



**SUBMISSION TO THE**

**NUNAVUT WILDLIFE MANAGEMENT BOARD**

**FOR**

**Information:**

**Decision: X**

**Issue:** Total Allowable Harvest Recommendations for the M'Clintock Channel Polar Bear Subpopulation

**Background:**

- M'Clintock Channel (MC) is a relatively small polar bear subpopulation managed by Nunavut. The last inventory study to estimate abundance was conducted between 1998-2000, which resulted in an estimate of 284 bears.
- Past harvests of 34 bears/year between 1979-1999 were unsustainable because the harvest levels were higher than what the estimated population size of 700 bears could support.
- A moratorium from 2001/2002 – 2003/2004 was implemented, followed by a reduced Total Allowable Harvest (TAH) of 3 bears until 2015. The subpopulation was managed to achieve recovery, and local traditional knowledge confirmed that there were more bears being seen in MC in the 2010s. As a result of the assumed increase, and to meet local harvest needs, the TAH was increased to 12 bears in the 2015/16 harvest season. Those 12 bears were divided evenly between Gjoa Haven, Cambridge Bay, and Taloyoak.
- The population data were out-of-date, and a new study was needed to assess the status of this subpopulation. Following community consultations during 2012 and 2013, a new 3-year study began in 2014.
- The method used for this study was the less-invasive genetic mark-recapture through DNA-biopsy sampling. The new study was conducted between 2014 and 2016.
- The Government of Nunavut, Department of Environment (DOE) initially planned to have a community project to collect local traditional knowledge from MC community members and hunters. However, the COVID-19 pandemic prevented local in-person meetings for interviews during 2020. As a result, that study could only be conducted remotely and is still ongoing as of January 2021.

### **Current Status:**

- The final report and results for the 2014-2016 study was completed and distributed to all relevant co-management partners in summer 2020.
- The new abundance estimate based on animals  $\geq 2$  years old is 716 bears (95% Credible Interval = 545 – 955), which is considered a statistical increase from the previous estimate of 284 bears.
- The new results suggest that the subpopulation is productive with mean cub-of-the-year and yearling litter sizes for the period 2014-2016 of 1.70 (Standard Error = 0.09) and 1.61 (Standard Error = 0.11), respectively.
- The calculated mean number of yearlings per adult female declined from 0.39 (SE = 0.10) during 1998-2000 to 0.28 (SE = 0.06) between 2014-2016.
- When using available sampling data, the estimated apparent survival rate for bears aged 2 and older was 0.88 (SE = 0.02), which would mean the population is declining. However, calculating the survival rate necessary to achieve the observed increase in abundance was 0.93. The discrepancy between the two survival estimates is likely because of a lack of movement data. Movement data informs survival models about how many bears move in and out of the area versus how many die.
- Body condition of bears in spring increased between the periods 1998-2000 and 2014-2016, which is likely due to changing ice conditions (i.e., reduction in multi-year ice) in the study area. The changes from less multi-year ice to more annual ice may have provided bears with improved prey accessibility, but this is not currently scientifically testable.
- Due to the lack of movement data (e.g. telemetry/spatial) it is difficult to quantify the amount of immigration and emigration that occurs between GB and neighbouring subpopulations. Although there are subpopulation boundaries, bears in adjacent subpopulations likely move back and forth across boundaries at different times of year. The abundance estimate represents the “superpopulation” (e.g., it includes all bears that were using the GB management area).
- Small sample sizes, low probability of recapturing the same bear, and lack of movement information constrained the analyses in this study such that the estimates of abundance and survival are certainly biased high and low, respectively.

### **Consultations:**

- In-person community consultations with relevant representatives from MC Hunters and Trappers Organizations (HTO) were held between October 19-21, 2020.
- During these consultations, the DOE representatives presented a harvest recommendation of increasing the TAH to 16 bears.

- There was general consensus among HTO members on the findings of the GN report.
- Some communities requested that any increase in the TAH should be an amount that could be divided equitably between the three communities.
- Some communities are more interested in harvesting from MC than others so they felt the allocation of tags should reflect that.
- Staff from Nunavut Tunngavik Inc. and Nunavut Wildlife Management Board were unavailable to attend these consultation meetings.
- A Kitikmeot Regional Wildlife Board (KRWB) representative attended the Cambridge Bay meeting (see details in Consultation Summary Report by DOE).

### **Recommendations:**

1. DOE recommends an **increase in the MC TAH from 12 bears to 18 bears at a 1:1 male to female sex harvest ratio.**

#### Rationale:

- a. The field data obtained from the 2014-2016 MC study came with many analytical limitations due to the nature of the data. Analytical procedures could be applied under specific sets of assumptions only, which led to an abundance estimate that is biased positively. The degree to which this estimate is biased positively cannot be determined at this time due to the lack of adequate data.
- b. The recommended TAH can be considered a conservative level in order to avoid a similar dilemma to what this subpopulation just recovered from, particularly in light of the uncertainties surrounding the abundance and survival estimates. Abundance estimates during the 1970s-1980s were imprecise yet formed the basis for harvest levels. These harvest levels turned out to be unsustainable in the long-term and abundance subsequently declined to levels where MC communities were negatively impacted by very limited harvest opportunities for over a decade. Setting MC harvest levels too high increases the risk for biological decline or depletion not only in MC, but also for neighboring subpopulations due to the unknown emigration/immigration rates.
- c. The recommended TAH keeps in mind that the goal is to maintain a viable polar bear subpopulation. With the slight increase over the scientific-based harvest recommendation, the potential impacts of the harvest should be closely monitored and assessed over time using all available information (science and Inuit Qaujimajatuqangit).
- d. The changes to the ecosystem (e.g. sea-ice conditions) should be monitored since there have been significant changes due to climatic

2. DOE recommends that the Kitikmeot Regional Wildlife Board discuss MC tag allocations with communities that harvest from both MC and the Gulf of Boothia polar bear subpopulations.

Rationale:

- a. During consultation meetings (October 19-21, 2020) there were similar concerns expressed in each community that the current tag allocation for MC communities needed a revision and re-allocation.

## Appendix 1

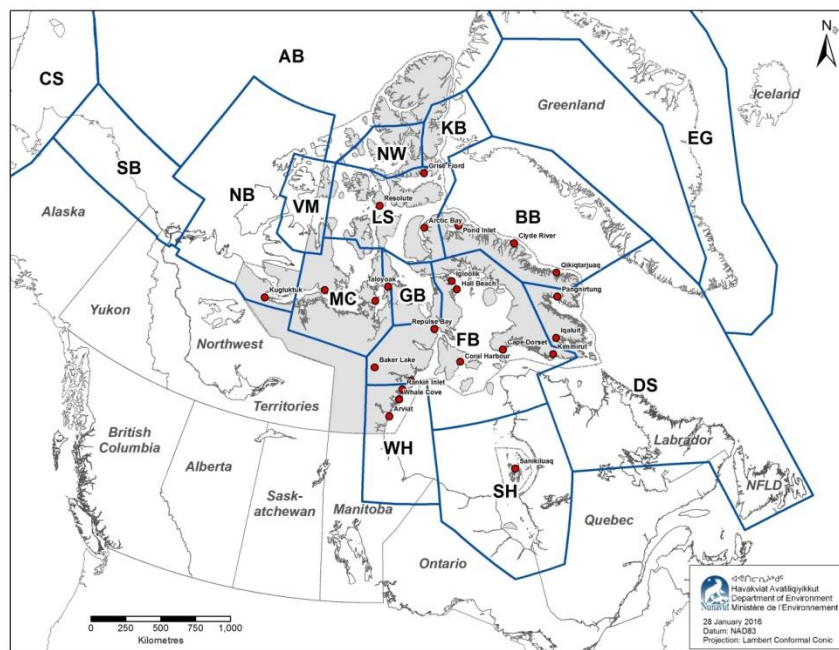


Figure 1. Overview of Nunavut polar bear subpopulations (GB = Gulf of Boothia, MC = M'Clintock Channel).