

- [International Whaling Commission] *Report of the Sub-Committee on Bowhead, Right and Grey Whales* (May 30/07), p. 10;
- [International Whaling Commission] *[Revised] Chair's Summary Report of the 59th Annual Meeting, Anchorage, Alaska* (May 2007), p. 3;
- *Dissolving Stock Discreteness with Satellite Tracking: Bowhead Whales in Baffin Bay*, Marine Mammal Science, 22(1): 34-45 (Jan/06);
- *Final Report of the Inuit Bowhead Knowledge Study* (March, 2000);
- *DFO Science Stock Status Report E5-52* (1999);
- *Distribution and Numbers of Bowhead Whales (Balaena mysticetus) in Northwestern Hudson Bay in 1995*, Arctic Vol. 53 No. 1 (March 2000), p.36-41;
- *COSEWIC Assessment and Update Status Report on the Bowhead Whale in Canada* (2005);
- *White Paper on Hunting of Large Whales in Greenland* (Fernando Ugarte, May/07), p.11;
- [International Whaling Commission] *Report of the Scientific Committee (SC/59/Rep 1, 2007)*, p. 40; and
- *Increasing abundance of bowhead whales in West Greenland*, Biology Letters (2007) 3, 577-580.

Copies of all of the above documents may be obtained from the NWMB at the following coordinates:

NUNAVUT WILDLIFE MANAGEMENT BOARD

Parnaivik Building

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The NWMB is currently awaiting the receipt of a reanalysis by DFO of the results from aerial surveys of Eastern Arctic Bowhead Whales, conducted from 2002 to 2004, as well as the delivery of a final report on Eastern Arctic Bowhead stock abundance. Until such time as those crucial documents are publicly available, the Board is not prepared to consider any modification to the bowhead TAH, other than the proposed increase of one whale for the 2008 season.

Through this letter, the NWMB is extending an invitation to you to provide written submissions to the Board on that proposed increase of one bowhead whale. Please note that those written submissions must be filed with the NWMB – in English and Inuktitut – by no later than 5:00 PM, February 25th 2008. Unless persuasive reasons are provided to the Board for late filing, the NWMB will not consider materials during the hearing that are not filed on time.

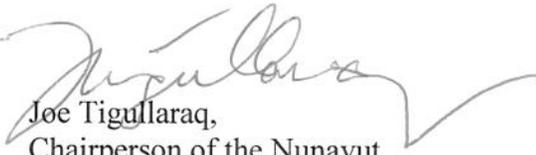
Documents may be filed with the Board in person, by courier, by mail, by fax or by electronic transmission. They should be clearly marked as pertaining to the NWMB Hearing on

Bowhead Whales. Documents are deemed to have been filed on the actual day of receipt by the Board.

Please keep in mind that the more thorough, reliable and persuasive supporting evidence and justifications are, the more weight they will be given by the NWMB in the *Nunavut Land Claims Agreement* decision-making process.

If you require further information, please do not hesitate to visit the NWMB website (www.nwmb.com), or contact the Board directly.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Joe Tigullaraq', with a long, sweeping flourish extending to the right.

Joe Tigullaraq,
Chairperson of the Nunavut
Wildlife Management Board

c.c. The Chairpersons of Nunavut's Hunters and Trappers Organizations,
Keith Pelly, A/Director, Eastern Arctic Area, Department of Fisheries and Oceans



Wildlife Briefing Note

NTI Request NWMB Modify or Remove the Total Allowable Harvest Level for Eastern Arctic Bowhead Whale, as per 5.6.16 of the Nunavut Land Claims Agreement

Background:

The present TAHs for Bowhead Whale are based on the 1999 DFO assessment of the North Hudson Bay/Fox Basin Population and the Davis Strait/Baffin Bay Population of Bowhead Whales for the Nunavut Settlement Area. These TAHs – One from the North Hudson Bay/Fox Basin Population every two years and one from the Davis Strait/Baffin Bay Population every 15 years– have not been modified since they were established.

The present TAHs are based on a combined total estimate of 345 whales, taking into account that Bowhead Whales were assessed as “endangered”.

DFO has completed Bowhead population surveys in the Nunavut Settlement Area from 2002 to 2004. DFO in cooperation with Greenland has also satellite tagged Bowheads to monitor the seasonal movements and stock identity of Bowhead Whales. This research confirms that there are an estimated 5016 Bowhead Whales present in these areas, in one population.

This recent scientific research has been considered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in the assessment of Bowhead Whales. COSEWIC has recommended that the status of Bowhead Whales be downgraded from “endangered” to “threatened” based on this new information.

DFO presented this research to The International Whaling Commission (IWC) in June 2006 and June 2007. IWC meeting 59 considered the recent scientific data and established a five year quota of two bowheads per year for Greenland.

DFO presented analysis of Bowhead Whale abundance and stock identity and interim advice regarding TAH of Bowhead Whales in January 2007 to the NWMB, pending expected endorsement of the results by the IWC. (Earlier – in October, 2005 - DFO had presented its 2002-2004 survey results to the NWMB.)

In summary, the current TAH levels assume that there are 345 Bowhead Whales in total in these areas and that they are endangered, whereas the recent research shows that the total population is approximately 15 times the size of the previous estimate, and the status of Bowhead Whales has been downgraded to threatened.

Despite these developments and the two years that have passed since DFO obtained its initial results, DFO has yet to propose any revision to the current TAHs on Bowhead Whales to the

NWMB. DFO appears to be concerned with national and international perceptions if the Minister is to approve an increased TAH for Bowhead Whales. There can be no other explanation for the delay. With respect, however, the NWMB and Minister should make their decisions based on fact rather than perception, according to the criteria in the Nunavut Land Claims Agreement (NLCA).

Bowhead Whales are recognized as a species of special importance in Article 5 of the NLCA. The Bowhead Whale is an important cultural resource to the Inuit of Nunavut. Inuit have been patiently waiting for an increase in the TAH of Bowhead Whales, which is understood by Inuit to be the recognition and acknowledgement of their traditional knowledge that was brought forward as the "Inuit Bowhead Knowledge Study".

The unnecessary delay in applying Inuit Qaujimagatuqangit and scientific information to modify or remove the TAH on Bowhead Whales is unnecessarily limiting Inuit harvesting. This delay is also jeopardizing Inuit harvesting, as this shared stock is being treated as underutilized, and allocations to other harvesters are being made and/or considered outside of the NSA. It is the Inuit of Nunavut that have identified the importance of Bowhead Whales and initiated the interest to prove that Bowhead Whale populations are healthy and vibrant.

Inuit have been asked by DFO to identify their "full level of needs" for Bowhead Whales, on the understanding that the TAH could be established to meet this need and the TAH would be less than the maximum sustainable yield of Bowhead Whales. However, if the reasonably foreseeable "full level of needs" for Inuit is substantially less than the maximum sustainable yield of the stock or population, then a TAH on the stock or population of that species is not justified under the NLCA. This is particularly so where, as in this case, the harvest is licensed, and monitoring concerns such as tracking struck losses can be met by licence conditions. If the NWMB or the Minister establishes a TAH for a stock or population, that it is done under the authority of 5.3.3 of the NLCA, and Inuit would have the right to harvest that species as per 5.6.3 of the NLCA.

Recommendation:

NTI recommends that the NWMB review both the Inuit Traditional Knowledge Study and the DFO submission "*DFO analysis of bowhead whale abundance and stock identity and interim advice regarding TAH of bowhead whales*" dated 8 January 2007. NTI requests that the NWMB then consider the modification or removal of the TAH on Bowhead Whales from the Eastern Canadian Arctic population, based on full considerations of Inuit Qaujimagatuqangit and scientific information. There are no legitimate reasons for delaying a decision on Bowhead Whales any longer.

Prepared by
NTI Wildlife Department
5-Nov-07

DFO 2007a
CC 104, 17 January 2007
Igaluit

**SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD**

FOR

Information: X

Decision:

Issue: DFO analysis of bowhead whale abundance and stock identity and interim advice regarding TAH of bowhead whales.

Background:

This is a follow-up to an information note submitted to NWMB in October 2005.

Since the settlement of the Nunavut land claim, DFO (Central and Arctic region) has conducted research on eastern Arctic bowhead whales, in support of wildlife management requirements. This research includes studies on bowhead whale abundance, long range movements, and genetic characteristics for stock identification. The results of this research suggests to DFO that the bowhead whales in the eastern Arctic are wide-ranging and belong to one stock. Papers for scientific publication are in preparation that summarize the results of this research.

DFO presented the results of the scientific research at the International Whaling Commission meetings in June 2006. At this meeting, the research was praised for the extent of the scientific work done over the relatively short time, but the conclusions regarding a single stock of bowhead whales and the abundance estimate were not endorsed in 2006. The main reasons for this lack of acceptance of DFO's conclusions were a lack of sufficient detail and clarity in the way the data was analyzed and criticism of some of the methods. It was recommended that revised and more detailed analyses be presented to IWC in 2007 at which time the evidence for a single stock and abundance would be considered.

DFO is presently preparing a more detailed account of the genetics and survey analysis. This information will be reviewed by a Canadian committee of marine mammal scientists (NMMPRC: the National Marine Mammal Peer Review Committee) and by the Bowhead Recovery team, prior to presentation at the next IWC meeting in May 2007.

Provisional Calculation of TAH

Pending more complete acceptance of abundance estimates and stock identity, an interim calculation of TAH is described here. For species considered endangered, a formula called PBR (Potential Biological Removal), developed by Wade (1998) is frequently used to calculate allowable human-induced removals from the population. PBR provides a conservative approach to estimating sustainable removal rates (Hammill and Stenson 2003) allowing the population to remain stable or increase in abundance.

PBR is estimated as follows:

$$PBR = N_{\min} (1/2 R_{\max} F_R) \quad \text{where,}$$

N_{\min} = 20th percentile of the abundance estimate

R_{\max} = the expected maximum net recruitment rate (4% per year for cetaceans; Wade 1998), divided by 2 to account for the event that maximum net recruitment rate is not realized.

F_R = a recovery factor used as an additional safety factor to account for unknown biases or estimation problems. $F_R = 0.1$ for endangered, $F_R = 0.5$ for threatened.

Until the analysis of survey abundance and stock identity has been resolved, the most conservative and conservation minded approach is to use the PBR calculation for an endangered status. Using an abundance estimate of 7309 whales, the results of the PBR indicate that a total human-induced loss of 10 animals from the population would be sustainable. This includes all anthropogenic mortality including harvest, ship strikes, struck and lost and net entanglement mortalities, etc.

Conclusions

Until such time as the population estimates have been accepted scientifically by Canadian and international peers, DFO-Science C&A recommends that the most conservative approach be used to estimate the harvest level for bowheads. Based on the PBR calculation described above, the Eastern Arctic population of bowheads would be able to support 10 anthropogenic (human caused) mortalities annually. Bowhead deaths caused by human activities (e.g. net entanglements, ship strikes, hunting losses) must not exceed 10 animals per year. This does not include dead beached or floating whales where the cause of death is deemed to have occurred by natural causes such as disease or predation (e.g. killer whales).

Changes resulting from a re-analysis of the survey data or as a result of changes to our assumptions of stock identity may change this advice. However, because the advice given here is conservative and because the abundance estimate is based on only a portion of the bowhead range, it is unlikely that future recommendations for a total annual allowable removal will decrease below 10 animals.

Consultations:

Preliminary analyses of the survey, genetics and tagging results were presented and discussed at the bowhead workshop held in Iqaluit in April 2006. Further details of this work will be reviewed at the Bowhead Recovery Planning Meeting in March 2007.

Prepared by:

Larry Dueck, Arctic Research Division, DFO, Central and Arctic Region, Winnipeg

Date: 8 January 2007

Appendix A

Summary of Aerial Survey Abundance Estimation and Calculation of PBR

In 2002 to 2004, aerial surveys were conducted in the eastern Arctic to estimate the size of the current bowhead population. In 2002, the surveys covered Eclipse Sound and most of Prince Regent Inlet and Gulf of Boothia. In 2003, the surveys covered Admiralty Inlet, the east Baffin Island coast, southern Gulf of Boothia, western Foxe Basin and north-western Hudson Bay. In 2004, the surveys covered Eclipse Sound, Admiralty Inlet and Barrow Strait, but too few sightings were made to estimate abundance. The surveys were conducted using parallel line transects that were spaced from 23 to 55 km apart.

The largest estimates of numbers from initial analyses of these surveys were based on sightings of whales in 2002 in the Eclipse Sound, Prince Regent Inlet and Gulf of Boothia regions. A total of 31 bowhead whales were counted during this survey, based on 21 separate sightings. With adjustments for unsurveyed areas between transects and for diving whales, the resulting estimate for this region was 7,309 bowheads (95% CI = 3,161-16,900).

The calculation of Potential Biological Removal (PBR) for preliminary aerial survey estimates are summarized in the Table 1 below.

Table 1. A summary of preliminary aerial survey estimates and PBR calculations for individual survey areas. PBRs are calculated for COSEWIC status of endangered and threatened. The mean proportion of time at the surface used for the calculations was 0.253 (on average, bowheads spent approximately one quarter of their time at the surface).

Survey area	Surface estimate	Dive-corrected estimate	N_{min}	PBR (threatened)	PBR (endangered)
Prince Regent Inlet, Gulf of Boothia, Eclipse Sound (2002)	1847	7309	5091	51	10
Gulf of Boothia, Foxe Basin and northern Hudson Bay (2003)	248	981	607	6	1
Admiralty Inlet and eastern Baffin Island (2003)	462	1828	1373	14	3

DFO 20076
Rm 54

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: X

Decision:

Issue: Sustainable Removals of Eastern Arctic Bowhead Whales

Background:

In January 2007, Fisheries & Oceans Canada (DFO) scientists updated the Nunavut Wildlife Management Board about recent genetics and satellite tagging studies on Eastern Arctic (EA) Bowhead whales, initial abundance estimates resulting from aerial surveys, and offered preliminary advice on sustainable removals from this stock. In June 2007, DFO presented the same research findings to the Scientific Committee of the International Whaling Commission (IWC), who recommended that the aerial survey data be re-analysed. The survey re-analysis was carried out between August and October of 2007.

Last year, DFO's National Marine Mammal Peer Review Committee (NMMPRC) accepted the conclusion that EA Bowhead whales form a single population that is shared between Canada and Greenland. At its most recent meeting (November 2007), the NMMPRC reviewed the method of re-analysis. NMMPRC noted that the mean estimate of 14,400 whales for the fully corrected (double-observer mark-recapture) method is much larger than previous estimates had indicated, although extremely wide confidence limits (4810-43105) illustrate the large uncertainty in this estimate.

Potential Biological Removal (PBR) is an internationally accepted mathematical calculation that is used to determine the human induced mortality of marine mammals that can be sustained each year and still allow the population to increase. Bowheads that are killed as a result of hunting, net entanglements, ship strikes, etc. are considered as human induced mortality. Bowheads that are killed by killer whales, or that die from natural causes, are not counted against a PBR.

Considering the high uncertainty of the new abundance estimate for EA bowhead, it is not clear if the increased population estimate will receive international support. The NWMB may wish to continue with setting short-term TAH (for a year or two) before setting a long-term annual quota for the EA Bowhead.

In the interim, a precautionary approach would be to ensure that no more than 10 bowheads are removed from the Eastern Arctic population by hunting and other human activities in Nunavut, Nunavik and Greenland. This value is based on previous advice to the NWMB. It should be noted that in June 2007, the IWC awarded Greenland 2 bowhead strikes/year for each of the years 2008-2012.

The NWMB may be receiving suggestions that a Nunavut bowhead TAH should reflect the PBR. In considering such suggestions, the NWMB may wish to consider both the pros and cons of a large increase in bowhead TAH. Canada's Aboriginal hunt of large whales has not been an issue at recent IWC meetings because the take is considered to be small. A sudden and dramatic rise in Canadian bowhead quota will draw unnecessary attention from the IWC and may even provoke the US to impose sanctions on Canada. A change in view by the IWC on Canada's Aboriginal hunt will affect the Inuvialuit's bowhead hunt and the re-establishment of a traditional large whale hunt by the Nunavik Inuit and the Nuu-Chaa-Nulth. Setting a bowhead TAH goes beyond a conservation consideration.

The allocation of bowhead between Nunavut and Nunavik is the responsibility of the Minister. DFO prefers that the sharing arrangement of bowhead harvesting be decided between Nunavut and Nunavik.

Consultations: B. Hunt, K. Pelley, K. Martin, P. Simon, B. Wong

Recommendations: That the NWMB review the updated science advice on the re-analysis of the aerial survey. It would be prudent for Canada to wait for international scientific input on the EA bowhead survey reanalysis before an official PBR is established. In other words, the NWMB may wish to continue with setting short-term TAH (for a year or two) and wait for comments from the IWC Scientific Committee before setting a long-term annual quota for the Eastern Arctic Bowhead.

Prepared by: P. Hall

Date: 6 December 2007

NOTICE OF NUNAVUT WILDLIFE MANAGEMENT BOARD PUBLIC HEARING

Notice is provided on February 4th, 2008, that the Nunavut Wildlife Management Board (NWMB) will hold a public hearing to consider the 2008 level of Total Allowable Harvest for bowhead whales in the Nunavut Settlement Area.

Date and time of the hearing:

March 6th 2008, 1:30 p.m. to 5:00 p.m.

The NWMB may also hold an evening session, 7:00 p.m. to 9:00 p.m.

Location of the hearing:

The hearing will take place in the City of Iqaluit, at the Nova Inn.

Issue to be considered at the hearing:

The issue under consideration at the hearing will be a proposed increase for 2008 of one additional bowhead whale to the existing 2008 Total Allowable Harvest of one bowhead whale.

A “*Total Allowable Harvest*” is the overall amount of a stock or population of wildlife that the NWMB decides can be lawfully harvested in accordance with the terms of the *Nunavut Land Claims Agreement*.

The filing of submissions to be considered at the hearing:

The NWMB has received submissions from Nunavut Tunngavik Inc. and the Department of Fisheries and Oceans regarding the level of Total Allowable Harvest for bowhead whales in the Nunavut Settlement Area. Copies of those submissions and other documents relevant to the hearing may be obtained by contacting the NWMB at the coordinates set out at the end of this notice.

The NWMB is inviting interested members of the public to file written submissions regarding the proposed increase by no later than 5:00 p.m. on February 25th 2008.

The NWMB will make publicly available all of the written materials filed with it, subject to relevant confidentiality or privacy concerns.

Attendance and participation at the hearing:

The hearing will be open to the public, although part of the hearing may be conducted in camera, where the NWMB considers that confidential or sensitive matters may be disclosed or discussed.

The NWMB will provide a reasonable opportunity for oral presentations from the parties at the hearing, by their choice of official, expert or counsel. The NWMB, as well as the parties, may ask relevant questions of any party at the hearing.

The NWMB will provide members of the public in attendance at the hearing a reasonable opportunity to make statements and to ask questions of the parties and the NWMB.

The NWMB will make its decision following the hearing, and after having considered all relevant submissions, presentations and statements.

How to obtain more information:

To receive more information about filing submissions, or about obtaining submissions, other relevant documents, the rules applying to the hearing, the agenda for the hearing, or attendance as a member of the public or as a party at the hearing, please contact the NWMB:

NUNAVUT WILDLIFE MANAGEMENT BOARD

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