NWRT Project #2-13-18

BATHURST ISLAND PEARY CARIBOU AND MUSKOX POPULATION RECRUITMENT SURVEY

INTERIM REPORT TO NWMB

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Summary:
A survey of the Bathurst Island Group (Bathurst, Helena, Cameron, Vanier, Massey, Alexander, Little Cornwallis, and Cornwallis Islands) was flown by Twin Otter between May 13 and May 27, 2013 to update the population estimate for caribou and muskox on the island group. Muskox were concentrated on northwest Cornwallis Island and central Bathurst Island, especially around Polar Bear Pass and Erskine Inlet. Caribou were concentrated around Bracebridge Inlet and on Massey and Alexander Islands. We observed 559 caribou, including 1 on Little Cornwallis and 2 on Cornwallis, and 773 muskox, including 98 on Cornwallis. These counts are much higher than the 2001 survey of the Bathurst Island Complex, which estimated 104-330 caribou and had a minimum count of 82 muskox. The 2002 survey of Cornwallis/Little Cornwallis reported a minimum count of 18 muskox and a single caribou. Residents of Resolute Bay have reported increasing caribou and muskox populations for several years and requested an updated population estimate. This report serves to update Nunavut Wildlife Management Board on the field activities for the 2012-13 fiscal.

Project Objectives:

1. Determine abundance of Peary caribou and muskoxen on the Bathurst Island Complex – the last survey was completed in 2001.
2. Determination of population vital rates for Bathurst Island caribou and muskoxen, particularly cow:calf ratios and bull:cow ratios. (This objective was modified to provide adult:calf ratios, since the survey platform did not allow more detailed classification).
3. Field test high resolution satellite imagery for use in Peary caribou and muskox surveys. (Funding was not available for obtaining imagery this year; however, back-dated imagery is available and when priorities allow the imagery can be obtained and checked with survey results to address this objective).

Materials and Methods:
Although originally planned for April, before caribou begin moving to calving ranges, the survey was delayed until mid-May primarily due to weather systems that covered the survey area with low cloud and fog for weeks. Other commitments and mechanical issues further reduced aircraft availability when the weather was favorable. Aircraft had not been determined at the time of application to the NWRT; the survey was flown by Twin Otter to allow more local participation, efficient refueling, and safe transport. Transects were flown at 400' altitude after discussion with the Resolute Bay Hunters and Trappers Association, spaced 5 km apart (although increased to 10 km in some areas due to weather and season constraints). Cornwallis and Little Cornwallis Islands were surveyed with 10-km transect spacing.

Although distance sampling was originally proposed, and a form of distance sampling was incorporated into the fixed-wing survey design (bins along the wing strut demarking 250 m, 400 m, and 650 m strips as well as the standard 500 m strip), the final estimates will be calculated following Jolly's Method 2 for strip transects (Jolly 1969). Preliminary calculations have also used Bayesian techniques to overcome differences in survey effort across the study area.

Ground surveys were not undertaken due to logistical concerns, and satellite imagery was not examined this year due to insufficient funding and staff time.

Project Schedule:
Feb 4, 2013 – Consultation with RBHTA on survey objectives, methods, and background.
May 2 2013 – Arrive in Resolute, survey to begin as soon as crew is assembled and weather cooperates.
May 9, 2013 – Meet with RBHTA to clarify protocols.
May 15-27, 2013 – Survey undertaken when weather allows (6 days of flying).
July 10, 2013 – Meet with RBHTA to go over preliminary results of survey.
Oct 22-24, 2013 – All Chairs Meeting for federal Peary Caribou Recovery Strategy – report on preliminary results for Bathurst Island caribou.
On-going – report preparation and review. Project is on schedule.

Preliminary Results

We flew surveys on May 13, 14, 22, 25, 26, and 27, 2013, for a total of 7689 km (4497 km on transect) and 41.6 h (29.2 h on transect). Visibility was excellent for all survey flights with clear skies (<10% cloud) and high contrast. Some patches of low fog were encountered along the coast, and these sections were removed from transects for analysis. Temperatures ranged from -22°C to -3°C. We saw 559 caribou and 773 muskox (Figures 1 and 2).

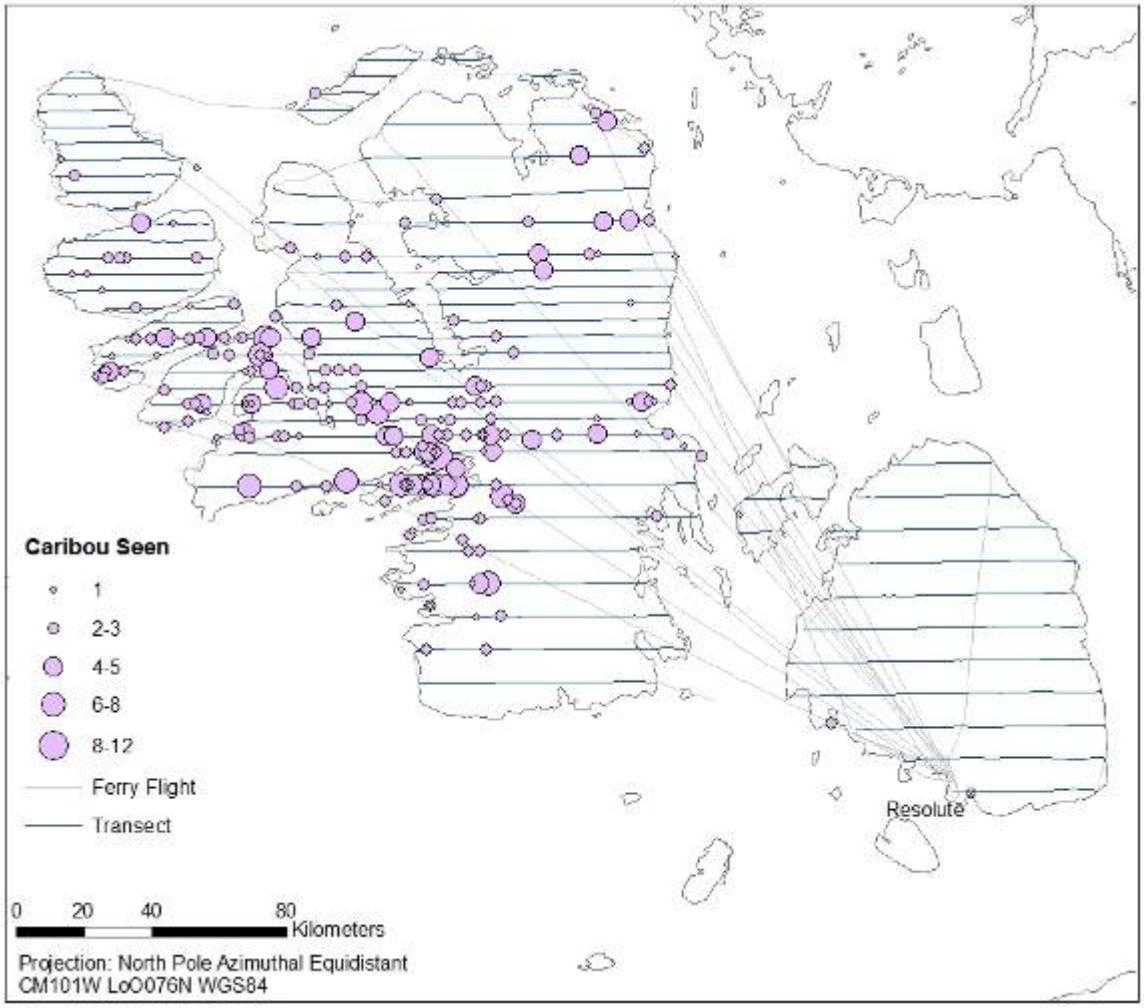

Figure 1. Geographic distribution of groups by size, including groups seen off transect and on ferry flights.

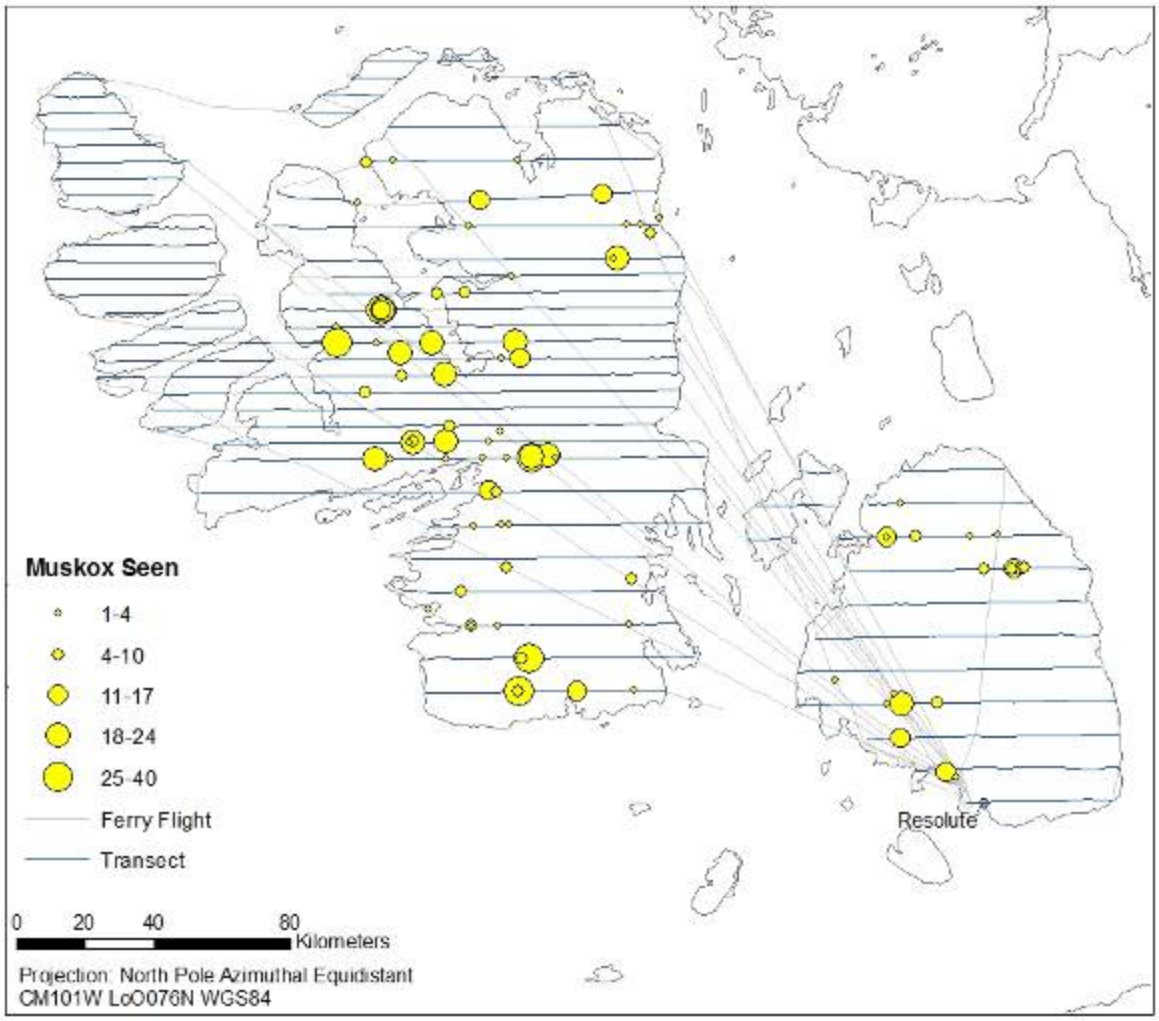

Figure 2. Distribution of groups by size, including groups seen off transect and on ferry flights.

Although error associated with group locations makes this dataset insufficient for fine-scale resource selection work, Figure 10 presents caribou and muskox groups in relation to vegetation classes on the BIC. Notably, no observations fall on barren ground, as suggested by the HTA, and while caribou were seen on extensive crustose lichen patches, muskox were not.

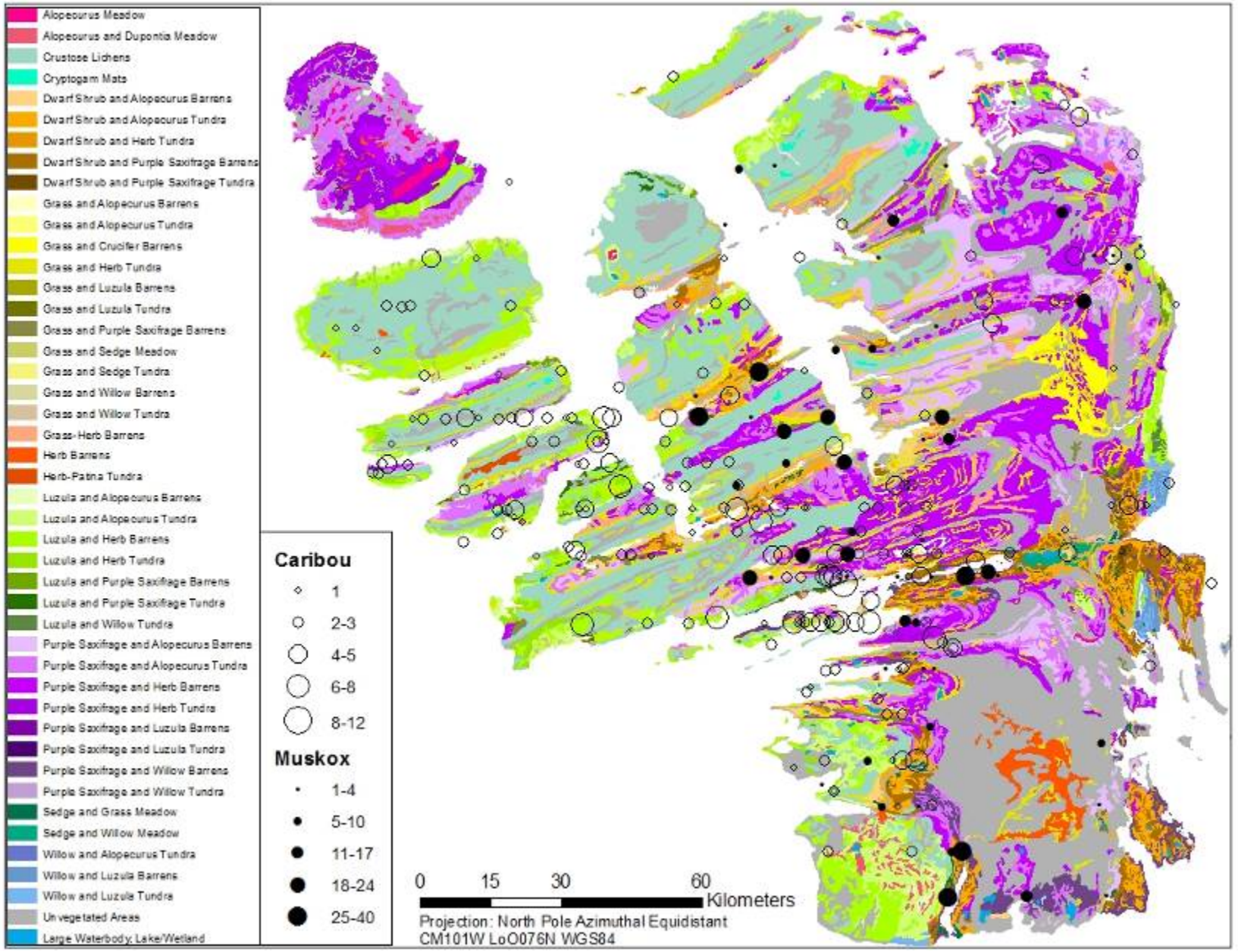

Figure 10. Vegetation layer (Brazel 2006) in relation to observed groups of caribou and muskox.

Residents of Resolute Bay have reported higher populations of both caribou and muskox, including on Cornwallis Island, since the last survey in 2001. The results of this survey agree with local knowledge of the populations. The caribou and muskox on the BIC appear to be recovering after the 1994-97 die-off and since the 2001 survey, which estimated 187 caribou (104-330 95%CI) and a minimum count of 82 muskox on the BIC. Although Cornwallis Island has only been sporadically surveyed, the minimum count of muskox is much higher than the previous surveys (50 muskox in 1961, not including calves, Tener 1963; 70 in 1988, Miller 1989; minimum count of 18 in 2002, Jenkins et al. 2011). We observed 556 caribou on the BIC (plus 3 on Little Cornwallis and Cornwallis) and 773 muskox, 98 of which were on Cornwallis Island. Although not all observations were on transect, the calculated population estimates will be considerably higher than these counts.

Reporting to Communities:

Feb 4, 2013 – Consultation with RBHTA on survey objectives, methods, and background.
May 2-31 2013 – Regular communication in-person with HTA and with local assistants selected by HTA as survey observers.
May 9, 2013 – Meet with RBHTA to clarify protocols.
July 10, 2013 – Meet with RBHTA to go over preliminary results of survey.
Oct 22-24, 2013 – All Chairs Meeting for federal Peary Caribou Recovery Strategy – report on preliminary results for Bathurst Island caribou.
On-going – report preparation and review – drafts have been sent to the HTA for comments. Additional consultation, especially in conjunction with other projects, expected in winter/spring 2014. Project is on schedule.

Literature Cited:

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