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Avatiliqiyikkut
Department of Environment
Ministère de l'Environnement

18 July 2012
Rebecca Jeppesen
Director of Wildlife Management
Nunavut Wildlife Management Board
PO Box 1379
IQALUIT NU X0A 0H0

RE: Additional information for consideration in reviewing the 2012-2013 Total Allowable Harvest for the Western Hudson Bay sub- population of polar bears.

Dear Ms. Jeppesen;

On May 25, 2012 Minister Arreak submitted a letter requesting that the Nunavut Wildlife Management Board (NWMB) make a decision regarding the Total Allowable Harvest (TAH) for the Western Hudson Bay Polar Bear Population (WH). In that submission the Minister suggested that the NWMB consider establishing a TAH of 24 for 2012-2013. Unfortunately, we have learned that the calculations used in determining this recommendation contained an error. The appendix to this letter contains a description of the specific error that was found. While the discovery of the error does not change the 2012-2013 TAH recommendation of 24, it is of course necessary to ensure that the NWMB has complete and accurate information for its decision making processes.

The Department of Environment strives to ensure that our scientific research, analyses, and advice are of the highest quality, and mistakes of any nature are extremely rare. Please accept our apologies and rest assured that we will strive to ensure that in future there are no errors in our scientific information and advice.

As the NWMB is now reviewing the TAH for WH in a written hearing process, please accept this letter as an amendment and additional information to be considered.

The most recent (2011) population estimate for WH is 1000, which is not significantly different from the 2004 mark-recapture estimate of 934. Similar to several other populations where estimated rates of survival and recruitment are unavailable or considered unreliable, a sustainable harvest rate of 4.5%[1] (Taylor et al. 1987[2]) is assumed, equaling 45 bears per year. Manitoba has a guaranteed allocation of 8 for their control activities, so the sustainable harvest for 2012/13 would be 37. Due to an over-harvest of 3 bears in 2011/12, this figure would need to be reduced by 3, resulting in a maximum sustainable harvest of 34 for Nunavut.

However, the scientific model used to calculate the sustainable harvest assumes a healthy population, with normal reproductive rates, resulting in a sustainable harvest rate of 4.5%. While there is much uncertainty of the present population dynamics in WH, preliminary observations and scientific analysis suggest that the recruitment rate is quite low, and that the sustainable harvest rate is much lower than 4.5%. Therefore, in consideration of this uncertainty, we still suggest that a precautionary approach is

[1] This approach has been used to set quotas in the Southern Beaufort and Northern Beaufort populations in the NWT. It is also used as a guide to manage harvest in Southern Hudson Bay.

[2] Taylor, M.K., DeMaster, D.P., Bunnell, F.L., and Schweinsburg, R.E. 1987. Modeling the sustainable harvest of polar bears. J. Wildl. Manage. 51:811-820

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necessary, and that the 2012-13 TAH be set at 24. It is our considered position that a higher TAH would not be prudent at this time.

As you are aware, a complete re-analysis of all WH data is being conducted, and Environment Canada indicates that the results will be available in the fall of 2012. The availability of that data will better inform WH management, and I suggest that any reconsideration of the WH TAH for 2013-2014 and beyond should await those results.

Once again, I apologize for the error and any inconvenience this may have caused. If your staff has any question or requires additional information, they are welcome to contact me.

Respectfully,

Drikus Gissing
Director
Wildlife Management Division

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Western Hudson Bay – TAH calculations and review

- A discrepancy was identified in the TAH calculations that were made using the Taylor et al. 1987 model.
- Technical staff with DOE inadvertently used the wrong proportion of females in the calculations.
- Following is the explanation for the discrepancy:
    - The TAH is calculated as: Population Estimate x 0.015 / Proportion of harvest that was female
    - Population estimate = 1000
    - Proportion of harvest that was female: 8 females were taken and the total harvest was 27 (21 NU + 3 NU over + 3 MB), then the proportion is 8/27 = 0.30 (rounded to 2 decimal places).
    - Inserting a population of 1000 and a proportion value of 0.30 into the equation gives a TAH of 45.
    - At the time when the recommendation was prepared 24 bears had been harvested – 16 males and 8 females, which is a female proportion of 0.33 (8/24).
    - Instead of using the proportion of females in the total harvest the ratio of females to males was used by mistake. 16 (that being just the male portion of the harvest) was used and not the total harvest (being 24; 8/16). That resulted in a proportion of 0.5.
    - By mistakenly using 0.5 in the calculation the TAH result came to 30 bears – as was recommended in the original RFD.
- If the correct proportion had been used, the calculated TAH recommendation would have been 45 (less the NU overharvest and Manitoba harvest). Note that this is 4.5% of the population, which is used to calculate sustainability for a healthy polar bear population.
- Given the uncertainty surrounding the WH population and its trend, and concerns expressed regarding body condition, the GN believes that the establishment of a TAH needs to be precautionary.

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