NWRT Final Report

NWRT Project Number: 2-20-07

Project Title: North Baffin Caribou Distribution Using GPS Telemetry

Project Leader:

John Ringrose
Baffin Regional Wildlife Biologist
Department of Environment
Government of Nunavut
Box 569 Pond Inlet, NU, X0A 0S0
(867)899-7576
Jringrose@gov.nu.ca

Summary:

The Government of Nunavut, (GN) Department of Environment, (DoE) planned to deploy 15 GPS telemetry collars on adult female caribou between March 28 and April 12, 2021 in North Baffin. Unfortunately, due to inclement weather, the crew was only able to deploy 7 collars during this period. A representative from the Mittimatalik Hunters and Trappers Organization (HTO) in Pond Inlet, NU was an active participant in the program. Location data from the collars will be collected for the next 4 years and analyzed by the DoE to inform management decisions related to Baffin Island caribou. Spatial affiliation and movement data gained through this program is essential to defining subpopulations within the Baffin Island herd, with a reasonable degree of confidence.

North Baffin HTO's were consulted prior to beginning the project. Updates were provided to HTOs throughout the field program and in-person consultations are being planned for January 2021.

Project Objectives:

The primary objective of the proposed project is to conduct a GPS collar deployment on northern Baffin Island caribou in order to fill in important data gaps for Baffin caribou. Successful and timely recovery of Baffin Island caribou is essential to the promoting the traditions and improving the food security of Baffin Island communities.

Information collected from this project is critical to understanding several fundamental aspects of Baffin caribou ecology on Baffin Island and this program was designed to fill the following data gaps critical to effective population management:

1. Overwinter cow and calf mortality (This information is critical to demographic modelling of subpopulations)
2. Important habitat usage areas, such as calving grounds and migratory pathways and links to habitat characteristics. (Determining site fidelity such as calving and migration areas will allow GN to reduce future impacts on these areas).
3. Subpopulation structure and delineation of subpopulations (To successfully manage Baffin Island caribou we need to establish whether there is more than one subpopulation)

4. Detect possible effects of industrial developments, such as avoidance of infrastructure (Monitoring the movements and behaviours of caribou near mines and comparing this data with that from caribou away from mine infrastructure will allow us to infer effects of activity and improve future mitigation).
5. Reduce required spatial extent for abundance survey; if possible. (Understanding daily and annual movement and delineating subpopulations of Baffin caribou may reduce the spatial extent required during the next abundance surveys. Reducing the spatial extent of these surveys reduces overall project cost, may increase abundance survey frequency and may increase future survey result accuracy.)

Materials and Methods:

We proposed to deploy 15 Telonics Iridium GPS collars, model; *Telonics TGW 4577-4 with CR5B release mechanism* in northern Baffin Island utilizing 2021 spring composition surveys to reconnaissance caribou groups while gathering complimentary information (Figure 1). Proposed collar deployment locations were selected using discussions with HTOs in combination with past research results, in an attempt to delineate potential subpopulations.

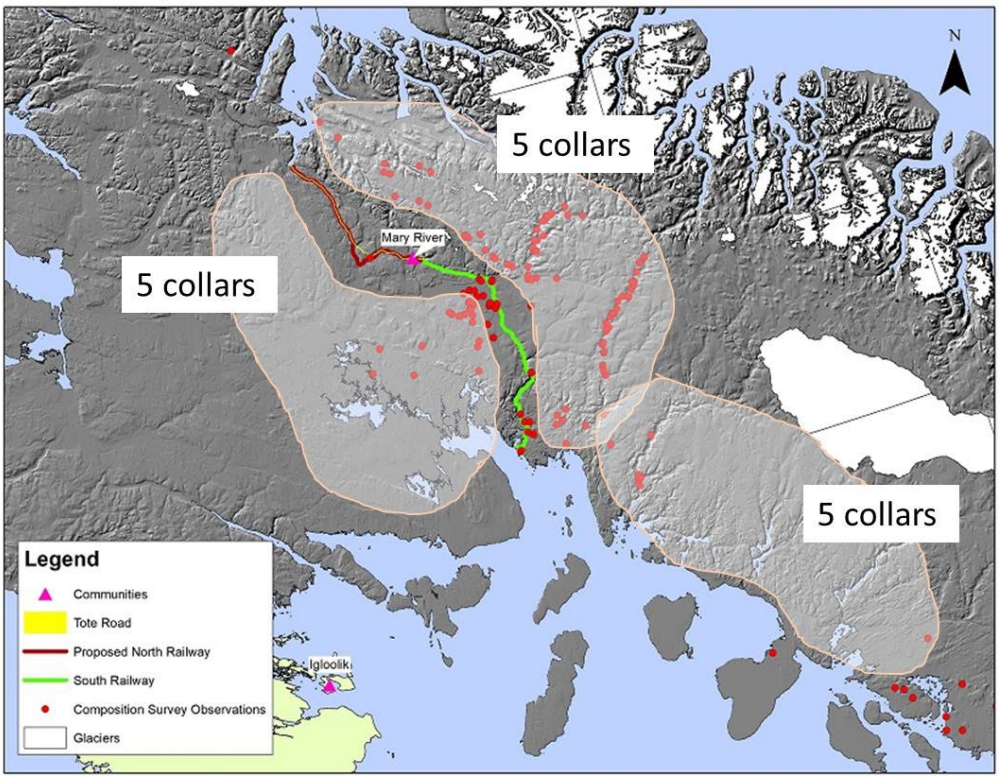

Figure 1. Proposed collar deployment locations and proposed number of collars. Previous versions were revised with participating HTOs and the areas displayed above wee targeted to allow dispersal of collars across the region.

The daily crew consisted of 4 individuals: Glen Sibbeston (pilot), Gordon Carl (Net Gunner), Nathan Ootoova (Mittimatalik HTO Representative) and John Ringrose (GN Baffin Biologist) or Christopher Mutch (GN Baffin Technician). To ensure protocols were followed, maintain project transparency and to incorporate Inuit Qaujimajatuqangit into the selection of target caribou and search locations, a designated HTO Observer was included as a member of the team and participated in all activity.

A helicopter was used to fly to areas identified by reconnaissance flights (2021 spring composition surveys). Once groups of caribou were located a healthy female caribou was selected for the collaring process by the HTO volunteer and collaring crew. Collaring was completed using a Eurocopter AS350 B2 rotary wing aircraft piloted by Glen Sibbeston of Panorama Helicopters. Caribou were captured using a net-gun with maximum 90 second chase times. After a net had been deployed and the caribou subdued, the net was quickly removed by the net gunner and HTO participant. Collars were attached to the neck of the caribou with ample space for future growth but not too loose to allow chaffing or swaying of the collar. The caribou was released immediately after.

The GPS collars were programed to record 6 GPS locations per day and transmit these locations every 4 days via a satellite to the Baffin DoE Office. All collars will remain on the caribou for 4-4.5 years after which they will automatically be released at a predetermined date via the CR-5B release mechanisms. programmable collar release mechanism. As per HTO request, the release mechanism can be accessed remotely and allows early release of the collars should there be a malfunction of the unit. Once released the collars will be retrieved by local hunters or research staff by helicopter or snowmobile.

Results:

The program was greatly influenced by adverse weather conditions and helicopter flight was only possible on 7 days during a 16-day period from March 28 to April 12, 2021. Of the 7 possible flight days 4 of these were further impacted by poor weather conditions. Extreme cold temperatures, high winds, snowfall and whiteout conditions were encountered regularly during this period and made collaring difficult. A total of 31 flight hours were flown in North Baffin over the period, 20 hours short of the goal of 50 hours.

Although weather conditions were not favourable, the DoE managed to affix collars to seven adult female caribou approximately 60-200 kms southeast of Mary River Iron Mine (Figure 2). Attempts were made to collar other individuals, but challenging terrain and weather conditions forced attempts to be aborted early to maintain caribou health and crew safety. During the collaring process, the HTO representative actively participant as a keen member of the collaring crew and provided critical knowledge of the local area during searching efforts. Unfortunately, even though caribou health was the most important factor determining collaring attempts one female caribou tumbled while being caught and succumb instantly to its injuries. The caribou was processed by the MHTO representative, and the caribou brought to Pond Inlet for distribution to the community by the HTO. North Baffin HTOs were updated throughout the collaring program and notified of the unfortunate mortality.

Although we managed to locate groups of caribou to collar, substantial search effort was required to locate relatively few caribou in comparison to other areas on Baffin Island.

The success of this project can be attributed to active participation between the GN and the MHTO, excellent collaring crew and knowledge of the local area by the HTO participant.

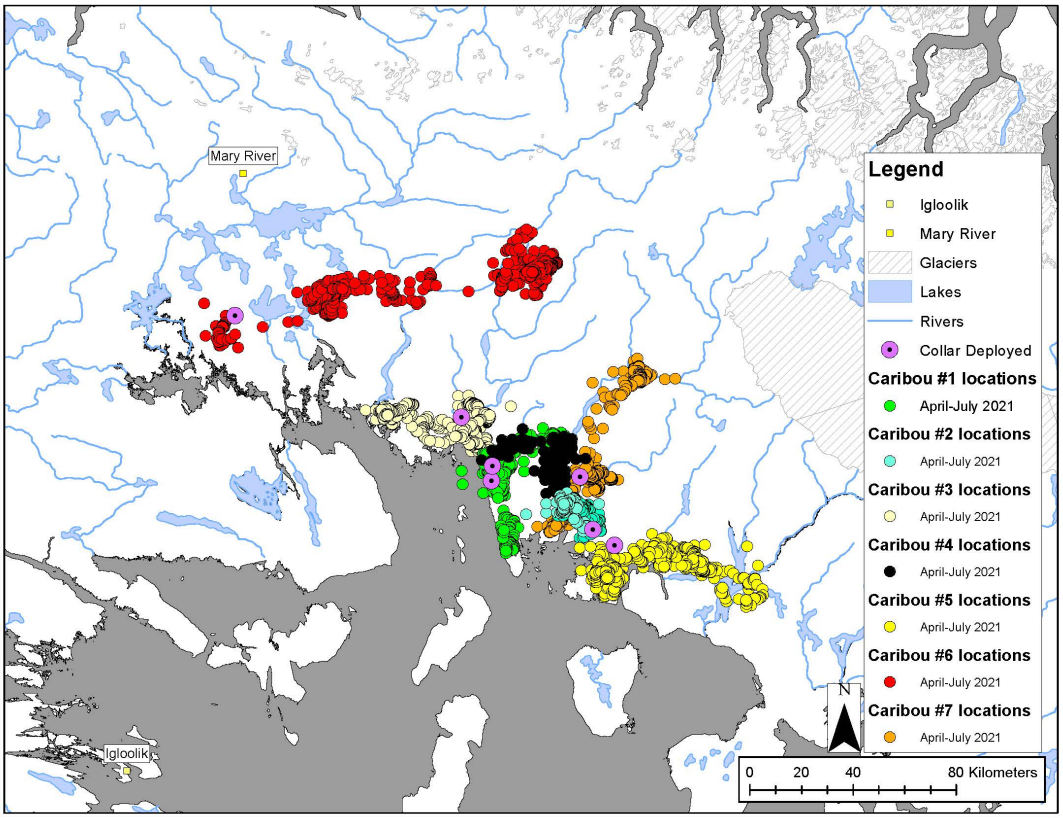

Figure 2. Caribou collar deployment locations and preliminary movement data from April 2021-July 2021 in North Baffin. Individual caribou are separated by colour.

Caribou locations will be collected by the DoE for the next four years and analyzed using various spatial techniques to determine presence of critical habitats, seasonal range, migratory corridors, and sub-population affiliations. The collar data (i.e. locations) will be analysed using the minimum convex polygon method or similar. This method delineates home ranges by creating a minimum bounding convex. Further spatial analysis is pending.

Discussion/Management Implications:

Unfortunately, the number of collars deployed was less than the 15 proposed collars. However, with the challenges faced this should still be considered a successful program. The safety of the collaring crew and the health of the caribou were top priority and unfortunately budgetary and weather conditions forced the program to end prior to the full deployment.

The data collected over the next four years from this program will inform management decisions related to Baffin Island caribou. Spatial affiliation and movement data gained through this program is essential to defining subpopulations with a reasonable degree of confidence. Defining populations is of utmost importance, as the population is the fundamental unit of wildlife management. Although recent genetic analyses suggest remarkable genetic uniformity of caribou across Baffin Island caribou, it does not preclude the possibility that there are distinct subpopulations as is the case in the mainland barrens of Nunavut/NWT. Managing caribou without the delineation of subpopulations risks extirpating entire

subpopulations. Determining subpopulation structure will directly influence the continuation, modification or removal of Total Allowable Harvest and Non-quota Limitations.

The information collected from this project is essential to understanding the movement patterns and habitat use of Baffin caribou at the current abundance phase. Previous scientific research into the movement of Baffin Island caribou has been limited. This information will directly influence the future management of Baffin caribou as it is likely to identify critical habitats, movement, effects of development and sub-population structure. Results from this research will also be used to reduce the costs and amount of search time necessary during composition surveys. It may also identify new regions that have large aggregations of caribou that can be observed during composition surveys.

Reporting to communities/resource users:

Communities were consulted prior to the project in late 2019 and early 2020 and support letters provided to NWMB. Communities were updated throughout the project by phone and email. Consultations with HTOs were planned for September 20-October 1, 2021 to update HTOs after the project was completed but were required to be postponed due to limited co-management partner participation and availability of accommodations in the communities. Rescheduled consultations are planned for January 2022 to provide results in person and discuss management implications and future research. Finalized reports and further updates will be distributed to the communities and co-management partners when completed.