



August 13, 2014

Mr. Ben Kovic, Chairperson  
Nunavut Wildlife Management Board  
Box 1379  
Iqaluit, Nunavut  
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Dear Mr. Kovic:

This letter responds to the Nunavut Wildlife Management Board's (NWMB, "Board") request for submissions to its written public hearing to consider the Kivalliq Wildlife Board (KWB) proposal to increase the Total Allowable Harvest (TAH) for bowhead whales (*Balaena mysticetus*) in the Kivalliq Region. The Board's decision has the potential to increase the overall TAH in the Nunavut Settlement Area to 5 bowhead whales per year.

The KWB's proposal is consistent with DFO Science Advice for the Eastern Canada-West Greenland (EC-WG) bowhead population (DFO 2008b). In 2007, based on the results of satellite tagging and genetic studies, DFO concluded that eastern Arctic bowhead whales are most likely part of a single transboundary population whose range includes the waters of Nunavut, Nunavik and west Greenland. Quantitative estimates of changed abundance for the EC-WG bowhead population size are difficult to calculate. There are no aerial surveys that have covered the full extent of bowhead summer distribution in the Eastern Canadian Arctic. The most recent aerial surveys were conducted by DFO in 2002, 2003 and 2004.<sup>1</sup>

Repeated statistical analysis of the same 2002 aerial survey data, using increasingly sophisticated techniques, has produced different partial population estimates for the EC-WG bowhead population (Table 1).

Table 1. Partial population estimates for the EC-WG bowhead whale population, resulting from sequential statistical re-analyses of the same 2002 aerial survey results.

Source	Partial Population Estimate * (95% Confidence Limits)
COSEWIC (2005)	5,016 (95% CI = 2,611-9,633)
Cosens et al. (2006)	7,309 (95% CI = 3,161-16,900)
Dueck et al. (2008)	14,400 (95% CI = 4,811-43,105)
IWC Heide Jorgensen et al. (2008a)	14,196 (95% CI = 5,935-33,956)
IWC Heide Jorgensen et al. (2008b)	8,187 (95% CI = 3,835-17,480)
IWC Givens et al. (2009)	6,344 (95% CI = 3,119-12,906)

\* All estimates are based on the same 2002 aerial survey results.

<sup>1</sup> DFO used a multi-year aerial survey design because, at that time, two separate populations of bowhead whales were recognized, one in Hudson Bay–Foxe Basin and the other in Baffin Bay-Davis Strait.

Although relatively imprecise, these sequential estimates indicate that the EC-WG bowhead population currently numbers in the thousands and has increased significantly since commercial whaling ended (COSEWIC 2009). In 2009, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) recommended that the EC-WG bowhead whale population be listed as a Species of Special Concern under the *Species At Risk Act* (SARA).

In its assessment of Eastern Arctic bowhead whales, DFO Science used the Precautionary Approach to calculate a sustainable level of human-induced mortality for bowhead whales. To do this, DFO used an internationally accepted mathematical method called Potential Biological Removal (PBR). The PBR method uses precautionary principles in cases where scientific knowledge of a particular species is considered data-deficient. Given the lack of detailed biological information about EC-WG bowhead whales, DFO applied expected life history information (i.e., rate of population increase) for baleen whales to calculate a sustainable level of human-induced mortality. For bowhead whales, human-induced mortality can result from events such as hunting (including animals that are struck and lost), net entanglements, and ship collisions.

Using the PBR method, DFO Science concluded that a total human induced mortality equal to or less than 18 bowhead whales per year would not pose a threat to the EC-WG bowhead population. Their report added that: *“Given the high level of uncertainty, both with the current and pre-commercial whaling population estimates, it is recommended that a high level of risk avoidance (i.e.  $F_R = 0.1$ ,  $PBR = 18$ ) be considered for the management of this population until it can be demonstrated that a higher PBR is warranted.”*

Additional surveys are needed to provide a time series that will give greater confidence in estimates of population abundance and trend (DFO 2008b). In 2013, DFO conducted large scale aerial surveys to update current abundance estimates for known Baffin Bay narwhal (*Monodon monoceros*) stocks. Survey observers also recorded their sightings of bowhead whales and other marine mammals. Inuit co-management organizations were involved in designing the aerial survey and in selecting Inuit survey observers. DFO expects the 2013 abundance estimate update will be relatively precise but negatively biased (low); some important bowhead summer habitat was not surveyed either because of bad weather (e.g. Foxe Basin) or because Baffin Bay narwhal were unlikely to be there (e.g. Lancaster Sound, northern Hudson Bay, and Hudson Strait). DFO's National Marine Mammal Peer Review Committee will review the results of the 2013 aerial surveys in the fall of 2014. The results of a genetic mark-recapture study for EC-WG bowhead whales will also be reviewed at this meeting. Using the approved results of the 2013 aerial survey and genetic mark-recapture study, DFO Science will reassess its Total Allowable Harvest recommendation for the EC-WG bowhead whale population and DFO will present this new information to the Nunavut Wildlife Management Board in 2015.

Approval of the KWB's proposal would increase the existing level of Total Allowable Harvest for the EC-WG bowhead population within the Nunavut Settlement Area (NSA) to five bowhead



whales per year. The corresponding increase in maximum potential harvest mortality throughout the range of this population would remain within the recommended conservation limit.

DFO supports the KWB's proposal to increase the level of Total Allowable Harvest for EC-WG bowhead whales within the Nunavut Settlement Area based on the current Science advice, and recommends that the NWMB take the following considerations into account in reaching its decision:

- a) the maximum potential harvest mortality of EC-WG bowhead whales in Canada and Greenland (Tab 1).
- b) the possibility of additional human-induced mortality of EC-WG bowhead whales resulting from increased seasonal access to Arctic waters predicted due to climate change. These additional mortalities may result directly from ship strikes or net entanglements, or indirectly owing to increased anthropogenic noise, changes in bowhead food supply, and vulnerability to predation.
- c) the NWMB may wish to evaluate both the pros and cons of an increased Total Allowable Harvest (TAH) level for EC-WG bowhead whales. To date, Canada's Aboriginal hunt of large whales has not been an issue internationally, because the take is considered to be small. DFO supports the process by which Nunavut and Nunavik decide a mutually agreeable sharing arrangement for the harvest of EC-WG bowhead whales.
- d) the NWMB may wish to consider the potential implications to the full utilization and processing of landed bowheads, if hunts are conducted at great distance from the host community. At the March 2014 bowhead IFMP meeting, NTI representatives indicated that discussions about the full utilization and processing of harvested bowhead would take place with the Alaska Eskimo Beluga Whaling Commission (AEBWC) during the winter of 2014/15.
- e) the NWMB may wish to delay its decision on the KWB proposal pending approval and release of the updated population abundance estimate and sustainable harvest recommendation for EC-WG bowhead whales.

In the coming months, a draft Integrated Fishery Management Plan (IFMP) for the EC-WG bowhead population will be presented for NWMB decision. This IFMP is being developed jointly by representatives of the Nunavut and Nunavik Inuit co-management organizations, in support of an ongoing, sustainable and efficient harvest by Canadian Inuit.

Thank you for considering this submission to the NWMB's written Public Hearing, I look forward to continued collaboration in this important matter.

Yours sincerely,

Larry Dow, Director of Northern Operations  
DFO Central and Arctic Region

Attachments: (see Tab 1)

Cc: Peter Kydd, Director of Wildlife Management, NWMB  
Leah Muckpah, Kivalliq Regional Liaison, NIWS  
Ema Qaqqutaq, Kitikmeot Regional Liaison, NIWS  
Jason Mikki, North Baffin Regional Liaison, NIWS  
Jackie Price, South Baffin Regional Liaison, NIWS  
Glenn Williams, Wildlife Advisor, NTI  
Josepi Padlayat, Chairperson, NMRWB  
Mark O'Connor, Director of Wildlife Management, NMRWB  
Dave Burden, Regional Director General, DFO Central and Arctic Region  
Richard Nadeau, Regional Director General, DFO Quebec Region  
Scott Gilbert, A/Regional Director, Fisheries Management, DFO Central and Arctic Region  
Patrick Vincent, Regional Director, Fisheries Management, DFO Quebec Region



**Tab 1. Calculation of Maximum Potential Bowhead Whale Hunting Mortality:**

The Eastern Canada – West Greenland population of bowhead whales ranges from southern Davis Strait to the North Water in the High Arctic, and from Peel and Viscount Melville Sounds eastward across Baffin Bay to the Greenland coast .



A small Aboriginal subsistence harvest of bowhead whales occurs in both Canada and in West Greenland. To ensure a continuing sustainable subsistence harvest, annual hunting removals in both countries must be accounted for.

**Considerations:**

- A. Canada: The Nunavut and Nunavik Inuit Land Claims Agreements each retained and deemed established, all existing regulatory provisions on the amount of wildlife that can be harvested, until removed or otherwise modified by the corresponding Wildlife Management Board (NILCA S.5.2.22, NWMB S. 5.6.51). Within the Nunavut Settlement Area, the NWMB established a Total Allowable Harvest (quota) of 3 bowheads per year. Within the Nunavik Marine Region, the NMRWB established a Total Allowable Take of 2 bowheads per year. The Marine Mammal Regulations (SOR/93-56) require a DFO Marine Mammal Fishing Licence for all bowhead harvests; it authorizes Inuk Hunt Captains "...to hunt and land one, or strike two bowhead whales whichever occurs first."
- B. Greenland: A regulatory quota of 2 strikes/year is in effect, therefore a maximum of 2 bowhead whales could be killed in a given year.

**Conclusion:**

In the highly unlikely event that no EC-WG bowheads were successfully landed by Canada or Greenland in a given year, the combined maximum potential hunting mortality for the population would be calculated as:

Nation	Geographic Area	Annual Harvest Restriction	# Strikes / Licence	Maximum Possible Harvest Mortality
• Canada	Nunavut Settlement Area	TAH = 3 (5)**	2	6 (10)**
	Nunavik Marine Region	TAT = 2	2	4
• Denmark	West Greenland	Quota = 2 strikes	--	2
Cumulative Total =		7 (9)**	2	12 (16)**

\*\* Values in brackets would apply only after NLCA approval of each of the QWB and KWB requests for increases in the Total Allowable Harvest (TAH) of EC-WG bowhead whales.

Tab 2. Literature Cited

- Cosens, S.E., H. Cleator, and P. Richard. 2006. Numbers of bowhead whales (*Balaena mysticetus*) in the eastern Canadian Arctic, based on aerial surveys in August 2002, 2003 and 2004. DFO Can. Sci. Advis. Sec. Res. Doc. - 2006/052.
- COSEWIC. 2005. COSEWIC assessment and update status report on the Bowhead Whale *Balaena mysticetus* in Canada. Ottawa. viii + 51 pp.
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- Dueck, L., P. Richard and S. Cosens. 2008. A review and re-analysis of Cosens et al. (2006) aerial survey assessment of Bowhead Whale abundance for the eastern Canadian Arctic. DFO Can. Sci. Advis. Sec. Res. Doc. 2007/080.
- Givens, G. B. Koski, V. da Silva, L. Dueck, L. Witting, M.P. Heide-Jørgensen, P. Wade, G.P. Donovan, A. Cañadas and K. Laidre. 2009. Report of the Working Group on Abundance Estimates for Eastern Canada West Greenland bowhead Whales. Annex F (Appendix 3). Report of the International Whaling Commission 11 (Suppl.): 188-190.
- Heide-Jørgensen, M.P, K.L. Laidre, and S. Fossette. 2008a. Re-analysis of the availability correction factor used in the aerial survey of Bowhead Whales in the eastern Canadian Arctic 2002-2004. SC/60/BRG21. 7 pp. Presented to IWC Scientific Committee Meeting, Santiago, Chile, June 2008.
- Heide-Jørgensen, M.P, K.L. Laidre, and S. Fossette. 2008b. Re-analysis of a reanalysis of a Canadian Bowhead survey – revision of SC/60/BRG21. SC/60/BRG21 (Revised). 8 pp. Presented to IWC Scientific Committee Meeting, Santiago, Chile, June 2008.