊᖑᓇᓱᒃᑏᑦ ᐅᒥᕐᒪᓯᓱᓚᐅᖅᑳᖅᐳᑎᒃ ᑐᒃᑐᓇᓱᓕᖅᑲᑦᑕᕐᓂᕐᒥᓂ, ᐱᔭᐅᔪᒪᓂᖅᓴᐅᔪᑦ ᐊᑐᐃᓇᐅᓖᕐᓯᒥᒃ, ᐊᒥᓱᕈᖅᓯᒪᕚᓪᓕᖅᑐᑦ ᑐᖅᑯᖃᓚᐅᖅᑎᓪᓗᒥᑦ 1990–ᕐᒥᓂᑦ. ᓇᐃᓴᖅᑕᐅᓯᒪᑎᐊᕐᒥᑎᓪᓗᒥᑦ ᖃᑯᖅᑕᐃᑦ ᑐᒃᑐᑕᐅᓯᒪᑦ, ᖃᐅᔨᓴᕈᓇᕐᒥᓚᒍᑦ ᑖᒃᑯᐊ ᐱᔭᐅᖃᑦᑕᖅᑐᑦ ᒪᓕᒃᑲᓗᐊᓇᐊᒃᓴᕐᒥᑦ ᐅᓄᖅᓯᕙᓪᓕᐊᓂᕐᒥᓄᑦ.

ᐅᓇ ᐅᓂᒃᑳᖅ ᕿᒥᕐᕈᔭᐅᓪᓗᐊᖅᑐᖅ ᓇᐃᓈᖅᓯᒪᓗᓂ ᐊᖑᓇᓱᒃᑕᓄᑦ ᑎᑎᖅᑲᕐᒥᓂᑦ ᐅᓪᓗᒥᒧᑦ, ᑭᓯᐊᓂᓕ, ᐅᓂᒃᑳᓕᐅᕐᒥᓇᖅᐸᕐᒥᓂᕐᒥᓄᑦ ᐱᔾᔪᑎᖃᐅᖅᓱᑎᒃᓗ ᐊᒥᓱᓚᕐᓂᑦ ᑎᑎᖅᑭᓇᔾᔪᑎᓂᑦ, ᑐᓴᒃᓴᓂᑦ ᐊᑐᐃᓇᖅᑕᖃᑐᐃᓐᓇᐊᓕᒃ ᐊᖑᓇᓱᒃᑕᐅᕙᓚᐅᖅᑐᓄᑦ ᐊᕿᒍᓄᑦ ᒫᓂ. ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓂᑦ ᐅᓂᒃᑳᓕᐅᖅᑲᑦᑕᓕᕈᑎᒃ ᐃᒻᒪᖄ ᐱᑕᖃᕐᒥᑐᐃᑦ ᐱᔭᐅᔭᓇᖅᓴᔪᖅᐳᑦ, ᓄᑖᓂᒡᓗ ᑐᓴᖅᑎᑦᑎᓗᑕ ᐊᖑᓇᓱᒃᑕᐅᕙᒃᑐᓂᑦ.

ᖃᐅᔨᒪᔭᐅᓪᓗᐊᕐᒥᔪᖅ ᑖᒃᑯᐊ ᖁᑦᑎᒃᑐᒥᑦ ᓴᖅᑮᔭᖅᑎᑦᑎᕐᒪᑕ ᐊᖑᓇᓱᒃᑕᐅᑐᐃᓐᓇᓲᓂᑦ, ᑖᒃᑯᐊ 1-3 ᓄᓇᖏᑦ ᐊᑐᑐᐃᓐᓇᓇᐊᖏᑦ ᐊᐅᓚᑦᑎᓂᕐᓂᑦ ᐅᓂᒃᑳᓕᐅᕆᐊᖅᑲᖅᐸᑦᓗ, 2015-16–ᒧᑦ, ᐱᔭᕆᐊᖏᑦ ᐅᒥᕐᒪᓄᑦ ᐅᑯᓇᓃᑦᑐᓂᑦ ᐅᒥᕐᒪᕐᓂᑦ ᐊᐅᓚᑦᑎᔾᔪᑎᓂ. ᓄᓇᖏᑦ ᒥᑭᒪᑕ, ᐊᖑᓇᓱᒃᑐᓕᕆᔨᒃᑯᑦ ᑲᑐᔾᔨᖅᑲᑎᒌᒃᑯᕐᒥᑦ ᐃᓚᐅᔪᑦ ᐆᒪᓇᒃᑲᐅᑎᒃᑐ, ᐊᔪᕐᒥᑦᑐᓂᒡᓗ ᐆᒪᔪᕐᓂᐊᖅᑎᖃᕈᓐᓇᐅᑎᑦ

ᖃᖕᒐᓕᒫᐸᓗ, ᓂᐅᕕᐊᒃᓴᐅᓰᑦ ᐊᐅᓪᓚᕐᑎᑕᐅᕙᒃᑐᓪᓗ ᑐᒃᑐᐃᑦ ᐅᒥᖕᒪᐃᓪᓗ ᑐᓴᐅᒪᔾᔪᑎᒃᑯᑦ ᐊᑲᐃᓪᓕᐅᕈᑕᐅᙱᑦᑐᖅ, ᑭᓯᐊᓂ ᖃᖕᒐᕿᐊᖅ ᐊᑲᐃᓪᓕᐅᕈᑕᐅᑐᐃᓐᓇᓇᐊᓕᒃ. ᐊᓯᐊᒍᑦ, ᐊᓯᖕᒋᑦ ᓄᓇᓕᖕᒋᑦ ᐊᖕᒋᔾᔫᒥᔪᑦ, ᖃᓕᓅᒃᑐᑦ ᐊᖑᓇᓱᙵᕕᖕᒋᑦ, ᐊᓯᔾᔨᒐᔪᒃᑐᑦ ᐆᒪᔪᖕᓂᐊᖅᑎᖕᒋᑦ ᐊᖑᓇᓱᒃᑐᓕᕆᔾᒃᑯᓪᓗ ᑲᑎᒪᔨᖕᒋᑦ, ᐃᑖᓐᓂᒃᑯᓪᓗ ᐋᖅᑭᒃᓯᒪᔪᖅᑲᙳᕆᑎᓪᓗᒍ ᐊᖑᓇᓱᒃᑕᓂᑦ ᑎᑎᕋᖅᑕᑦᑕᖕᓂᓂᑦ, ᐊᒻᒪᓗᑦᑕᐅᖅ, ᓂᐅᕕᐊᒃᓴᓇᔭᐅᕙᖕᓂᖕᒋᑦ ᐊᐅᓪᓚᕐᑎᑕᐅᕙᖕᓂᖕᒋᓪᓗ ᑐᒃᑐᐃᑦ ᐅᖃᐅᓯᐅᖃᑦᑕᒪᓇᒃᑐᑦ ᓄᓇᓕᖕᓂᑦ ᐊᒥᓲᔭᓅᓂᖅᐸᓪᓕᐊᓪᓗᑎᒃ ᑐᒃᑐᐃᑦ, ᐃᓄᐃᓪᓗ ᓄᓇᕗᒻᒥᑦ, ᓂᕿᒎᒃᑐᐊᓗᐃᓪᓗ, ᐊᒥᓱᕈᖅᐸᓪᓕᐊᓪᓗᑎᒃ, ᑎᑎᖅᑲᓄᑦ ᓈᒻᒪᙱᓕᐅᕈᑏᑦ ᓴᖅᑭᑕᐅᔪᑦ ᖁᑦᑎᒃᑐᒥᐅᓄᑦ ᐊᖑᓇᓱᒃᑕᑦ ᐊᒥᓲᓂᖅᓴᐅᓂᐊᖅᐳᑦ ᑭᙵᓪᓕᖕᒥᑦ, ᕿᑎᖕᒥᐅᓂᑦ ᕿᑭᖅᑖᓗᖕᒥᓪᓗ.

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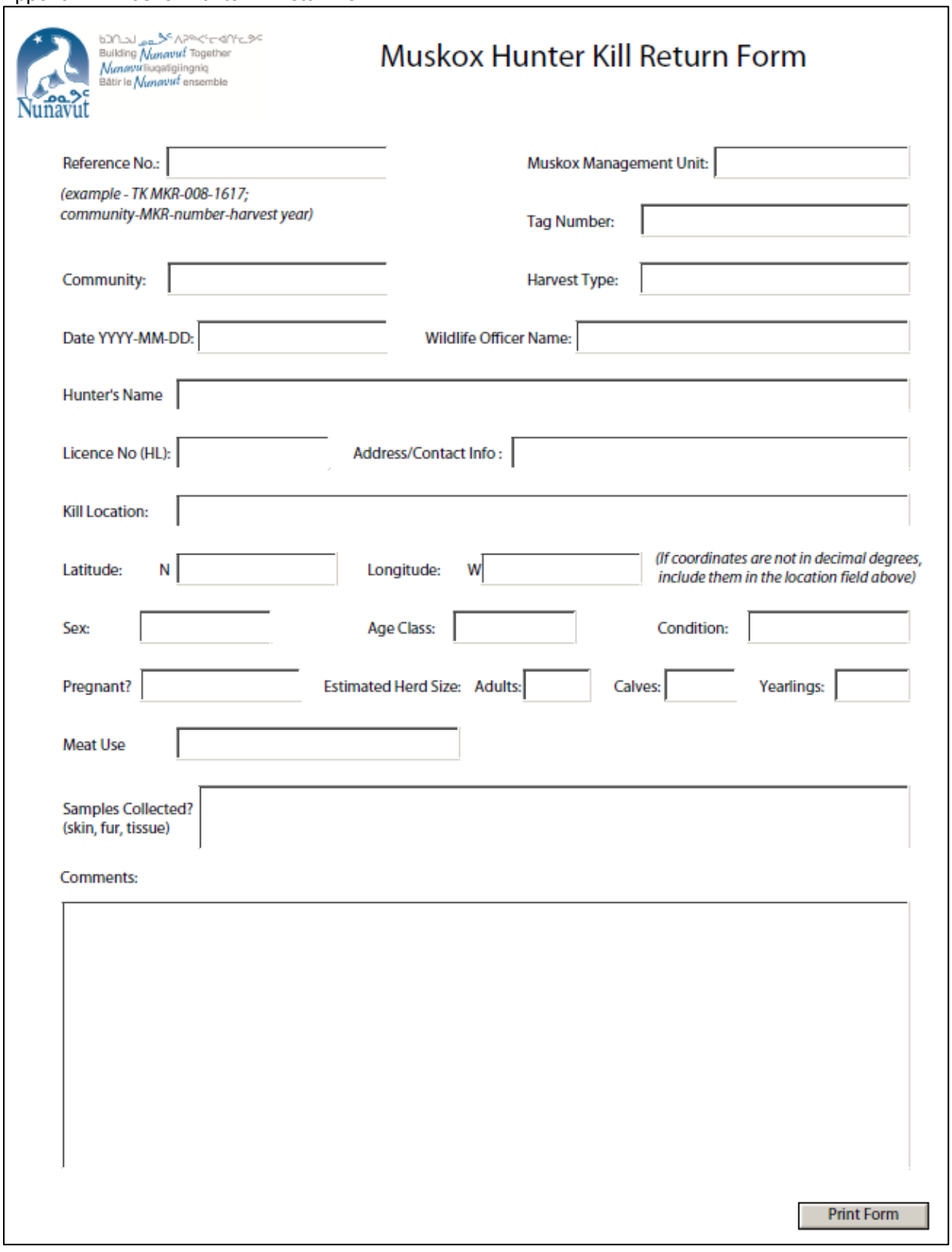
Appendix 1. Muskox hunter kill return form.



Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

Nunavut

Muskox Hunter Kill Return Form

Reference No.:

(example - TK MKR-008-1617; community-MKR-number-harvest year)

Muskox Management Unit:

Tag Number:

Community:

Harvest Type:

Date YYYY-MM-DD:

Wildlife Officer Name:

Hunter's Name

Licence No (HL):

Address/Contact Info :

Kill Location:

Latitude: N

Longitude: W

(If coordinates are not in decimal degrees, include them in the location field above)

Sex:

Age Class:

Condition:

Pregnant?

Estimated Herd Size: Adults:

Calves:

Yearlings:

Meat Use

Samples Collected? (skin, fur, tissue)

Comments:

Print Form

Appendix 2. Caribou kill return form.

Building Nunavut Together
Nunavuliuqatigiingniq
Bâtir le Nunavut ensemble

Caribou Hunter Kill Return Form

Harvest Zone:

Reference No.:

(example - TK-CKR-008-1617; community-CKR-number-harvest year)

Suspected Herd:

Tag Number:

Community:

Harvest Type:

Date YYYY-MM-DD:

Wildlife Officer Name:

Hunter's Name

Licence No (HL):

Address/Contact Info :

Kill Location:

Latitude: N

Longitude: W

(If coordinates are not in decimal degrees, include them in the location field above)

Number Harvested:

Estimated Herd Size: Adults:

Calves:

Yearlings:

Meat Use

For each caribou harvested: (include additional ones in comments)

Sex:		Pregnant?		Age Class:		Condition:	
Sex:		Pregnant?		Age Class:		Condition:	
Sex:		Pregnant?		Age Class:		Condition:	
Sex:		Pregnant?		Age Class:		Condition:	
Sex:		Pregnant?		Age Class:		Condition:	
Sex:		Pregnant?		Age Class:		Condition:	

Samples Collected? (skin, fur, tissue)

Comments:

Print Form

Appendix 3. Summary of anecdotal information available for Peary caribou harvest in the High Arctic. This table should be considered a work in progress and is presented largely to underline the extensive data gaps present for harvest information on this species.

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
1954		Grise Fiord		26			RCMP in Taylor 2005
1955		Grise Fiord		29			RCMP in Taylor 2005
1956-57		Grise Fiord		15			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1957-58		Grise Fiord		13			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1958-59		Grise Fiord		0			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1959-60		Grise Fiord		2			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1960-61		Grise Fiord		23			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1961-62		Grise Fiord		20			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1961-62	PC-04	Grise Fiord	March	2	Princess Royal Island	May be included in the Game Condition Report as well	IN in Taylor 2005
1962-63	PC-01	Grise Fiord		2	Craig Harbor		RCMP in Taylor 2005
1962-63	PC-01	Grise Fiord		26	Lee Point to Jakeman Glacier		RCMP in Taylor 2005
1963-64		Grise Fiord		11			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1964-65		Grise Fiord		12			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1965-66		Grise Fiord		38			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1966-67		Grise Fiord		12			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1967-68		Grise Fiord		24			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1968-69		Grise Fiord		75		Possibly no harvest from Resolute in this year	Grise - RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973; Resolute – Gray 1998
1969-70		Grise Fiord		47		Possibly no harvest from Resolute in this year	Grise - RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973; Resolute – Gray 1998

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
1970-71		Grise Fiord		61		Possibly no harvest from Resolute in this year	Grise - RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973; Resolute – Gray 1998
1971-72		Grise Fiord		26			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1972-73		Grise Fiord		29			RCMP Game Condition Reports 1951-71, est from Fig 21 in Riewe 1973
1996-97		Grise Fiord	Sep	19			Nunavut Wildlife Harvest Study 2004
1996-97		Grise Fiord	Feb	5			Nunavut Wildlife Harvest Study 2004
1996-97		Grise Fiord	Mar	9			Nunavut Wildlife Harvest Study 2004
1997-98		Grise Fiord	Jun	4			Nunavut Wildlife Harvest Study 2004
1997-98		Grise Fiord	Jul	1			Nunavut Wildlife Harvest Study 2004
1997-98		Grise Fiord	Oct	21			Nunavut Wildlife Harvest Study 2004
1997-98		Grise Fiord	Dec	5			Nunavut Wildlife Harvest Study 2004
1997-98		Grise Fiord	Feb	9			Nunavut Wildlife Harvest Study 2004
1998-99		Grise Fiord	Aug	10			Nunavut Wildlife Harvest Study 2004
1998-99		Grise Fiord	Sep	4			Nunavut Wildlife Harvest Study 2004
1998-99		Grise Fiord	Nov	18			Nunavut Wildlife Harvest Study 2004
1998-99		Grise Fiord	Dec	2			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Jul	1			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Aug	10			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Oct	18			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Nov	6			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Mar	11			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	Apr	5			Nunavut Wildlife Harvest Study 2004
1999-00		Grise Fiord	May	3			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Aug	15			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Sep	8			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Oct	4			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Nov	7			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Dec	1			Nunavut Wildlife Harvest Study 2004

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
2000-01		Grise Fiord	Feb	2			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Mar	3			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	Apr	2			Nunavut Wildlife Harvest Study 2004
2000-01		Grise Fiord	May	1			Nunavut Wildlife Harvest Study 2004
2001		Grise Fiord		35			DOE Wildlife Officer
2002		Grise Fiord		35			DOE Wildlife Officer
2003	PC-01	Grise Fiord		66	Southern Ellesmere		J Galipeau pers comm. In 2010 harvest report (from HTO)
2004	PC-01	Grise Fiord		25	Southern Ellesmere	Estimate	J Galipeau pers comm. In 2010 harvest report (from HTO)
2005		Grise Fiord		21	Southern Ellesmere	Incomplete data	2010 harvest report (estimate JQ by phone 2006-09-20)
2006-07	PC-01	Grise Fiord	Sep 22-28	7	Sor/Bird Fiord	Ad male, young male, 2 ad female, 2 yearling, 1 unk	DOE Wildlife Officer
2006-07	PC-01	Grise Fiord	Sep-06	18	Muskox Fiord		DOE Wildlife Officer
2006-07	PC-01	Grise Fiord	Mar-May	21	Sor Fiord	2M 1F 18Unk	DOE Wildlife Officer
2006-07	PC-01	Grise Fiord	Mar	1	Vendom Fiord		DOE Wildlife Officer
2007-08	PC-04	Grise Fiord	May	3	Truelove		DOE Wildlife Officer
2008-09	PC-01	Grise Fiord	Aug	3	Muskox Fiord		DOE Wildlife Officer
2008-09	PC-01	Grise Fiord	Sep	5	Sor Fiord	5M	DOE Wildlife Officer
2009	PC-01	Grise Fiord		12	Muskox, Sor Fiords	Estimate	DOE Wildlife Officer
2009-10	PC-01	Grise Fiord	Nov	5	Sor Fiord		DOE Wildlife Officer
2014-15	PC-04	Grise Fiord	May, early	2	Northern Devon Island	A couple, actual number not reported	DOE Wildlife Officer, J. Neely
1967-68	PC-05	Resolute		36	Bathurst Island		Bissett 1967 and Slaney 1975 in Gray 1998
1967-68	PC-05	Resolute		14	Cornwallis Island		Bissett 1967 and Slaney 1975 in Gray 1998
1971-72	PC-05	Resolute		26	Bathurst Island		Bissett 1967 and Slaney 1975 in Gray 1998
1971-72	PC-05	Resolute		19	Cornwallis Island		Bissett 1967 and Slaney 1975 in Gray 1998
1972-73	PC-05	Resolute		75	Bathurst Island		Bissett 1967 and Slaney 1975 in Gray 1998

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
1972-73	PC-05	Resolute		0	Cornwallis Island		Bissett 1967 and Slaney 1975 in Gray 1998
1973-74	PC-05	Resolute		22	Bathurst Island		Bissett 1967 and Slaney 1975 in Gray 1998
1973-74	PC-05	Resolute		54	Cornwallis Island		Bissett 1967 and Slaney 1975 in Gray 1998
1974	PC-05	Resolute	Fall	19	Cornwallis Island		Bissett 1967 and Slaney 1975 in Gray 1998
1975	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1976	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1977	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1978	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1979	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1980	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1981	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1982	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1983	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1984	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
1985	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1986	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1987	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1988	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase (some hunters express desire to remove ban)	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1989	PC-05	Resolute	All	0	Bathurst Island	HTA-imposed harvest ban to allow caribou to increase (some hunters express desire to remove ban)	Resolute HTA, Miller 1998, Freeman 1977, Ferguson 1987
1995-96	PC-05	Resolute		85±25	Bathurst and Cornwallis	Movement of many caribou onto Cornwallis meant a higher harvest than previous years; 50-100 caribou total based on Miller's casual itnerviews with hunters	C. Welsh pers comm 1996 in Miller 1998
1996-97		Resolute	Aug	1			Nunavut Wildlife Harvest Study 2004
1996-97		Resolute	Nov	5			Nunavut Wildlife Harvest Study 2004
1997-98		Resolute	Aug	8			Nunavut Wildlife Harvest Study 2004
1997-98		Resolute	Oct	2			Nunavut Wildlife Harvest Study 2004
1997-98		Resolute	Jan	1			Nunavut Wildlife Harvest Study 2004
1998-99		Resolute	Aug	20			Nunavut Wildlife Harvest Study 2004
1999-00		Resolute	Jul	3			Nunavut Wildlife Harvest Study 2004

Harvest Year	MMU	Community	Date	# Harvested	Location	Comments	Source
1999-00		Resolute	Aug	22			Nunavut Wildlife Harvest Study 2004
1999-00		Resolute	May	2			Nunavut Wildlife Harvest Study 2004
2000-01		Resolute	Aug	8			Nunavut Wildlife Harvest Study 2004
2000-01		Resolute	Nov	5			Nunavut Wildlife Harvest Study 2004
2000-01		Resolute	Mar	3			Nunavut Wildlife Harvest Study 2004
2001		Resolute		unk	Eastern QEI		J Galipeau pers comm 2005-06-06. In 2010 harvest report
2002		Resolute		8	Eastern QEI		J Galipeau pers comm 2005-06-06. In 2010 harvest report
2003		Resolute		18			J Galipeau pers comm 2005-06-06. In 2010 harvest report
2004		Resolute		18			J Galipeau pers comm 2005-06-06. In 2010 harvest report
2005	PC-05	Resolute		16	Bathurst Island		DOE Wildlife Officer
2006-07	PC-05	Resolute	early winter	13	Bathurst Island		DOE Wildlife Officer
2006-07	PC-05	Resolute	Aug	22	Bathurst Island		DOE Wildlife Officer
2007	PC-05	Resolute		1	Bathurst Island	Eartag 1737 from 2003 telemetry project	DOE Wildlife Officer pers comm in 2010 harvest report
2008		Resolute		unk			DOE Wildlife Officer pers comm in 2010 harvest report
2009		Resolute		1		Eartag 1733 from 2003 telemetry project	DOE Wildlife Officer
2008-09	PC-05	Resolute	Mar	2	Polar Bear Pass		DOE Wildlife Officer
2008-09	PC-05	Resolute	Apr	2	Freeman Cove	1M, 2F?	DOE Wildlife Officer
2009-10	PC-05	Resolute	Jul	1	Freeman Cove		DOE Wildlife Officer
2009-10	PC-05	Resolute	Sep	8	Bathurst Island		DOE Wildlife Officer
2009-10	PC-05	Resolute	Dec	4	Bathurst Island		DOE Wildlife Officer
2012-13	PC-05	Resolute	Fall to Spring	Many	Bathurst Island		DOE Wildlife Officer, T. Mullin
2013-14	PC-05	Resolute	Fall to Spring	Many	Bathurst Island		DOE Wildlife Officer, T. Mullin