



**SUBMISSION TO THE**

**NUNAVUT WILDLIFE MANAGEMENT BOARD**

**FOR**

**Information:**

**Decision: X**

**Issue:** Baffin Island Caribou Harvest Management

**Background:**

Based on a Department of Environment (DOE) survey conducted this winter of the entire Baffin Island caribou range we estimate there are currently between 3,462 and 6,250 caribou on Baffin Island (Table 1). With very few animals the risk posed by overharvest is significant and could result in continued population decline and/or extirpation from some or all of Baffin Island. At the very least, overharvest could restrict the capacity of the caribou population to increase when range conditions improve.

Early scientific surveys (1940-1970) failed to provide reliable population estimates due to limited coverage and unsophisticated survey methods. Inuit Qaujimagatuqangit (IQ) suggests that there were more than 100,000 caribou on Baffin Island in 1985. Based on IQ and some limited aerial reconnaissance in 1991 DOE biologists estimated that there were 60,000 -180,000 caribou in South Baffin, 10,000 caribou in Northeastern Baffin and 50,000 -150,000 caribou in North Baffin.

In February and March 2014 an island-wide Baffin Island caribou aerial survey was completed using multiple aircraft and the Distance-Double Observer Platform technique. Local Hunters and Trappers Organizations (HTOs) were involved in the planning of the aerial survey and in its implementation. Data from this survey formed the basis of the first scientifically rigorous population estimate for Baffin Island (Table 1). These result as well as a list of possible management options was sent in October to all HTOs that utilize Baffin Island caribou.

IQ collected on Baffin Island suggests caribou have been cycling from very scarce to very abundant for at least the last 150 years, and there is an increasing acceptance by the scientific community that Barrenground caribou experience large population fluctuations over a 50-90 year period. These cycles are believed to be natural and result from the interaction of caribou and their habitat. Caribou numbers increase until they surpass the carrying capacity of the environment and then they decline precipitously to low numbers until the range conditions improve at which time the cycle begins again.

**Current Status:**

There are currently 3,462 to 6,250 (95% CI) caribou on Baffin Island and much of these caribou are concentrated in South Baffin and Prince Charles Island (Table 1; Figure 1). The population estimate for North Baffin which is the main hunting ground for Pond Inlet and Arctic Bay residents is 159-622 caribou (Table 1; Figure 1). This corresponds to a population decline of more than 95% based on the 1991 estimate derived from IQ.

Although the current decline is not being blamed on hunters, we believe overharvesting when there are so few animals may lead to further decline and possibly even extirpation of this population.

There is currently no mechanism by which DOE can collect reliable harvest information, and no reliable harvest statistics exist. However, the limited reported harvest confirms at least 54 animals were harvested in the North Baffin survey strata over the last 12 months (Figure 1). This harvest represents more than 17% of the estimated population for this area and includes cows as well as bulls.

Anecdotal harvest reports from South Baffin also identify continued significant high harvest levels (considering current population estimates) in late winter and early spring, from especially Iqaluit and Kimmirut areas.

**Consultations:**

DOE has conducted a variety of consultations with regards to the status of Baffin Island caribou starting in 2013. DOE and partners held a workshop in July 2013 with more than 60 representatives from Baffin HTOs, DOE and invited speakers and elders. At that workshop participants identified a community-based approach that supports Inuit self-management as the preferred system for caribou management on Baffin Island. Under this system, local HTOs would work with community members to establish restrictions and management actions. However, to date no community-based management actions or harvest restrictions have been implemented, and there is some concern that not all Baffin HTOs have the capacity to implement restrictions on their members.

Consultations were completed with all Baffin Island communities/HTOs, (including Hall Beach and Igloolik) in December 2013 and January 2014. .

As part of DOE's social science/*Inuit Qaujimatuaqangit* research program, a public opinion poll was conducted in communities who traditionally harvest Baffin Island caribou by DOE social scientist Moshi Kotierk. The most common response was that there are currently few to very few caribou. There was disagreement amongst interviewees as to whether there is a need to take management action.

DOE, in collaboration with Nunavut Tunngavik Incorporated (NTI), Qikiqtaaluk Wildlife Board (QWB) and the Nunavut Wildlife Management Board (NWMB), held a second workshop with Elders, HTOs and Biologists in Iqaluit on November 3-4, 2014 to discuss Baffin Island caribou management goals and possible management actions.. All HTOs with the exception of Arctic Bay were represented. Everyone present agreed that the Baffin Island caribou population is very low and that management action is needed.

Workshop participants indicated they support the creation of a management plan and continued consultation in regards to caribou management. The communities overwhelmingly support action, however many participants indicated a preference for harvest levels being restricted on a per household basis. Unfortunately as there are currently 4615 households on Baffin Island (as per Nunavut Bureau of Statistics), a per household allocation of even one caribou would deplete the entire caribou population.

Overall there was agreement in all of the aforementioned consultations that there are currently very few caribou. Most of the HTO representatives agreed that immediate management action is required and that Baffin Island caribou should be treated as one population.

#### **Options/Recommendations:**

The management goal expressed at the recent 2014 Baffin Island Caribou Workshop is to halt the further decline in Baffin Island caribou, and to allow the caribou population to increase. The rate of the caribou increase is dependent on harvest, range condition, predation and extreme weather events. By minimizing risks related to harvest we can improve the likelihood that the population will increase. This process may take several years to several decades.

A sustainable harvest level for Baffin Island is 47-140 bull caribou depending on population trend (based on mean values from Table 1). This corresponds to a 1-3% harvest, depending on population trajectory (decreasing, stable, increasing), which is the accepted range based on our empirical knowledge of caribou ecology. Note that each cow harvested in the population is equivalent to approximately 3 bulls; therefore a mixed harvest would need to be proportionately lower.

Management actions should be enacted as soon as possible in order to reduce the risk of extirpation of some or all of the Baffin Island caribou population. An adaptive management approach is recommended including regular monitoring to advise changes to harvest restrictions so that actions reflect population size and trajectory.

Although it is a high priority in DOE's ongoing research, we do not have sufficient data to delineate caribou subpopulations for Baffin Island. Available evidence, however, suggests that when the population is small distinct areas harbour separate populations. Therefore consideration should be given to distributing harvest in proportion to available

caribou. North Baffin caribou are particularly vulnerable to extirpation (currently 159-622 animals; Figure 1). The issue of harvest pressure could be addressed through recommendation of harvest distribution by QWB or by restricted access or closure of harvest areas where caribou are particularly vulnerable.

Options to reduce harvest to sustainable levels could include HTOs and QWB enacting bylaws upon members. Alternatively, setting Non Quota Limitations (NQLs) and/or Total Allowable Harvest (TAH) levels could be considered.

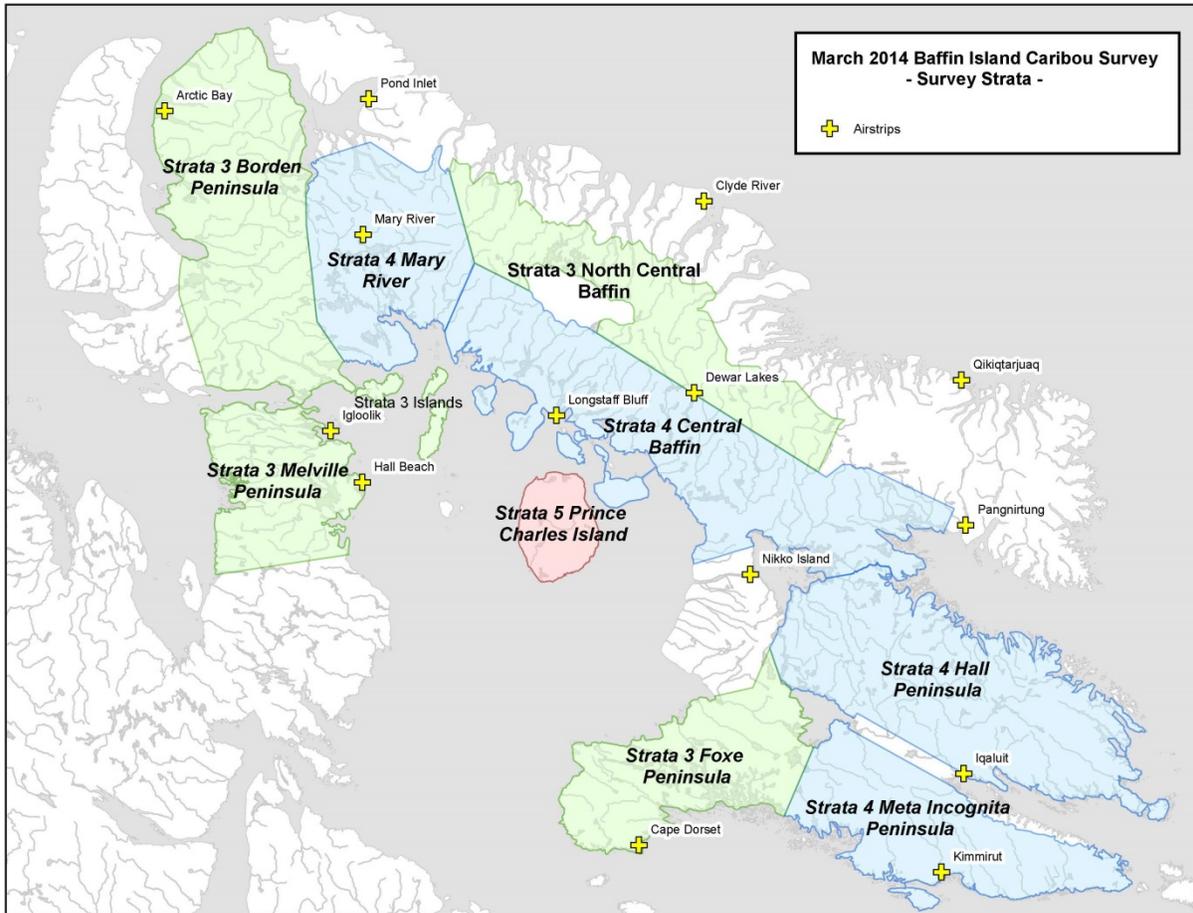
Examples of harvest management regimes for consideration include but are not limited to:

- 1) Baffin Island wide moratorium for a period of time until the population recovers. Removing all harvest from this population would be the most effective way to reduce risk.
- 2) Baffin Island wide TAH: Harvest level limited to 1% bull harvest or equivalent (Table1). This number could be increased to 3% with sufficient data suggesting the population is increasing (although this would slow any increase). Under this regime caribou may be extirpated from some areas of Baffin Island.
- 3) Harvest area restrictions for all of north Baffin, Prince Charles Island, core areas of the Hall and Meta-Incognita Peninsulas and between Nettilling and Amadjuak Lake, wherein harvest is restricted to zero animals. This would functionally remove the core range of caribou on Baffin Island from harvest.

DOE believes the above noted Options balance the best current available scientific information, *Inuit Qaujimajatuqangit* and community input to ensure harvest does not cause a further decline and/or extirpation of Baffin Island caribou.

**Table 1.** Estimated caribou abundance and sustainable harvest by survey area. The population estimates are separated by strata flown in the 2014 caribou survey (Figure 1). The estimated sustainable harvest of caribou is given for both stable and increasing populations based on a bull only harvest.

Strata (Survey Area)	Caribou estimate	95% Confidence Limit (caribou estimate range)	Sustainable Harvest Stable Population (Bulls Only 1%)	Sustainable Harvest Increasing Population (Bulls Only 3%)
<i>North Baffin</i>				
Borden Peninsula	6	1-30	0	0-1
Mary River	224	96-521	1-5	3-16
North Central Baffin	85	31-230	0-2	1-7
<b>Total</b>	<b>315</b>	<b>159-622</b>	<b>2-6</b>	<b>5-19</b>
<i>South Baffin</i>				
Central Baffin	1,091	662-1,798	7-18	20-54
Foxe Peninsula	216	48-972	0-10	1-29
Hall Peninsula	887	467-1,686	5-17	14-51
Meta-Incognita Penninsula	539	256-1,138	3-11	8-34
Prince Charles Island	1,603	1,158-2,220	12-22	35-67
Total (+ Prince Charles Island)	4,337	3,169-5,935	32-59	95-178
<b>Total</b>	<b>2,734</b>	<b>1,777-4,207</b>	<b>18-42</b>	<b>53-126</b>
<i>Other areas</i>				
Melville Peninsula	220	88-551	1-6	3-17
Survey Area Total	4,872	3,661-6,484	37-65	110-195
<b>Baffin Island Total</b>	<b>4,652</b>	<b>3,462-6,250</b>	<b>35-63</b>	<b>104-188</b>



**Figure 1.** Survey Strata for the Baffin Island Caribou Survey – March 2014.