Distribution and abundance of muskoxen (*Ovibos moschatus*) and Peary caribou (*Rangifer tarandus pearyi*) on Prince of Wales and Somerset Islands, August 2016

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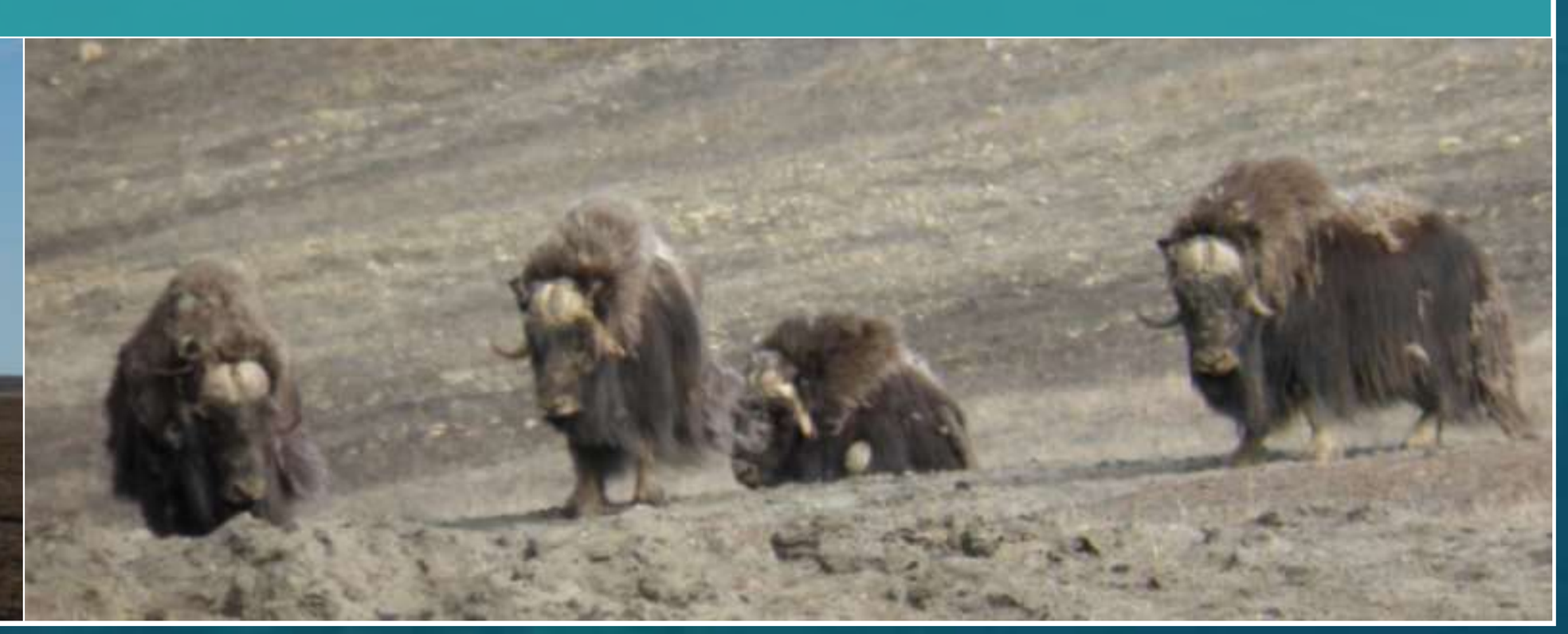
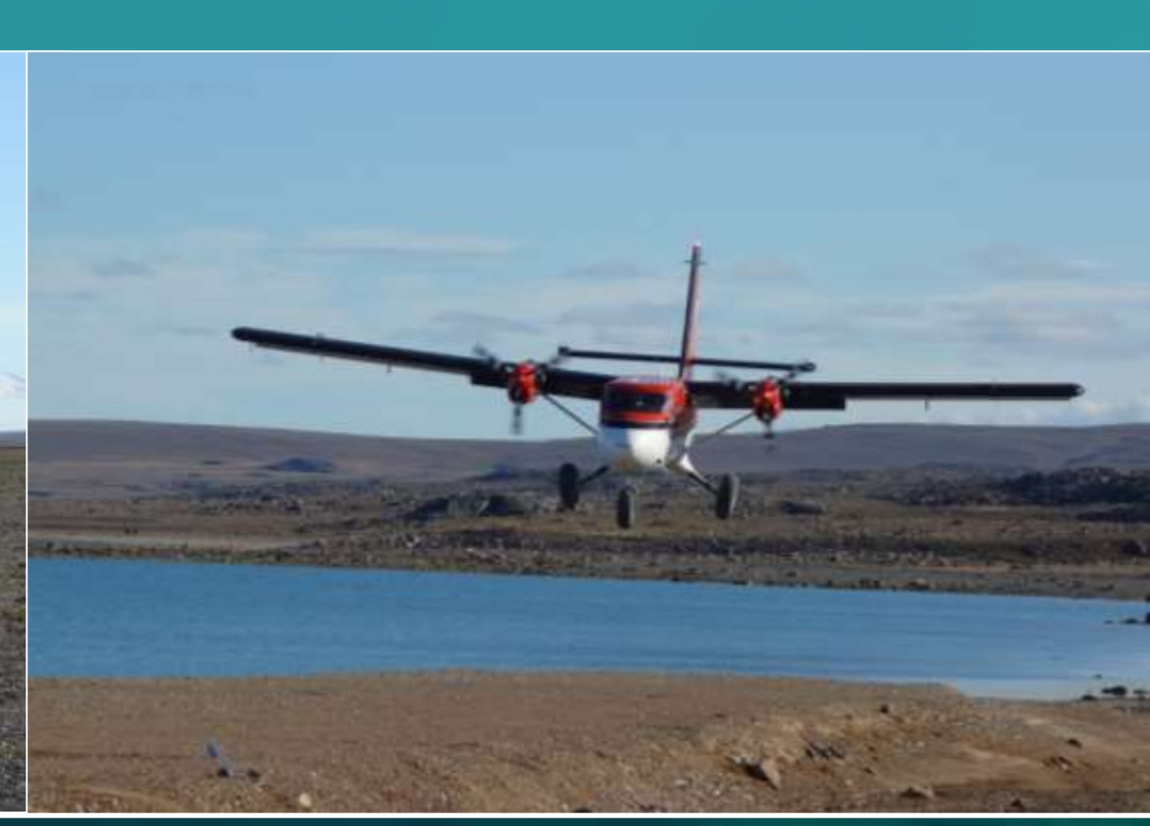
INTRODUCTION

- Peary caribou and muskoxen are the only ungulates inhabiting the Queen Elizabeth Islands.
- Both are important sources of country food and cultural persistence for local communities. Resolute, Taloyoak, and sometimes Gjoa Haven harvest from Prince of Wales and Somerset islands.
- Severe winter weather (ground-fast ice) restricts access to forage and causes sporadic die-off events.[1, 2, 3]
- The islands were previously occupied by 5,000 Peary caribou, which migrated between Prince of Wales, Somerset, and smaller satellite islands, and the Boothia Peninsula,[4 5] but the population crashed to very low levels in the 1980s [6, 7] and had not recovered as of the most recent survey in 2004.[8]
- The cause of the caribou decline is not known for certain but may be linked to reduced calf recruitment and adult female survival, increased human harvest, increased wolf predation (supported by an increasing muskox population), and severe winter weather the early 1990s.[9,,10,11] Movement to neighboring islands and Boothia Peninsula is not thought to fully explain the decline on Prince of Wales and Somerset islands.[9,10]
- Muskoxen were likely abundant on the islands historically, and increased since surveys began in the 1970s until the 1990s.

METHODS

- Flew 82 hours by Twin Otter and Turbine Otter, 2 observers each side, August 5-23, 2016, at 180 kph and 150 m above ground with a 1.6-km fixed-strip width and 20% coverage
- Survey area was stratified as Prince of Wales/ Russell/Prescott/Pandora islands (8.64 km transect spacing) and Somerset Island (10.16 km transect spacing)
- Population estimates were calculated based on the observed densities of muskoxen on transect [12, 13, 14]
- Since no caribou were seen, no population estimate was calculated for Peary caribou

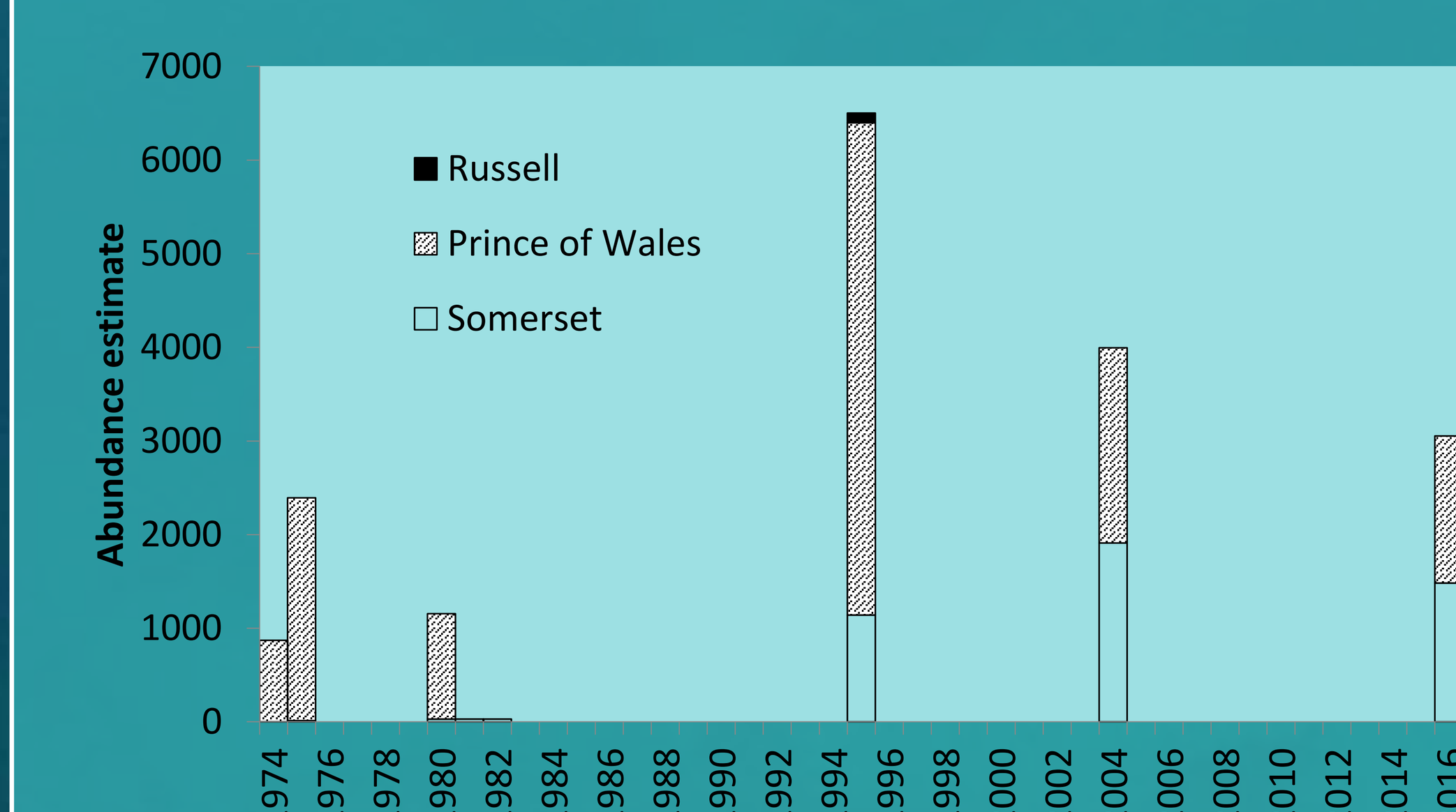


RESULTS

Muskoxen have declined slightly but remain at high densities.

- The survey provided a population estimate of 3,052± SE 440 muskoxen on Prince of Wales and Somerset islands (including smaller satellite islands), with 1,569 ± SE 267 on Prince of Wales, Pandora, Prescott, and Russell islands, and 1,483 ± SE 349 muskoxen on Somerset Island.
- The previous survey in 2004 estimated 2,086 muskoxen on Prince of Wales/Russell islands (1,582-2,746, 95% CI) and 1,910 muskoxen on Somerset Island (962-3,792 95% CI)

Overlapping confidence intervals between the 2004 and 2016 estimates, the potential for several declines/increases over the 12 years between surveys, and high calf ratios observed in 2016 complicate determination of current population trend.



Population trends for muskoxen on Prince of Wales, Somerset, and Russell islands, showing an increase from the 1970s and a gradual decline since the mid-1990s. Surveys were conducted in June-July 1974 and 1975,[4] July 1980,[5] July-August 1995,[6] April-May 1996,[7] April 2004 and 2005,[8] and August 2016 (this report). Error bars are not shown and are not available for all estimates.

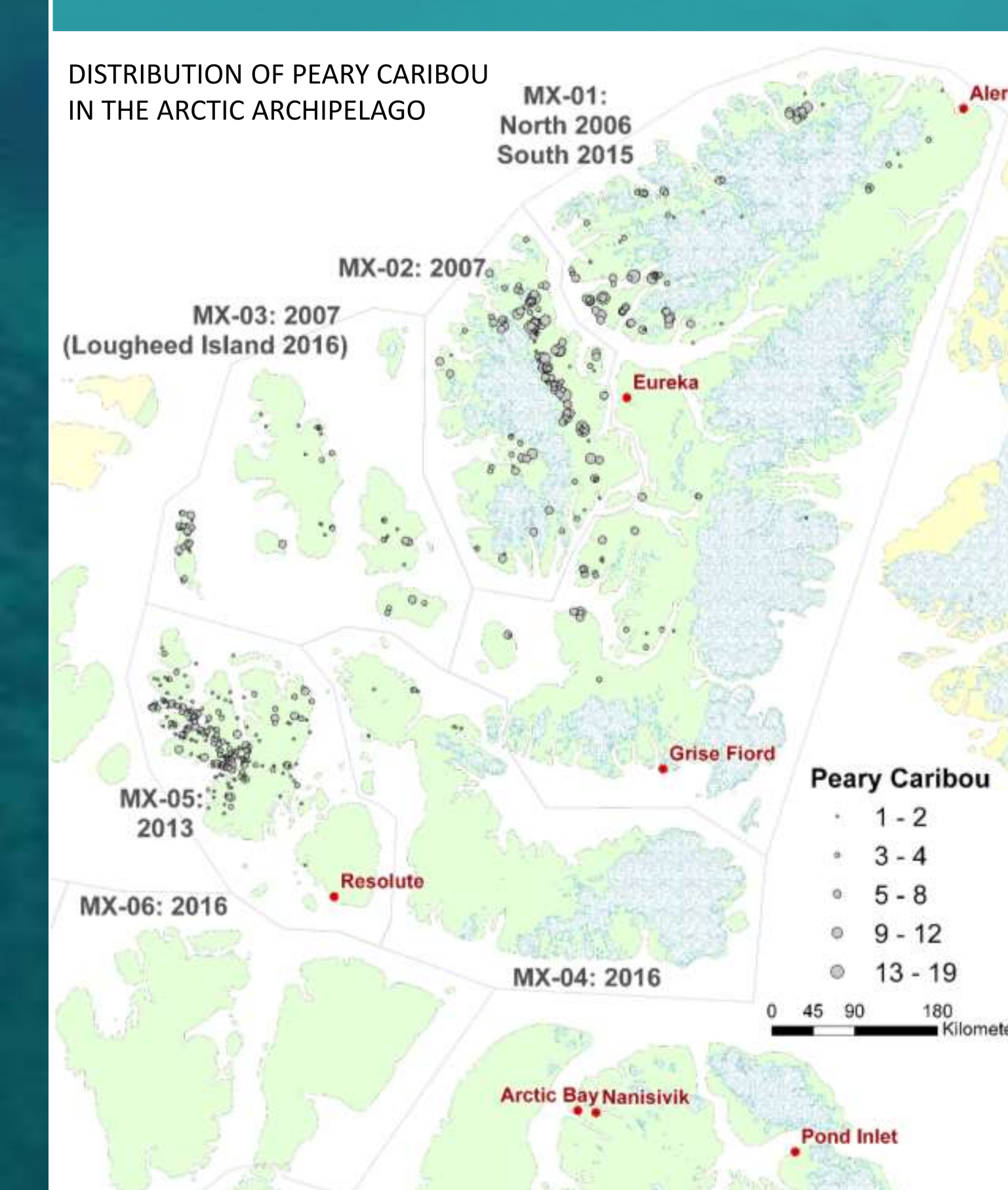
Peary caribou have not recovered from the population crash in the 1980s.

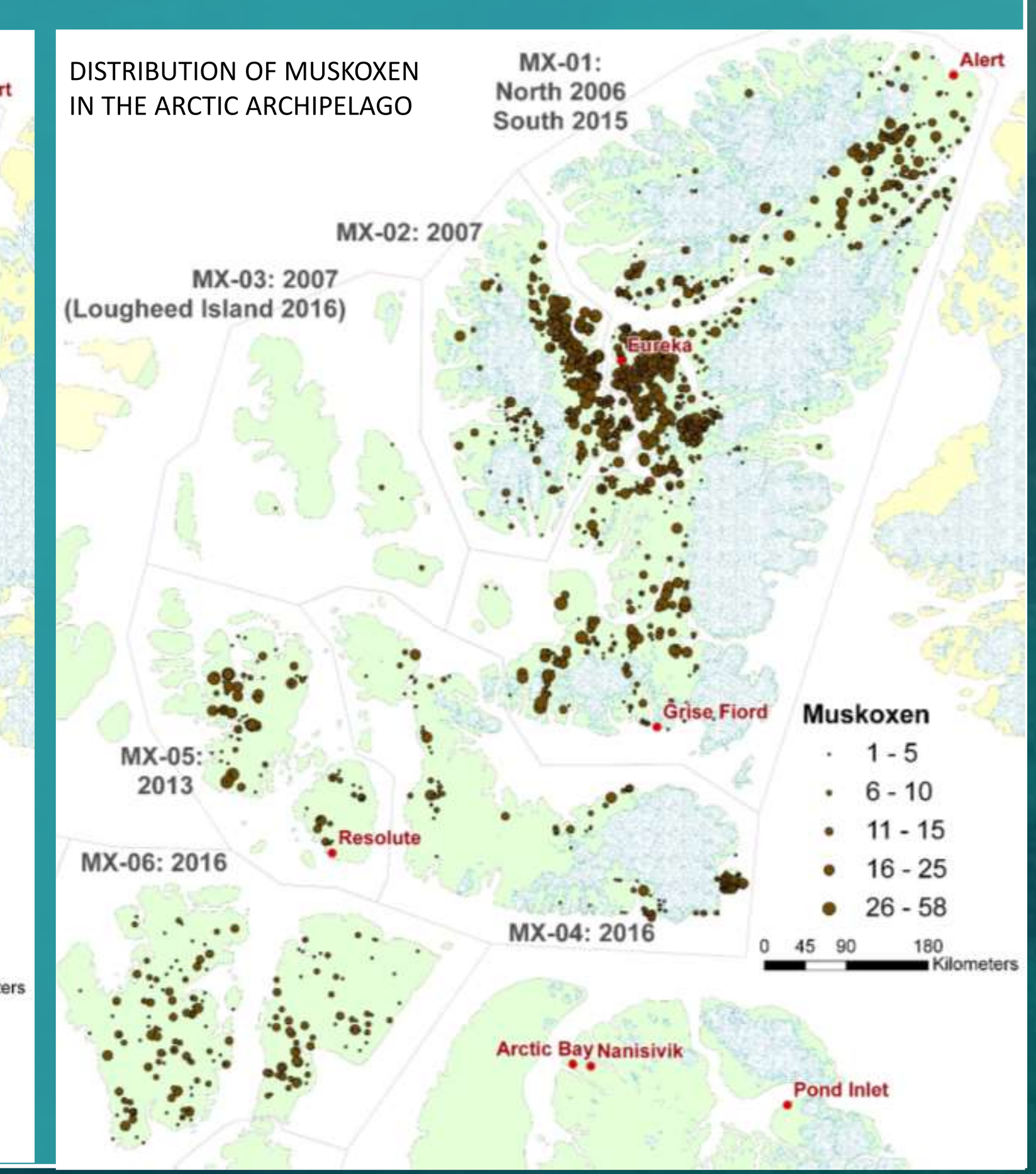
No Peary caribou were seen on the survey, but hunters did see 2 caribou on western Somerset in mid-August. Clearly Peary caribou have not recovered to historic levels on the islands.

Population trends for Peary caribou on Prince of Wales, Somerset, and Russell islands, showing a catastrophic decline between 1980 and 1995. Surveys were conducted in June-July 1974 and 1975,[4] July 1980,[5] July-August 1995,[6] April-May 1996,[7] April 2004 and 2005,[8] and August 2016 (this report). Error bars are not shown and are not available for all estimates.

MANAGEMENT IMPLICATIONS

- The muskox population has declined since the 1990s, but it is still at high density and could support more harvest than is currently taken, although there is no Total Allowable Harvest (TAH) on MX-06.
- Current muskox harvest does not fill the previous TAH (20 tags allocated to Resolute, removed in fall 2015) annually for MX-06.[15]
- The drastic decline in Baffin Island caribou over recent years has limited harvest opportunities on Baffin Island. Although Arctic Bay does not normally harvest from Somerset Island, there may be increased interest in harvesting muskoxen there.
- Careful monitoring of harvest is important since sporadic die-offs occur regardless of muskox density.
- The long timeframe between surveys (12 years) makes it difficult to interpret population trends.
- No TAH is currently set for Peary caribou and no management plan has been implemented. Residents of Resolute harvest from the islands, but not frequently. Caribou moving to the Boothia Peninsula are harvested by Taloyoak, but differentiating among Peary, barren-ground, and hybrid caribou is difficult and complicates monitoring efforts





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