Nunavut Wildlife Management Board (NWMB) in-person public hearing to consider modifications to total allowable harvests for the Eclipse Sound and Admiralty Inlet narwhal management units

NUNAVUT TUNNGAVIK INCORPORATED (NTI) SUPPLEMENTARY COMMENTS ON THE RECOMMENDATIONS OF FISHERIES AND OCEANS CANADA (DFO)

November 14, 2016

Introduction

NTI presented written and oral comments in the NWMB's 2012 public hearing to review DFO's draft narwhal management plan and establish total allowable harvests (TAHs) for narwhal under the Nunavut Agreement.

In August 2016, NTI provided written comments on DFO's 2016 recommendations for narwhal TAH modifications and for approval of the narwhal flexible quota system and phase II of the tag transfer policy.

NTI asks that the NWMB consider the following comments, in addition to NTI's August 2016 submission, when making the NWMB's decisions in this proceeding, and that the Board take NTI's 2012 submissions into account in so far as they relate to the issues being considered.

TAH modifications

1. TAH Units - Summering Stocks

Under the Nunavut Agreement, a "stock" to which a TAH may attach must be a biologically self-sufficient group. DFO's evidence does not establish that, over the long term, the narwhal summering stocks described in DFO's recommendations may satisfy this requirement for attaching TAHs under the Nunavut Agreement for the following reasons:

i) Management by summering stocks was initiated on a three-year trial basis in part due to sources of uncertainty with respect to narwhal summering stocks.

ii) Primarily, there is a reliance in DFO's evidence on a relatively small number of satellite tagged narwhals to delineate summering stocks. In some cases, there is no satellite telemetry to delineate summering stocks (Jones Sound, Smith Sound and East Baffin Island).

iii) Inuit knowledge (Remnant and Thomas, 1992; Stewart et al., 1995) and scientific reports (LGL and Greeneridge 1986; Cosens and Dueck 1986; Finley et al. 1990) suggest that narwhals are sensitive to acoustic disturbance and can display changes in migratory behaviour.

iv) Inuit from the community of Pond Inlet have also been reporting different narwhals than normally observed in Eclipse Sound.

v) Generally, narwhals frequent the same fjords and bays each summer (Heide-Jørgensen et al. 2003; Laidre et al. 2004; Heide-Jørgensen et al. 2015). However, there is some evidence that suggests mixing between summering areas does occur (Dietz et al. 2001; Heide-Jørgensen et al. 2002; Watt et al. 2012).

With respect to site fidelity for Eclipse Sound, Watt et al. (2012) reported that a female narwhal was tagged in August 2010 in Eclipse Sound, overwintered in Davis Strait and proceeded into Admiralty Inlet in July, 2011. The narwhal remained in Admiralty Inlet for two months before the tag stopped transmitting in October, 2011.

"Preliminary tagging data from 2011 indicates that four narwhal moved from Eclipse Sound to Admiralty Inlet during the summer. Given this new information and the possibility of mixing between the Eclipse Sound and Admiralty Inlet summering aggregations, an analysis using the allocation model was conducted assuming these were one unit. The results of this analysis represent an extremely conservative scenario, and were not substantially different from the original results of the model, providing further support for the overall sustainability of the Canadian narwhal hunt in 2006 through 2010" (DFO 2012).

"New tracking data indicate some exchange between the Admiralty Inlet and Eclipse Sound aggregations during the summer. The implications of this on harvest sustainability were assessed using the attribution model and the results indicated harvests are sustainable under both scenarios (i.e., separate and combined units)." (DFO 2013).

As a result, DFO considered total allowable landed catch (TALC) where Eclipse Sound and Admiralty Inlet stocks were treated as one summering stock,[1] noting connectivity between the two stocks as a source of uncertainty (DFO 2015).

2. Proposed Reduction for Eclipse Sound Narwhal Summering Stock

The NWMB should take into account the following points when considering DFO's recommendation to reduce the TAH for the Eclipse Sound narwhal summering stock:

[1] Appendix 1 – Tables 1 and 2 from DFO CSAS SAR 2015/46

i) The Pond Inlet HTO reported various issues with the 2013 aerial survey of the Eclipse Sound summering stock[2].

a. One major issue could be the presence of killer whales which can have an effect on the distribution, movements, or behaviour of narwhals. An example of how this could have affected the survey results is that the narwhal availability correction factor could be inaccurate when killer whales are present.

ii) In an aerial survey of Eclipse Sound and adjacent waters conducted by LGL Limited, Elliott et al. (2015) reported daily variation in the number of narwhals observed for the same study area.

a. "... narwhals have a highly clumped distribution and exhibit, as a minimum, localized movements within a 24-hour period.

Repeating the aerial survey on different days during the same time period is recommended for this reason. However, the 2013 aerial survey of the Eclipse Sound summering stock did not employ this method. Doniol-Valcroze et al. (2015) reported that narwhal sightings were extremely clustered in Eclipse Sound and Admiralty Inlet in the 2013 aerial survey.

iii) Thomas et al. (2016) also reported annual variation in narwhal density for the study area of Eclipse Sound and adjacent waters.

a. "Narwhal density within the study area varies considerably from year-to-year based on aerial surveys completed in 1978-79, 1994, 1996, 2002, 2004, 2007, 2008, 2013, 2014 and this study (Koski and Davis 1979, 1980; Richard et al. 1994, 2010; Baffinland 2012; Doniol-Valcroze et al. 2015b; Elliott et al. 2015; Thomas et al. 2015). Depending on the geographic strata (Eclipse Sound, Milne Inlet, or smaller fjords) within the study area, the density may vary from year-to-year by a factor that ranges between 2 and 85 times (e.g., Koski and Brandon 2012). The reasons for these wide fluctuations in narwhal numbers from year to year have not been well-studied to date. Possible reasons include the timing of aerial surveys, observer bias and whether or not aerial surveys captured the location of large herds of narwhals on a given survey day. Also, some narwhals in the Eclipse Sound complex move to adjacent areas within a given summering period and do not necessarily return to the same summering area from year to year. Satellite tag data show that some narwhals move between Eclipse Sound and Admiralty Inlet within a given year (Watt et al. 2012). Over 40% of the 12 narwhals tagged in Eclipse Sound travelled west to Admiralty Inlet and two occurred in the summering range for the Somerset Island stock (Watt et al. 2012). Interestingly, the only narwhal to retain its tag beyond a year, did not return to Eclipse Sound where it was tagged in August 2010, it instead travelled past Eclipse Sound and remained in Admiralty Inlet from late July to early October when the tag stopped transmitting (Watts et al. 2012). If enough narwhals move

[2] These have been presented in the 2016 NTI submission (Appendix II).

between Eclipse Sound and Admiralty Inlet, it could explain some of the fluctuations in narwhal numbers within and between years. This was, in part, the rationale provided by Doniol-Valcroze et al. (2015b) for such different abundance estimates for the Eclipse Sound narwhal stock in 2002–2003 versus 2013."

iv) Thomas et al. (2016) report that the overall spatial-temporal trend in narwhal abundance has been consistent across 2013, 2014 and 2015 based on aerial surveys conducted by LGL Limited from 2013-2015.

a. "Observed narwhal densities (i.e., numbers of individuals/km2; uncorrected for biases) were calculated for each year Baffinland conducted extensive aerial surveys and serve as an indicator of relative abundance in 2015, 2014 and 2013 (as well as 2007 and 2008). As in previous years, in 2015, observed narwhal densities varied considerably across geographic strata and two-week survey periods (early August to mid-September in 2015). During the three surveys in August 2015, highest narwhal densities were observed in key summering areas—i.e., Milne Inlet South (2.21, 0.87, 4.93 individuals/km2), Milne Inlet North (0.60, 1.23, 0.14 individuals/km2), Koluktoo Bay (1.90, 0.20, 0.89 individuals/km2) and Tremblay Sound (0.91, 2.61, 18.26 individuals/km2). Based on the GNLMM results of the extensive aerial survey data, the overall spatial-temporal trend in narwhal abundance has been consistent across 2013, 2014 and 2015—narwhal numbers peak in Milne Inlet, Koluktoo Bay and Tremblay Sound from mid to late August"

v) Thomas et al. (2016) report that there was no substantial difference in the overall density of narwhals in 2013, 2014, and 2015.

a. "Despite this finding, and given the increase in vessel activity during 2015, the model term Year was not statistically significant, which indicates there was no substantial differences in the overall density of narwhals in 2013, 2014 and 2015."

vi) Thomas et al. (2016) report that narwhal did react to the presence of shipping activity. The presence of ship activity and killer whales could have had a large influence on the observations of the 2013 DFO aerial survey.

a. "Results from both the extensive and photographic surveys indicate that narwhal numbers are reduced during periods with large vessel activity. It is uncertain how these statistically significant differences translate into biological significance for narwhals. However, there were no detectable changes in the spatial-temporal pattern of narwhal occurrence in their summering areas and no significant changes in their relative abundance from year-to-year."

vii) DFO recently completed an aerial survey of the Eclipse Sound summering stock in 2016 in which they employed the method of surveying the same area repeatedly (e.g. replicates).

viii) Nunavut's wildlife co-management system is intended to invite public participation, and promote public confidence, particularly amongst Inuit[3]. The Baffin Bay narwhal population is estimated to number approximately 140,000 (Doniol-Valcroze et al. 2015) and no conservation concern has been identified for this population. Any significant change in management should be commensurate with the level of risk to this narwhal population and should be informed by both scientific information and Inuit knowledge.

Recommendation

Given that "there were no detectable changes in the spatial-temporal pattern of narwhal occurrence in their summering areas and no significant changes in their relative abundance from year-to-year" based upon aerial surveys conducted by LGL Limited from 2013-2015, the NWMB should consider waiting for the results of the 2016 DFO aerial survey of the Eclipse Sound summering stock before making a decision on any reduction to the Eclipse Sound narwhal TAH.

Submitted on behalf of Nunavut Tunngavik Incorporated by

Paul Irngaut, Director of Wildlife and Environment

[3] NLCA Article 5.1.3 (b) (v).

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Appendix I – DFO Canadian Science Advisory Secretariat Science Advisory Report 2015/046

Table 1. Area surveyed, survey coverage, narwhal sightings (surface abundance), and corrected abundance estimates by summer stock. The weighted correction factor used was 2.94 (CV 3.4%), except in East Baffin Island fiords where it was 4.53 (CV 3.8%).

Stock / Stratum	Area (km^2)	Percentage surveyed	Surface abundance	Abundance (corrected)	CV
Jones Sound	35,357	13%	4,316	12,694	0.33
Smith Sound	40,669	4%	5,563	16,360	0.65
Somerset Island	115,309	9%	16,921	49,768	0.20
Admiralty Inlet	9,419	26%	11,915	35,043	0.42
Eclipse Sound	8,459	26%	3,566	10,489	0.24
East Baffin Island	53,510	8%	3,799	17,555	0.35
Combined AI+ES	17,878	26%	15,481	45,532	0.33

Table 2. Total allowable landed catch (TALC) for the six Canadian summer stocks of narwhals in the Canadian High Arctic. The recovery factor (Fr) was set at 0.5 for the Jones Sound and Smith Sound stocks to account for uncertainty in stock structure and narwhal movements. Fr of 1.0 was set for the other stocks as suggested for large populations with additional stock assessment information.

Summer Stock	N_{min}	TALC
Jones Sound (/Fr=0.5)	9,714	76
Smith Sound (/Fr=0.5)	9,897	77
Somerset Island	42,081	658
Admiralty Inlet	24,895	389
Eclipse Sound	8,564	134
East Baffin Island	13,214	206
TOTAL	108,365	1,540
Combined AI + ES	34,716	542

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Nunavut Wildlife Management Board (NWMB), Written Hearing to Consider the Narwhal Flexible Quota System and Tag Transfer Policy Phase II

NUNAVUT TUNNGAVIK INCORPORATED (NTI) COMMENTS ON THE RECOMMENDATIONS OF FISHERIES AND OCEANS CANADA (DFO)

August 12, 2016

Introduction

NTI presented written and oral comments in the NWMB's 2012 public hearing[1] to review DFO's draft narwhal management plan and establish total allowable harvests (TAHs) for narwhal under the *Nunavut Agreement*.

NTI's position on the issues in this proceeding[2] continues to be informed by NTI's 2012 comments. NTI asks that the Board take into account NTI's 2012 comments in so far as they relate to the issues in this proceeding.

A. TAH modifications

1. TAH units

DFO's evidence does not establish that, over the long term, the narwhal summering stocks described in DFO's recommendations are a justifiable unit for attaching TAHs under the *Nunavut Agreement*. Under the Agreement, a "stock" to which a TAH may attach must be a biologically self-sufficient group.

NTI recommends that the NWMB continue to employ these narwhal units for TAH-setting purposes only on a three-year trial basis.

2. Proposed increases in TAH levels for stocks other than Eclipse Sound

NTI supports the proposed increases in TAH levels for stocks other than Eclipse Sound.

3. Proposed reduction in TAH level for Eclipse Sound (from 236 to 134 narwhal annually)[3]

a) Hearing procedure

The NWMB established the current TAH for Eclipse Sound on the basis of an oral public hearing. Hunters and Trappers Organization (HTO) representatives appeared before the Board and were able to ask questions of and make comments to DFO's representatives. For that reason, the Board should hold an oral public hearing in Pond Inlet before making any decision to reduce this TAH level.

Additional considerations support the holding of an oral hearing in Pond Inlet on this proposal:

- The HTO is on record as opposing this TAH reduction (HTO's May 27 2016 letter to the NWMB[4]; DFO "What We Heard" document, page 3[5]);
- Where limitations on Inuit harvesting are concerned, the NWMB normally uses written hearings to deal with unopposed proposals. Because Inuit culture is predominantly oral, written hearings are not an appropriate venue for dealing with proposed limitations that Inuit oppose.
- The HTO also is on record as objecting that consultation to date with the community regarding this proposal has not been adequate. According to the HTO's letter, the short visit that DFO representatives made to Pond Inlet regarding this proposal was made without prior indication of the issue to be discussed.

If the Board convenes an oral hearing, the submissions received in this written hearing can form part of the hearing record and contribute to the discussion.

b) *Nunavut Agreement* justification

Under the *Nunavut Agreement*, the Board must reject the proposed TAH reduction for Eclipse Sound if DFO's evidence does not show that the reduction is necessary to maintain vital, healthy narwhal populations capable of sustaining Inuit harvesting needs. (See pages 6-10, NTI 2012 comments.[6])

(As NTI's 2012 comments noted, the history of narwhal non-detriment findings under CITES between 1980 and 2010 indicates that the CITES process does not employ defensible conservation criteria for limiting the exercise of Inuit harvesting rights under the *Nunavut Agreement*. Accordingly, the prospect of CITES detriment findings related to trade in narwhal parts is not relevant to the Board's or Minister's TAH decision. Neither the Board nor the Minister may take such a prospect into account in setting a TAH level under the Agreement.)

c) Proposed reduction

If the Board's decision were based only on the results of the last survey, DFO's proposal would be consistent with the stock management approach set out in the 2013 narwhal management plan.

However, the following considerations support the view that the 2013 survey results do not justify the TAH reduction that DFO proposes:

i. The HTO reported as follows in its May 27 letter:

- Conditions were foggy when Eclipse Sound narwhal were counted, cutting down available flight time and impairing visibility;
- The survey took place in only a few days of one month of one year and could not count whales that had not arrived yet;
- The number of whales that come to Eclipse Sound varies each year and the whales arrive at different times each year;
- Pond Inlet hunters did not observe a decrease in narwhal in 2013 of the scale reported by the 2013 survey; their observations are not considered in the survey;
- The proposed decrease does not take into account the care that Pond Inlet hunters have shown to harvest narwhal conservatively.

ii. NTI anticipates, that, if given the opportunity to address the Board, Pond Inlet Inuit will report that they have been observing a "different type" of narwhal than they are accustomed to seeing in Eclipse Sound. This lends support to the view that aerial surveys on this area do not necessarily observe discrete units of narwhal.

iii. Killer whales present in the area may have caused clumping of the narwhal observed.

iv. The recent history of narwhal surveys in Admiralty Inlet shows that making rash changes in allowable harvest levels that do not have community support cannot instill confidence in the management system and so undermines a key objective of Article 5 of the *Nunavut Agreement*. As noted in NTI's 2012 submission, DFO survey-based recommendations for annual allowable harvests of Admiralty Inlet narwhal see-sawed from 130 to 28 to 233 narwhal in the short time between 2008 and 2012.

v. In the peer review of DFO's scientific report, NTI's biologist noted the possible linkage between narwhals in neighbouring Admiralty Inlet and Eclipse Sound. NTI's point was considered, but not adjusted for in the final recommendations, because, in DFO's view, there was not enough information to support this linkage. The Board should weigh DFO's opinion with the history of widely fluctuating survey results and the Inuit Qaujimajatuqangit that Inuit can present.

vi. Conclusions of the LGL marine mammal study[7], conducted for Baffinland in Eclipse Sound, Milne Inlet, Navy Board Inlet, and Pond Inlet within the seven weeks immediately after DFO's 2013 survey, support the Inuit view that it is unwise to base levels of narwhal harvesting in this area solely on a single-year survey conducted in August:

  - "The timing of narwhal arrival and departure to/from their summering areas is variable and dependent on ice conditions" (ix).

- "About 80% of the [LGL] 2013 aerial survey effort … occurred after mid-September and these data help address a data gap in cetacean distribution, movement, and abundance late in the open-water period" (xi).

- "Narwhal densities were higher in late August/early September (Survey Period 1) and mid-September (Survey Period 2) versus later in the season (see graph below). … As the open-water season progressed, narwhals were more frequently observed in Eclipse Sound and in mid-October narwhals were observed in Pond Inlet. By mid-October (Survey Period 4), there was extensive ice coverage in Pond Inlet as well as Navy Board Inlet, Tremblay Sound, and Koluktoo Bay and many narwhals appear to have left the Eclipse Sound complex and started moving toward their wintering areas." (xii. See also the graph on page xii, showing more narwhals in Eclipse Sound after August than in August.)

- "… narwhals have a highly clumped distribution and exhibit, as a minimum, localized movements within a 24-hour period. In addition to daily variation, narwhal density within the study area varies considerably from year-to-year based on surveys completed in 1978-79, 1994, 1996, 2002, 2004, 2007, 2008, and this study (Koski and Davis 1979, 1980; Richard et al. 1994, 2010; Mary River Project FEIS, Appendix 8A-2, Feb 2012). Depending on the zones (Eclipse Sound, Milne Inlet, or smaller fjords) within the study area, the density may vary from year-to-year by a factor that ranges between 2 and 85 times (Koski and Brandon 2012). The reasons for these wide fluctuations in narwhal numbers have not been well-studied to date." (xii-xiii)

- "…narwhals were significantly more abundant and located farther within the inlets (e.g., White Bay, Tremblay Sound, Koluktoo Bay, Milne Inlet) earlier in the season before moving eastward to the larger areas (e.g., Eclipse Sound, Pond Inlet) during the later part of the season. This trend was consistent during the three years with aerial survey data (2007, 2008, and 2013)."(xiii)

vii. NTI understands that DFO may plan to do an aerial survey of narwhals for Eclipse Sound this summer. If so, considering the uncertainties above, the NWMB should wait for the results of this aerial survey before making a decision that could modify the current TAH.

B. Approval of the Narwhal Flexible Quota System and Tag Transfer Policy Phase II

The NWMB should differentiate clearly in its decisions between those that establish, modify or remove non-quota limitations on harvesting and decisions that are intended to have different implementation consequences. For the sake of proper implementation and accountability in decision-making, it is important that any Board decisions that are intended to limit Inuit harvesting be expressed in clear terms.

Submitted on behalf of Nunavut Tunngavik Incorporated by

for

Paul Irngaut, Director of Wildlife

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[1] http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2012-1/proposed-integrated-fisheries-management-plan-for-narwhal-in-the-nunavut-settlement-area-including-the-establishment-of-total-allowable-harvests-basic-needs-levels-and-non-quota-limitations-july-24th-26th.

[2] http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2016-1/written-public-hearing-to-consider-approval-of-the-narwhal-flexible-quota-system-and-tag-transfer-policy-phase-ii . DFO's recommendations are at http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2016-1/written-public-hearing-to-consider-approval-of-the-narwhal-flexible-quota-system-and-tag-transfer-policy-phase-ii/proposal-for-decision-and-supporting-documentation-4/6024-fisheries-and-oceans-canada-s-proposal-for-nwmb-decision-regarding-approval-of-the-narwhal-flexible-quota-system-and-tag-transfer-policy-phase-ii-eng/file

[3] According to DFO's 2015 Science Advisory Report (page 2) "If narwhals from the Eclipse Sound and Admiralty Inlet areas are considered as belonging to a single unit, the TALCs cannot simply be summed. The TALC advice for a combined unit would be 542 narwhals": http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2016-1/written-public-hearing-to-consider-approval-of-the-narwhal-flexible-quota-system-and-tag-transfer-policy-phase-ii/proposal-for-decision-and-supporting-documentation-4

[4] http://www.nwmb.com/en/public-hearings-a-meetings/meetings/regular-meetings/2016/rm002-2016-june-17-2016/5972-rm002-2016-meeting-binder-eng/file

[5] http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2016-1/written-public-hearing-to-consider-approval-of-the-narwhal-flexible-quota-system-and-tag-transfer-policy-phase-ii/proposal-for-decision-and-supporting-documentation-4/6032-tab-4-baffin-bay-narwhal-tour-what-we-heard-april-2016-eng/file

[6] http://www.nwmb.com/en/public-hearings-a-meetings/public-hearings-1/2012-1/proposed-integrated-fisheries-management-plan-for-narwhal-in-the-nunavut-settlement-area-including-the-establishment-of-total-allowable-harvests-basic-needs-levels-and-non-quota-limitations-july-24th-26th/responses-6/2477-nti-response-submission-on-ifmp-for-narwhal-jul-4-2012-eng/file

[7] MARINE MAMMAL AERIAL SURVEYS IN ECLIPSE SOUND, MILNE INLET, NAVY BOARD INLET, AND POND INLET, 31 AUGUST – 18 OCTOBER 2013, by Robert E. Elliott, Scott Raborn, Heather R. Smith, and Valerie D. Moulton, LGL Limited, environmental research associates, for Baffinland Iron Mines Corporation, March 6 2015: ftp://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2013-2014/01-REPORT/160401-08MN053-Aerial%20SurveyReport-Part%201-IA2E.pdf