



ESTIMATES OF ABUNDANCE AND TOTAL ALLOWABLE REMOVALS FOR ATLANTIC WALRUS (*Odobenus rosmarus rosmarus*) IN THE CANADIAN ARCTIC



Atlantic Walrus *Odobenus rosmarus rosmarus*
(Jason Hamilton, DFO)



Figure 1. Distribution of Atlantic walrus stocks (names in red) in the Canadian Arctic (from Stewart and Hamilton 2013).

Context

Walrus in the Canadian Arctic are divided into two genetic populations comprised of seven stocks. The high Arctic population is composed of the Baffin Bay (BB), west Jones Sound (WJS) and Penny Strait-Lancaster Sound (PS-LS) stocks; the central Arctic population is composed of the north and central Foxe Basin (N-FB, C-FB) and Hudson Bay-Davis Strait (HB-DS) stocks (Figure 1). At this time, the relationship between these six stocks and walrus distributed in south and east Hudson Bay (S&E-HB) is unknown.

Ecosystems and Fisheries Management within Fisheries and Oceans Canada (DFO) asked Science to provide population estimates and sustainable harvest advice for Canadian walrus stocks. A previous attempt to provide this advice was unsuccessful because available stock abundance estimates and harvest information was insufficient (Stewart 2008). Aerial surveys conducted in 2007-2011 permitted the calculation of abundance estimates for all stocks except S&E-HB. This document summarizes calculated estimates of abundance and corresponding estimates of total allowable removal (TAR), developed using the Potential Biological Removal (PBR) method, for six walrus stocks.

This Science Advisory Report is from the October 29 to November 2, 2012 annual meeting of the National Marine Mammal Peer Review Committee (NMMPRC). Additional publications from this process will be posted as they become available on the [DFO Science Advisory Schedule](#) as they become available.

SUMMARY

- Results of recent aerial surveys and satellite telemetry studies were used to develop abundance estimates for six walrus stocks that make up the high Arctic and central Arctic populations in Canada.
- Individual stock abundance estimates are likely negatively biased, due to incomplete survey coverage, inter-annual variability in walrus distribution, weather and ice conditions.
- The quality and amount of satellite tag data, used to adjust surveys for animals missed by the survey, varied among surveys and, at least in Foxe Basin, may not have been representative of the whole population. More satellite data are required to develop better adjustment factors for the haulout counts.
- Based upon the derived abundance estimates, a range of total allowable removals (TARs) was calculated for each stock using the Potential Biological Removal method (PBR). For each stock, these estimates were compared to reported harvests in Canada between 1985 and 2010.
- The Baffin Bay (BB) stock was estimated at approximately 1,250 walrus in 2009, based on a count of 571, resulting in a TAR of 10-11.
- The west Jones Sound (WJS) stock was estimated at 503 (coefficient of variation (CV) = 0.07) walrus in 2008, based on a count of 404, resulting in a TAR of seven or eight.
- The Penny Strait-Lancaster Sound (PS-LS) stock was estimated at between 661 (CV = 2.08) and 727 (CV = 0.07) walrus in 2009, based on a count of 557, resulting in a TAR of 10-12.
- Partitioning harvest to the three stocks comprising the high Arctic population was not possible, but the 25-year average reported harvests in Canada (approximately 14) are less than the combined TAR sum (27-31).
- Estimated size for the combined north and central Foxe Basin stocks (N&C-FB) in 2011 ranged from 8,153 (CV = 0.07) to 13,452 (CV = 0.43) walrus, based on counts of 6,043 and 4,484, respectively, using different dates and different adjustment factors. The calculated TARs of 106-166 straddle the lower 95% confidence limit of recent harvest levels (approximately 185), which do not include other human-caused mortality. Better survey coverage and better information on current removals are required, as is further investigation into walrus movements within Foxe Basin and exchange with the larger Hudson Bay-Davis Strait stock.
- Only a small portion of the Hudson Bay-Davis Strait (HB-DS) stock range has been surveyed. Numbers of walrus summering in the Hoare Bay area on southeast Baffin Island in 2007 were estimated at between 1,420 (CV = 0.07) and 2,533 (CV = 0.17), based on a count of 1,056. The calculated TARs are 18-38 and the local harvest is approximately 36.
- The central Arctic population as a whole lacks sufficient data for a meaningful population estimate and subsequent advice on TARs.
- Uncertainty exists for all areas: survey counts are negatively biased; most surveys suffer from incomplete coverage; most adjustment factors are based on small samples or data from other places and times; harvest statistics are incomplete and losses unreported.
- The BB stock and the West Greenland-southeast Baffin Island component of the HB-DS stock are shared with Greenland. Further investigations into movement patterns between Canada and Greenland and total hunting mortality from both countries are required.
- The estimates of TARs presented cannot be partitioned among various sources of human-caused mortality. For all stocks, additional information is required about harvest levels,

hunting losses, and other types of human-caused mortalities such as net entanglement and ship strikes before providing sustainable harvest advice.

INTRODUCTION

Walrus in the Canadian Arctic have been divided into two genetic populations and seven stocks (Figure 1) based on genetic, isotope, satellite tag, and elemental analysis. DFO Science was asked to provide abundance estimates and sustainable harvest advice for each of the seven walrus stocks: the BB, WJS and PS-LS stocks of the high Arctic population; the N-FB, C-FB and HB-DS stocks of the central Arctic population; and the S&E-HB stock. The S&E-HB stock is not considered in this report since there is no associated stock assessment information available.

Walrus are widely distributed in the eastern Canadian Arctic and are most often found in aggregations of tens to thousands. During summer months, groups of walrus often haul out on ice floes or, if no ice is available, at terrestrial sites. To estimate walrus numbers for the six stocks, aerial surveys of walrus haulouts were conducted between 2007 and 2011. The practice of using haulout counts to estimate stock size for walrus is thought to be an appropriate survey method but is not well developed. For that reason several approaches were used to extract as much information as possible from the data. Data from satellite tags deployed at the time and in the location of some surveys, and from other walrus studies, were used to adjust the haulout counts to account for those animals missed by the survey. A range of abundance estimates were obtained, all of which are considered negatively biased due to incomplete coverage.

Under the precautionary approach, walrus are considered data poor. DFO uses the PBR method to develop advice about sustainable removals for marine mammals considered data poor. PBR refers to all human-caused mortality so estimating a TAR provides the level of removals from all human-caused mortalities that should allow the population to grow. The purpose of this document is to use recent aerial survey information to estimate TARs for walrus stocks using the PBR method.

ASSESSMENT

Published population estimates compiled by Stewart and Hamilton (2013) are presented in Table 1. These data differ among stocks and often between years, limiting the application of a consistent technique to estimate walrus numbers. The basis for all these estimates is a Minimum Counted Population (MCP), obtained by counting walrus in digital images taken during aerial surveys. MCP underestimates true population size as some walrus were not counted either because the survey coverage was incomplete or they were submerged during the survey period. MCP values were adjusted using satellite tag data movement patterns and replicate surveys to account for missed animals (Stewart and Hamilton 2013). For each stock, the adjusted MCP estimates were used for the PBR calculation of annual TAR levels (Table 1). As an initial assessment of sustainability of each stock, the TARs were compared with the most recent landed harvest data for 1985-2010 (Table 2) noting that this does not consider other sources of human-caused mortality. For example, since 2008, industrial development in walrus habitat has increased or is about to increase with concomitant potential for increased human-caused walrus mortality (Stewart et al. 2012). PBR includes, by definition, all anthropogenic mortality (removals). Until information is available on hunting mortality (landed and lost), net entanglements, ship strike mortality and other sources of mortality, it is not possible to apportion TAR to individual activities, such as landed harvest or ship-strikes.

The PBR method is used for data-poor species. The method used to calculate TAR levels for each walrus stock is as follows.

$$\text{TAR} = \text{PBR} = N_{\min} \cdot R_{\max} \cdot 0.5 \cdot F_R$$

where: N_{\min} is the estimated minimum population size. Estimates of N_{\min} were direct counts (MCP) or calculated from the adjusted counts of hauled-out walrus (MCP_{HO}).

R_{\max} is the maximum rate of increase for the population.

F_R is a recovery factor with values set to reflect known population status, in order to promote recovery of those populations back to an optimum sustainable population level (Wade and Angliss 1997). For populations not known to have been depleted, the recovery factor is set to 1.

R_{\max} was set at 0.07, the value determined for a rapidly growing population of Pacific walrus (*Odobenus rosmarus divergens*) (Stewart and Hamilton 2013). F_R was set at 0.5 unless there was evidence of no decline. For the WJS and PS-LS stocks, Stewart et al. (2013a) found no statistical evidence of decline in walrus numbers between 1977 and the 1990s, and so TAR was also calculated by setting $F_R = 1.0$ for those stocks (Table 1).

There is insufficient information to adjust the TAR level to account for hunting losses. Therefore, stock-specific TARs were compared with corresponding walrus landings reported between 1985 and 2010 (Table 2) averaged for the years in which at least 75% of the communities involved reported harvest data.

High Arctic Population

Baffin Bay

The BB stock was surveyed in 2009, and estimated to number approximately 1,250 walrus, based on a count of 571 (Table 1). The adjusted MCP estimates were accompanied by information from three tags deployed in West Greenland that travelled to East Ellesmere Island at the time of the survey (Stewart and Hamilton 2013). The resulting TAR level was 10-11 walrus. Partitioning removals amongst the three stocks comprising the high Arctic population is not straightforward since the four communities may harvest from different stocks but harvest is only reported by community. If it is assumed that all walrus harvested by the community of Grise Fiord are from the BB stock, the average landed harvest in the years between 1985 and 2010 was nine (Table 2).

West Jones Sound

The WJS stock was surveyed in 2008, and its abundance estimated at 503 (CV = 0.07) walrus, based on a count of 404 (Table 1), no tag data were available for the survey period. However using the maximum proportion of walrus hauled out (0.74) likely underestimates the actual stock size. The calculated TAR was seven or eight, but increased to 17 when F_R was set to 1.0 (Table 2). The average landed harvest in 1985-2010 was nine walrus, but it is not known whether all of the walrus harvested by Grise Fiord were from the WJS stock (to date only four walrus are on record as having come from that stock (Table 2)).

Table 1. Stock-specific comparisons of TAR estimates developed using four different adjustment protocols. The error term is expressed as the coefficient of variation (CV). Only abundance estimates which exceeded MCP are included. (See Stewart and Hamilton (2013) for additional details including original sources of the abundance estimates.) The unadjusted TAR level was calculated by setting the Maximum Counted Population (MCP) as the N_{min} term, $R_{max} = 0.07$, and $F_R = 0.5$. TAR values in parenthesis were calculated using $F_R = 1.0$ if there was evidence of no population decline. Empty cells indicate the method was not applied or that it produced an estimate smaller than the number of walrus counted (MCP). BC refers to bounded counts.

	Not Adjusted		MCP _{HO} /0.74 ^a			MCP _{HO} /‰ tags dry ^b			MCP _{HO} /Avg _{time dry} ^c			BC _{HO} /0.74 ^d		
Stock(s) & year	$N_{min} =$ MCP	TAR	Est (CV)	Cal N_{min}	TAR	Est (CV)	Cal N_{min}	TAR	Est (CV)	Cal N_{min}	TAR	Est (CV)	Cal N_{min}	TAR
Baffin Bay 2009	571	10				1,251 (1.00)	621	11	1,249 (1.12)	585	10			
West Jones Sound 2008	404	7 (14)	503 (0.07)	474	8 (17)								<MCP	
Penny Strait-Lancaster Sound 2009	557	10 (19)	727 (0.07)	685	12 (24)							661 (2.08)	<MCP	
North and central Foxe Basin 2011	6,043	106	8,153 (0.07)	7,687	135	13,452 [†] (0.43)	9,510	166						
Hoare Bay area of Hudson Bay-Davis Strait 2007	1,056	18	1,420 (0.07)	1,339	23	2,102 (0.58)	1,336	23	2,533 (0.17)	2,197	38			

^a Counts adjusted by the maximum proportion of tagged walrus ever recorded hauled out concurrently in other studies.

^b Counts adjusted using the proportion of functioning satellite tags 'dry' at the time of the survey.

^c Counts adjusted using the average proportion of a day, or proportion of the survey period, that satellite tags registered as 'dry'.

^d Counts based on replicate counts adjusted for detection and availability.

[†] This estimate assumes that the tagging data from a single haulout were representative of other haulouts in Foxe Basin, and is based on a count of 4,484. If this assumption is not valid then the best estimate is 10,379 (CV = 0.42) for a TAR of 129.

Table 2. Stock-specific comparisons between the calculated TAR range and average reported landed harvests in Nunavut and Nunavik between 1985 and 2010. (SD = standard deviation)

Population	Stock(s)	TAR Range	Average Annual Landed Harvest \pm SD (# years averaged) [†]	Comments
High Arctic		27- 31 (52 [‡])	14.1 \pm 10.1 (22)	
	Baffin Bay (BB)	10-11	9.0 \pm 6.7* (17)	* If all Grise Fiord harvest is from BB.
	West Jones Sound (WJS)	7-8 (to 17 if $F_R=1.0$)	9.0 \pm 6.7* (17)	* If all Grise Fiord harvest is from WJS but only 4 on record.
	Penny Strait-Lancaster Sound (PS-LS)	10-12 (to 24 if $F_R=1.0$)	5.9 \pm 4.3* (17)	* If all Arctic Bay, Pond Inlet & Resolute harvests are from PS-LS.
Central Arctic			366.7 \pm 85.5 (18)	
	North and central Foxe Basin (N&C-FB)	106-135 (166)	184.5 \pm 56.1 (22)	TAR may be as high as 166 depending on how the tag data are interpreted.
	Hoare Bay area of Hudson Bay-Davis Strait (HB-DS)	18-38	35.8 \pm 18.9* (21)	* If all Clyde River, Qikiqtarjuaq, Pangnirtung and Iqaluit harvests are from southeast Baffin Island (Clyde River, Qikiqtarjuaq and Pangnirtung averaged 22 walrus).
	Hudson Bay-Davis Strait (HB-DS)		165.7 \pm 65.7 (21)	Requires HB-DS stock have about 9,500 walrus for a TAR of 166.

[†] The average reported harvest includes only years in which at least 75% of walrus-hunting communities reported their catches.

[‡] If $F_R=1.0$ for WJS and PS-LS.

Penny Strait-Lancaster Sound

In 2009, the PS-LS stock was estimated to number between 661 (CV = 2.08) and 727 (CV = 0.07) walrus, based on a count of 557 (Table 1). No satellite tag data were available for the 2009 surveys, so no specific adjustment factors could be applied. It is likely that, by using the maximum proportion of walrus hauled out (0.74), the actual number of animals is underestimated. The calculated TARs for this stock were 10-12 walrus (Table 2). Calculating TAR with $F_R = 1.0$, increased the TAR to 24. If it is assumed that all the walrus harvested by the communities of Arctic Bay, Pond Inlet and Resolute are from the PS-LS stock, the average landed harvest for 1985-2010 was six (Table 2).

Population-Level Removals

Although accurate partitioning of harvest to the three stocks was not possible, the combined TAR sum (27-52) exceeds the average reported harvests of 14 walrus for the high Arctic population in Canada (Table 2, Figure 2).

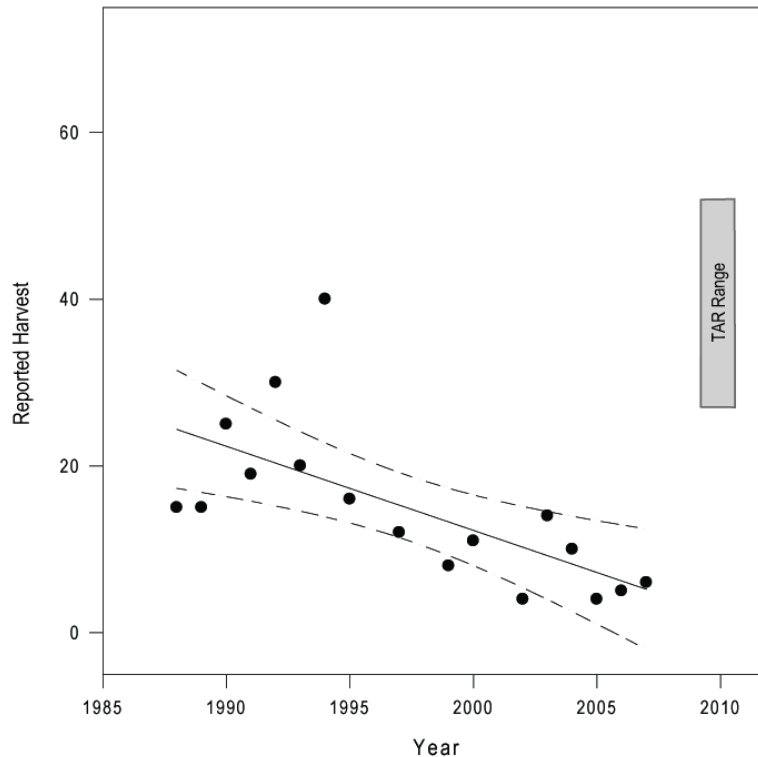


Figure 2. Reported annual harvests from high Arctic communities. Dashed lines are the upper and lower 95% confidence limits around the mean. The estimated TAR range is identified for comparison.

Central Arctic Population

Northern and Central Foxe Basin

Walrus of the N-FB and C-FB stocks are indistinguishable from the air so the survey results are combined and they refer collectively to N&C-FB. This combined stock was estimated to number 8,153 (CV = 0.07) walrus in 2011, based on a count of 6,043 (Table 1) (Stewart et al. 2013b), however assuming the maximum proportion of walrus hauled out (0.74) likely underestimates the actual number of animals present. The PBR calculation yielded TARs of 106-135 walrus which is less than the 25-year average reported harvest of about 185 walrus (Table 2), although it overlaps the lower 95% confidence limit (Figure 3). If it is assumed that data from 12 tags at a single haulout were representative of other haulouts in Foxe Basin, then there may have been 13,452 (CV = 0.43) walrus present and the TAR would be 166. It is not possible to test this assumption with current information. While the reported harvest on the N&C-FB stocks is above the TAR range, it is known that the survey was incomplete in coverage and likely produced an underestimate of abundance for this stock. However, the possible exchange between the N&C-FB and the spatially-larger HB-DS stocks needs further investigation.

Hudson Bay-Davis Strait

Only a small portion of the HB-DS stock range has been surveyed. The numbers of walrus summering in Hoare Bay, on southeast Baffin Island, in 2007 were estimated at between 1,420 (CV=0.07) and 2,533 (0.17). The latter estimate was adjusted using data from four tags deployed there. The PBR calculation for the Hoare Bay area yielded TARs of between 18 and 38 walrus (Table 2). If it is assumed that all the walrus harvested by the communities of Clyde River, Qikiqtarjuaq and Pangnirtung are from the southeast Baffin Island, the average landed

harvest for 1985-2010 was 22 (Table 2). When Iqaluit is added, the average landed harvest was about 36 (Table 2).

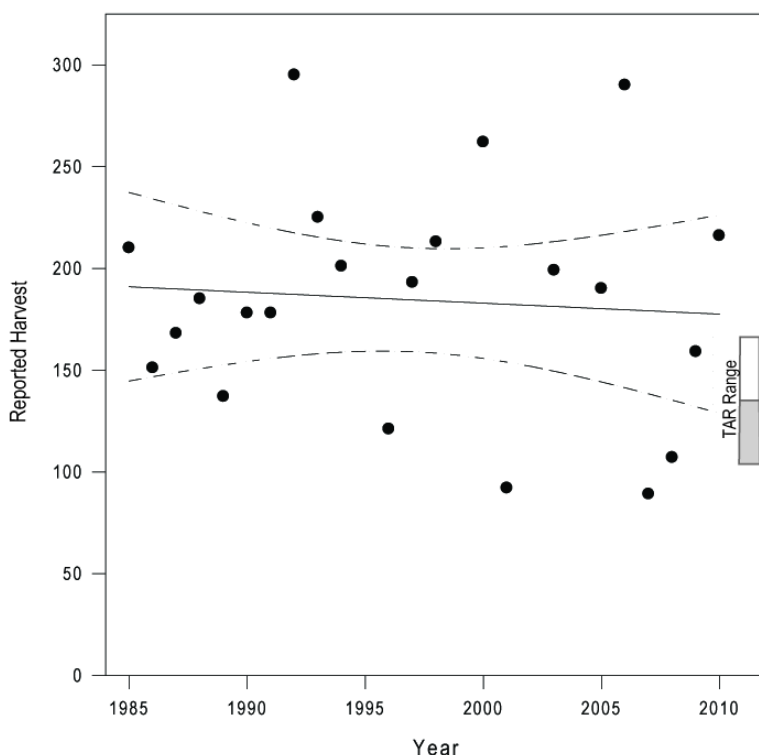


Figure 3. Reported annual harvests from Foxe Basin communities. Dashed lines are the upper and lower 95% confidence limits around the mean. The estimated TAR range is identified for comparison. The grey shaded box is based on surveys in 2010 and 2011. The unshaded box indicates the extended range if tag data were representative.

The annual reported harvest for the HB-DS stock averaged about 166 walrus (Table 2) with a statistically significant decline over the 25-year period (Figure 4). It has been suggested that there may be subunits or clinal variation within the HB-DS stock, but at the present time walrus harvests cannot be assigned to those undefined subunits. A population size of 9,500 walrus is required to support the current level of harvest from the HB-DS stock. This is not inconceivable given the large range of this stock but the entire stock would not be available to support local takes of this magnitude. More information is required on both stock structure and stock size.

Population-Level Removals

Survey coverage of the central Arctic population is largely incomplete, and there is evidence of substantial movement between Canada and Greenland. As such, the available abundance estimate is considered an underestimate for the entire population. There are insufficient data available at this time to improve its accuracy or estimate a population level TAR. The average reported harvest in Canada for the central Arctic population is 367 walrus (Table 2).

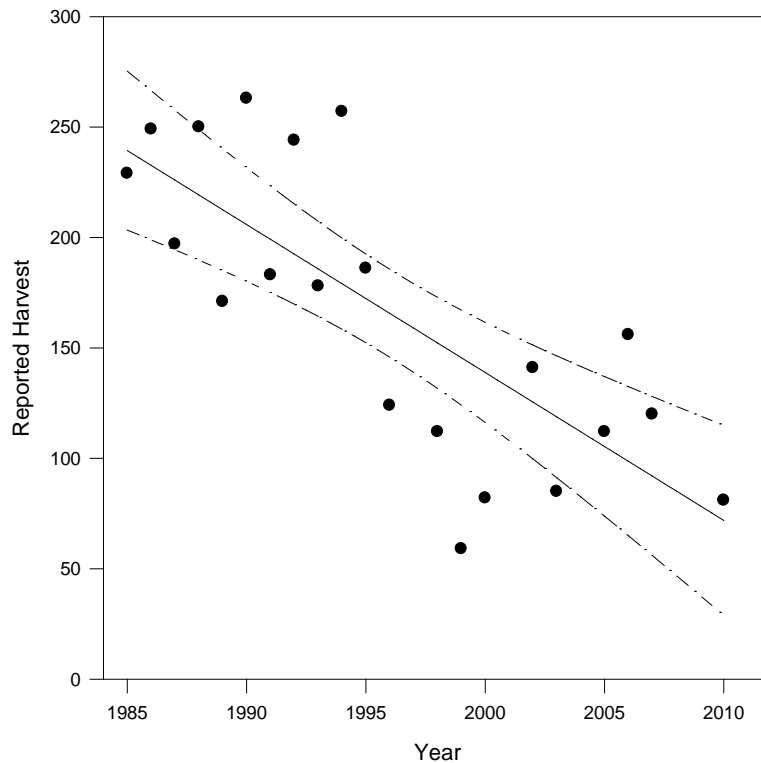


Figure 4. Reported annual harvests from Hudson Bay-Davis Strait communities. Dashed lines are the upper and lower 95% confidence limits around the mean.

Sources of Uncertainty

Walrus are widely distributed, the number of recurring haulout sites is uncertain, and the extent to which walrus move between haulout sites is not known. For these reasons, it is reasonable to assume that aerial survey coverage is incomplete. Comprehensive aerial surveys are also affected by annual variations in weather, ice conditions, and walrus distribution. Disturbance by boat activity at some haulout sites during the surveys caused animals to disperse, which limited the information available for abundance estimation, since displaced animals had the opportunity to travel to other haulout sites between surveys. Current estimates of total stock size are lacking for the HB-DS stock, and little information is available about walrus movements within Foxe Basin and between Foxe Basin and areas of HB-DS.

Information from satellite telemetry studies is used to adjust surface counts for diving/subsurface animals that are not counted during surveys. Many of the abundance estimates reported here relied on correction factors developed from previous studies, because it was not always possible to instrument local walrus at the time of the surveys. Even when concurrent telemetry information is available, the movements of individual walrus may not be representative of the whole stock. The behaviour of tagged walrus can be affected by the timing of their dispersal from the tagging sites and the possibility of coordinated haulout behaviour. Only estimates for Foxe Basin are based on more than 10 tags deployed in the area at the time of the surveys.

Information about levels of human-caused walrus mortality is limited or lacking. Reported harvest levels underestimate numbers of walrus removed, in part because they do not include struck-and-lost rates. Current hunting loss rates for different geographic areas, seasons and hunting methods in Canadian waters are not available. The BB stock and the HB-DS stock are

hunted in both Canada and Greenland but the current harvest levels from Greenland are not considered in this report. The relationship of hunted stocks between the two countries is uncertain. Other sources of human-caused mortality (e.g., ship strikes, net entanglements) have not been quantified.

There is no current information on walrus inhabiting S&E-HB to provide an abundance estimate or an understanding of their relationship to the other walrus stocks.

CONCLUSIONS AND ADVICE

There are no immediate concerns about the sustainability of the high Arctic walrus population, however a portion of this population is known to be shared with Greenland. A better understanding of walrus movement patterns and total hunting mortality is required to ascertain the sustainability of the cumulative harvest in both countries.

The central Arctic population as a whole lacks sufficient data for a meaningful population estimate and subsequent advice on TARs. In addition, this population is shared with Greenland, and scientific advice regarding overall sustainability requires more complete harvest information from both countries as well as better understanding of walrus movement patterns.

The PBR method allows estimation of the numbers of walrus that can be removed from the population annually as a result of all human activity without jeopardizing sustainability. Better information is required on current landed harvest levels and hunting losses. Levels of walrus mortality resulting from other human activities (e.g., net entanglements, ship strikes) are unknown yet need to be considered when determining sustainable harvest levels. The estimates of TARs presented cannot be partitioned among various sources of human-caused mortality. For all stocks, additional information about human-caused mortality is required before providing sustainable harvest advice.

Walrus distributions appear to be in a state of flux; changes in ice conditions and weather patterns appear to be altering movement patterns and habitat usage. This in turn may change stock and population dynamics in the future.

MANAGEMENT CONSIDERATIONS

The BB stock and HB-DS stock are shared with Greenland based on evidence from tagging data. Future discussion relating population estimates to harvests should include harvesters from Nunavut, Nunavik, and Greenland. Presently, Canada and Greenland have no shared management officially in place for these stocks. Increased sharing of harvest data between Canada and Greenland is advised, to determine which communities in both countries are hunting walrus and how many are taken from the shared stocks. In addition, continued satellite telemetry and genetics research is needed to determine the relationship of hunted stocks between the two countries. Lastly, other sources of human-caused mortality (e.g., ship strikes, net entanglements) need to be quantified to enable more precise sustainable harvest advice.

SOURCES OF INFORMATION

This Science Advisory Report is from the October 29 to November 2, 2012 annual meeting of the National Marine Mammal Peer Review Committee (NMMPRC). Additional publications from this process will be posted on the [Fisheries and Oceans Canada \(DFO\) Science Advisory Schedule](#) as they become available.

Stewart, R.E.A. 2008. Can we calculate total allowable harvests for walrus using potential biological removal? DFO Can. Sci. Adv. Sec. Res. Doc. 2008/025. iv + 13 p.

Stewart, R.E.A., and Hamilton, J.W. 2013. Estimating total allowable removals for walrus (*Odobenus rosmarus rosmarus*) in Nunavut using the potential biological removal approach. DFO Can. Sci. Adv. Sec. Res. Doc. 2013/031. iii + 12 p.

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History of the Walrus Working Groups

Type of Meeting	Year	Outcomes
Working Group (Foxe Basin)	2007	<ul style="list-style-type: none"> Established the Foxe Basin Walrus Working Group Agreement to develop an Integrated Fisheries Management Plan; Sharing of hunter perspectives; Mapping walrus areas based on traditional knowledge; Review of current science information
Working Group (Foxe Basin)	2009	<ul style="list-style-type: none"> Developed Terms of Reference; Discussed important management goals, and objectives; Science update
Working Group (Foxe Basin)	2010	<ul style="list-style-type: none"> Presentation by industry group on shipping; Science update; survey design
Working Group (Baffin Bay)	2010	<ul style="list-style-type: none"> Established the Baffin Bay Walrus Working Group; Agreement to develop an Integrated Fisheries Management Plan; Developed Terms of Reference Mapping walrus areas based on traditional knowledge Science review and update on surveys;
Working Group (Foxe Basin and Baffin Bay)	2010 (2 meetings)	<ul style="list-style-type: none"> Prioritized the Management Goals and Objectives; Reviewed and amended the walrus maps; Science review and update on surveys; Discussed the establishment of harvest levels (TAH and BNL) Discussed the NWMB process to approve the Management Plan
Community Consultations (Arctic Bay, Grise Fiord, Hall Beach, Igloolik, Pond Inlet, Resolute Bay)	2011	<ul style="list-style-type: none"> Agreement to move forward with the Management Plan as outlined; Reviewed maps; Update from DFO Science on surveys; Reviewed prioritized tables of walrus management objectives and goals; Main concerns identified.

Working Group (Foxe Basin and Baffin Bay)	2013	<ul style="list-style-type: none"> • Draft Management Plan presented and discussed; • Discussed proposed changes to the management regime for walrus; • Discussed recently published DFO Science; • HTO representatives believe the numbers in the science advice are too low; • Discussed struck and lost rates; • Combined the Foxe Basin and Baffin Bay Working Groups into one Working Group • Next steps: community consultations.
Community Consultations (Hall Beach, Igloolik, Pond Inlet)	2014	<p>Reviewed and discussed:</p> <ul style="list-style-type: none"> • The need to improve walrus management; • The draft Integrated Fisheries Management Plan; • The proposed walrus Management Units • The proposed changes to walrus management where there is science advice, in particular, the establishment of Total Allowable Harvest (TAH) levels and operational procedures to implement the proposed changes such as harvest reporting and walrus harvest tags; • Seek the views and comments from Inuit harvesters and community members on walrus management; • Relationship-building and continued engagement between DFO and Inuit communities.

Integrated Fishery Management Plan for Walrus in the Nunavut Settlement Area



Hunters & Trappers Organizations Consultations
May 28-June 4, 2014

1

Canada

 Fisheries and Oceans Canada Pêches et Océans Canada

Discussion Topics

- Why changes are needed to walrus co-management
- History of the Walrus Working Group
- Overview of the draft Walrus Management Plan
- Main changes being proposed
- Next steps

2

Canada

 Fisheries and Oceans Canada Pêches et Océans Canada

Why do we need changes to walrus management?

- Increased national and international interest in how the walrus fishery in Nunavut is managed.

3

Canada

Why do we need changes to walrus management?

- Convention on International Trade in Endangered Species (CITES):



4

Canada

Why do we need changes to walrus management?

- Convention on International Trade in Endangered Species (CITES) Parties will meet again in 2016.
 - Likely the USA will consider another proposal to uplist.
 - Working towards having a management plan in place by the next CITES meeting.

5

Canada

Why do we need changes to walrus management?

- Increased national and international interest in how the walrus fishery in Nunavut is managed.
- Demonstrate sustainable harvesting
- Strengthen walrus co-management consistent with the Nunavut Land Claims Agreement
- Incorporate best available scientific and Inuit knowledge.

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Canada

Why do we need changes to walrus management?

- Committee on the Status of Endangered Wildlife in Canada (COSEWIC):



7



Development of the IFMP

Walrus Working Groups were formed to lead the development of the IFMP. Members include:

- Regional Wildlife Organization (QWB): Co-Chair
- Local Hunters & Trappers Organizations (HTO): Arctic Bay, Grise Fiord, Hall Beach, Igloolik, Pond Inlet, Resolute Bay
- Nunavut Tunngavik Incorporated
- Nunavut Wildlife Management Board (participants)
- DFO- Co-Chair
- Other invited participants: Elders, Industry, QIA



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Walrus Working Groups

- The goal of the Working Group was to develop an IFMP that would identify the main objectives, management measures and requirements for a sustainable walrus fishery in the Nunavut Settlement Area.



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History of Walrus Management Plan Development

Type of Meeting	Year	Outcomes
Working Group (Foxe Basin)	2007	<ul style="list-style-type: none">Established the Foxe Basin Walrus Working GroupAgreement to develop an Integrated Fisheries Management Plan;Sharing of hunter perspectives;Mapping walrus areas based on traditional knowledge;Review of current science information
Working Group (Foxe Basin)	2009	<ul style="list-style-type: none">Developed Terms of Reference;Discussed important management goals, and objectives;Science update
Working Group (Foxe Basin)	2010	<ul style="list-style-type: none">Presentation by industry group on shipping;Science update; survey design

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Type of Meeting	Year	Outcomes
Working Group (Baffin Bay)	2010	<ul style="list-style-type: none">Established the Baffin Bay Walrus Working Group;Agreement to develop an Integrated Fisheries Management Plan;Developed Terms of ReferenceMapping walrus areas based on traditional knowledgeScience review and update on surveys;
Working Group (Foxe Basin and Baffin Bay)	2010 (2)	<ul style="list-style-type: none">Prioritized the Management Goals and Objectives;Reviewed and amended the walrus maps;Science review and update on surveys;Discussed the establishment of harvest levels (TAH and BNL)Discussed the NWMB process to approve the Management Plan

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Type of Meeting	Year	Outcomes
Community Consultations (Arctic Bay, Grise Fiord, Hall Beach, Igloolik, Pond Inlet, Resolute Bay)	2011	<ul style="list-style-type: none">Agreement to move forward with the Management Plan as outlined;Reviewed maps;Update from DFO Science on surveys;Reviewed prioritized tables of walrus management objectives and goals;Main concerns identified.

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Type of Meeting	Year	Outcome
Working Group (Foxe Basin and Baffin Bay)	2013	<ul style="list-style-type: none"> • Draft Management Plan presented and discussed; • Discussed proposed changes to the management regime for walrus; • Discussed recently published DFO Science; • HTO representatives believe the numbers in the science advice are too low; • Discussed struck and lost rates; • Combined the Foxe Basin and Baffin Bay Working Groups into one Working Group • Next steps: community consultations

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Integrated Fisheries Management Plan Layout

1. Overview of the Fishery
2. Stock Assessment, Science and Traditional Knowledge
3. Economic, Social and Cultural Importance
4. Management Issues
5. Objectives
6. Harvest Levels and Allocation
7. Management Measures
8. Shared Stewardship Arrangement
9. Compliance Plan
10. Performance Review

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Integrated Fisheries Management Plan Layout

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2. Stock Assessment, Science and Traditional Knowledge

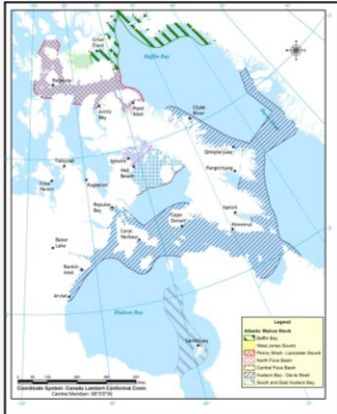
Two walrus populations in the Eastern Canadian Arctic:

1. High Arctic
2. Central Arctic;

Seven stocks

16





17

2. Stock Assessment, Science and Traditional Knowledge

Traditional Knowledge

- Knowledge has been shared through workshops, interviews, community consultations and questionnaires
- Inuit recognize different walrus stocks
- Has assisted with stock delineation

18



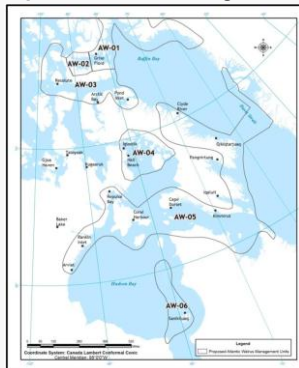
Recent Science Advice

- In November 2013, the Department published a Science Advisory Report that identified population abundance estimates and Total Allowable Removal levels for four (4) of the six (6) Management Units.

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Canada

Proposed Walrus Management Units



20

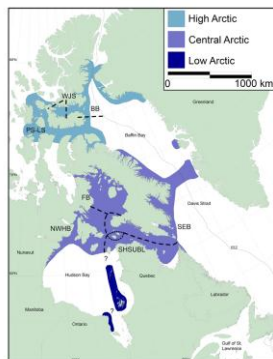


Figure 4. Approximate distribution of the Atlantic walrus populations in Canada. Walrus management units within these populations include: SEB = South and East Baffin, NWLB = North and West Baffin Bay, PS-LB = Frobisher Bay/Lancaster Sound, SEB = South and East Baffin, and SEB-LB = South and East Baffin/Lancaster Sound. Question marks (?) indicate uncertainty with respect to distribution and/or movements.

Stewart, B., and Higdon, J. (authors of draft COSEWIC Status Report on Atlantic Walrus in Canada – draft report in preparation 2014)

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Population	Stock	Management Unit	Nunavut Harvesting Communities	Nunavik Harvesting Communities	International Harvesting Communities
High Arctic	Baffin Bay	AW-01	Grise Fiord		Avanersuaq (Greenland)
	West Jones Sound	AW-02	Grise Fiord		
	Penny Strait-Lancaster Sound	AW-03	Resolute Bay Arctic Bay Pond Inlet		
Central Arctic	Northern Foxe Basin Central Foxe Basin	AW-04	Igloodik Hall Beach		
	Hudson Bay-Davis Strait	AW-05	Clyde River Qikiqtarjuaq Igloodik Pangnirtung Arviat Cape Dorset Chesterfield Inlet Coral Harbour Kimmirut Rankin Inlet Resolute Bay Whale Cove	Puvirnituq Akulivik Ivujivik Salluit Kangirsualujuaq Kuujuaq Tasiujaq Aupaluk Kangirsuk Quaqtaq Kangirsujuaq	Sisimiut (Greenland)
	South and East Hudson Bay	AW-06	Sanikiluaq	Inukjuak Kuujuaqarapik Umiujaq	22

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- When establishing Total Allowable Harvest (TAH) levels, the NWMB will consider the best available information: TEK, IQ and Science.
- DFO will be recommending sustainable harvest levels based on recent peer-reviewed Science advice.
- The advice will be in the form of Total Allowable Landed Catch (TALCs) recommendations.

TALCs

- Abundance estimates are produced from aerial surveys
- Potential Biological Removal is used to determine Total Allowable Landed Catch for each Management Unit
- Other known human losses are removed from the PBR before Total Allowable Landed Catch levels are recommended. This would include struck and lost rates.

Recommended Harvest Levels (Total Allowable Landed Catch)

Population	Stock(s)	Management Unit	Survey year	Abundance estimate highest adjusted	PBR/TAR highest adjusted	TALC Range of struck and lost rates		
						15%	23%	30%
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¹ Using a Recovery Factor of 1.0 in the PBR calculation.² Assuming the tagging data from a single haul-out was representative of other haul-outs in Foxe Basin.

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Landed Catch (Subsistence Harvests and Licensed Sport Hunts) of Walrus in Nunavut, 1997-2012

Landed Catch (Subsistence Harvests and Licensed Sport Hunts) of Walrus in Nunavut, 1997-2012

Community	Quota	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
	Sp	Sp	Sp	Sp	Sp	Sp	Sp	Sp	Sp	Sp	Sp
Grise Fiord	7	7	7	7	7	7	7	7	7	7	7
Total AW-01 & AW-02	7	7	7	7	7	7	7	7	7	7	7
Arctic Bay	10	10	10	10	10	10	10	10	10	10	10
Pond Inlet	1	1	1	1	1	1	1	1	1	1	1
Repulse Bay	6	6	6	6	6	6	6	6	6	6	6
Total AW-03	7	7	7	7	7	7	7	7	7	7	7
Hall Beach	1	1	1	1	1	1	1	1	1	1	1
Iqrook	14	14	14	14	14	14	14	14	14	14	14
Total AW-04	15	15	15	15	15	15	15	15	15	15	15

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Basic Needs Level (BNL)

- Agreement by the NWMB and the Minister of DFO that for walrus, narwhal and beluga, the BNL would equal the TAH.
- Once a TAH is established for a walrus stock or population, the BNL=TAH.

4. Management Issues

Improvements to some aspects of walrus management are needed to demonstrate sustainable harvesting:

- Updated abundance estimates
- Establishing sustainable harvest limits
- Ensuring harvests are within limits
- Improved harvest reporting
- Impacts from shipping, development and tourism
- Hunter Training
- Reduced hunting losses
- Sport hunt

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5. Objectives for the Fishery

- Long Term Objectives
 - To guide management of the fishery. What we want to achieve with our management regime
- Short Term Objectives
 - To address specific management issues over the next 3 to 5 years

(Table 3, Page 19 IFMP)

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6. Harvest Levels and Allocation

Outlines the harvest levels and allocations among users.

For Management Units without an established TAH:

- Current regulatory quotas identified in the Marine Mammal Regulations apply.

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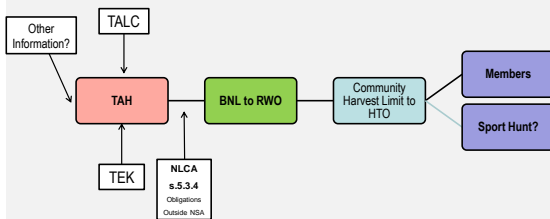
6. Harvest Levels and Allocation

For Management Units with an established TAH:

- Decision by NWMB and Minister of DFO that for walrus, the BNL will **equal** the TAH.
- The BNL will be allocated by the RWOs to the HTOs in the form of Community Harvest Limits.

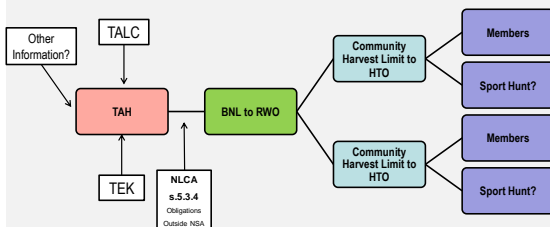
37

Walrus Harvest Allocation – Management Unit



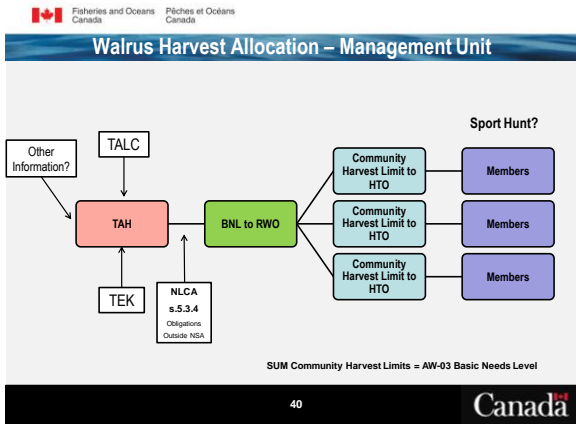
38

Walrus Harvest Allocation – Management Unit



SUM Community Harvest Limits = Basic Needs Level

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Sport Hunt

- The Walrus Working Group will be developing a TAH/BNL Walrus Sport Hunt policy that will outline the information DFO requires to issue a Marine Mammal Fishing Licence for walrus.

41

Canada

Walrus Harvest Tags

- Walrus Working Group discussed options for ensuring effective management/allocation of new harvest levels.
- A type of harvest tag was suggested.
- A Walrus Harvest Tag would be similar to that currently used for other species.
- A Walrus Harvest Tag would not be a licence to hunt and would be issued without fee or administrative charge.

42

Canada

Walrus Harvest Tags

- Walrus Harvest Tags would be provided to the RWO for each Management Unit.
- The RWO would allocate the Walrus Harvest Tags to the HTOs.
- The HTOs would allocate the Walrus Harvest Tags to their members.

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Walrus Harvest Tags

- Walrus hunters would pick up a Walrus Harvest Tag from the HTO office.
- Each Walrus Harvest Tag would provide for harvesting of one walrus (male or female or calf) in a specific Management Unit.
- Hunting could occur at any time during the year established by the HTO (e.g. Jan.1-Dec. 31 or April 1- March 31)

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WALRUS HARVEST TAG: AW-01-2014- 001	WALRUS HARVEST TAG: AW-01-2014- 001
Keep for personal record (MMR s. 17)	Return to HTO for validation
MANAGEMENT UNIT: AW-01	MANAGEMENT UNIT: AW-01
This Walrus Harvest Tag validates the harvest of one (1) walrus at any time between Jan 1, 2015 and December 31, 2015 for Management Unit AW-01.	This Walrus Harvest Tag validates the harvest of one (1) walrus at any time between Jan 1, 2015 and December 31, 2015 for Management Unit AW-01.
Sex: Male Female	Sex: Male Female
Age: Adult Juvenile Calf	Age: Adult Juvenile Calf
Struck & Sunk: No Yes Number:	Struck & Sunk: No Yes Number:
Date Harvested:	Date Harvested:
Location Harvested:	Location Harvested:
Hunter Name:	Hunter Name:
Hunter Signature:	Hunter Signature:

45



7. Management Measures

- Outlines the “controls” for the fishery to ensure sustainable harvesting, including conservation and ecosystem management measures.
- Many measures are already in place
- Additional measures and actions are needed to address management issues in the fishery

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Existing Management Measures

Management Measure	Applicable Legislation/ Regulation
Harvest Levels	<ul style="list-style-type: none"> • An Inuk may, without a licence, fish for food, social or ceremonial purposes for four (4) walrus in a year except where community quotas exist (Coral Harbour (60), Sanikiluaq (10), Arctic Bay (10) and Clyde River (20)). (Marine Mammal Regulations s. 6 and 26).
Monitoring and Reporting	<ul style="list-style-type: none"> • Harvest information must be reported (Marine Mammal Regulations s. 17; Fisheries Act s. 61; and the NLCA s. 5.7.43).
Licences	<ul style="list-style-type: none"> • The Minister may issue a marine mammal fishing licence (e.g. sport hunt) (Marine Mammal Regulations s. 4). • The Minister may issue a licence for certain activities such as for tagging (satellite tracking), live capture, biopsies (Marine Mammal Regulations s. 11).
Humane Harvesting	<ul style="list-style-type: none"> • Hunters shall only kill a walrus in a manner that is designed to kill it quickly (Marine Mammal Regulations s. 8). • No person shall disturb a walrus except when hunting for walrus (Marine Mammal Regulations s. 7).
Closing the Fishery	<ul style="list-style-type: none"> • When the quota is reached, the fishery will be closed (Marine Mammal Regulations s. 26)

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Existing Management Measures

Management Measure	Applicable Legislation/ Regulation
Reducing Loss Rates	<ul style="list-style-type: none"> • Hunters must have all necessary equipment on hand to retrieve a hunted walrus (Marine Mammal Regulations s. 9). • Hunters that kill or wound a walrus must make all reasonable efforts to retrieve it without delay, must not abandon or discard it, or waste any edible part of a walrus (Marine Mammal Regulations s. 10). • Hunters are to use a rifle or shotgun with the following restrictions: a) a rifle and non-full metal jacketed ammunition that produce a muzzle energy of not less than 1,500 foot pounds; or b) a shotgun and rifled slugs that produce a muzzle energy of not less than 1,500 foot pounds (Marine Mammal Regulations s. 25).
Sale and Transportation	<ul style="list-style-type: none"> • A Marine Mammal Transportation licence is required to transport walrus or walrus parts from one province to another (Marine Mammal Regulations s. 16). • A CITES Export Permit is required to transport walrus products outside of Canada.
Protection of walrus	<ul style="list-style-type: none"> • No person shall carry on any work that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery (Fisheries Act s. 35).

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Additional Proposed Management Measures

Management Measures	
Harvest Levels	<ol style="list-style-type: none"> 1. Establish TAH levels for four (4) of the six (6) Management Units. 2. Harvesting cannot exceed the sum of the community harvest limits or the TAH.

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When is Hunting Over?

1. Once the Community Harvest Limit has been reached, no further hunting is allowed, unless authorized by the RWO.
 - The RWO may approve the transfer of Walrus Harvest Tags between communities in the same Management Unit.
 - If approved, additional Walrus Harvest Tags will be provided to the HTO, by the RWO, to allow hunting of additional walrus.
2. When the sum of the Community Harvest Limits for a particular Management Unit is reached, no further hunting is allowed; **or**
3. When the Hunt Season is over

50



Additional Proposed Management Measures

Management Measures	
Walrus Harvest Tag	<ol style="list-style-type: none"> 3. Where a TAH has been set for a stock or population, establish a Walrus Harvest Tag system to improve the management, allocation, reporting and monitoring of walrus harvest levels.

51



Additional Proposed Management Measures

Management Measures	
Harvest Reporting	<ol style="list-style-type: none"> HTOs notify RWO and DFO when Community Harvest Limit is reached; RWOs notify DFO when the Sum of the Community Harvest Limits is reached in each Management Unit; HTOs to provide DFO with a completed summary of Walrus Harvest Tag returns from their members (monthly and at end of each hunt season); Reporting of all other walrus is required (NLCA s.5.7.43), such as walrus caught in fishing nets or those struck by ships.

52



Additional Proposed Management Measures

Management Measures	
OTHERS?	<ol style="list-style-type: none"> HTOs develop Community Hunting Plans and rules to regulate walrus harvesting practices and techniques among their members (sport hunt, struck and lost, youth training).

53



Next Steps

- Community Meeting: comments on the proposed changes to walrus management and the IFMP.
- Send out written community consultation booklets to other communities in the NSA.
- Consolidate comments and revise IFMP.
- Review by Walrus Working Group
- NLCA process

54





Integrated Fishery Management Plan for Walrus in the Nunavut Settlement Area



What do the proposed changes mean for hunters?

1

Canada

 Fisheries and Oceans Canada / Pêches et Océans Canada

Outline

The purpose of this session is to discuss:

- Development of the Walrus Management Plan
- Management measures:
 - Existing
 - New
- What do the proposed changes mean for hunters?

2

Canada

 Fisheries and Oceans Canada / Pêches et Océans Canada

Why do we need changes to walrus management?

- Increased national and international interest in how the walrus fishery in Nunavut is managed.
- Demonstrate sustainable harvesting.
- Strengthen walrus co-management consistent with NLCA wildlife harvesting and management provisions
- Incorporate best available scientific and Inuit knowledge.

3

Canada

Development of the Management Plan

Walrus Working Groups were formed to lead the development of the Management Plan. Members include:

- Regional Wildlife Organization (QWB): Co-Chair
- Local Hunters & Trappers Organizations (HTO): Arctic Bay, Grise Fiord, Hall Beach, Igloolik, Pond Inlet, Resolute Bay
- Nunavut Tunngavik Incorporated
- Nunavut Wildlife Management Board (participants)
- DFO: Co-Chair
- Other invited participants: Elders, Industry, QIA



4



Walrus Working Groups

- The goal of the Working Group is to develop a Management Plan that identifies the main objectives, management measures and requirements for a sustainable walrus fishery in the Nunavut Settlement Area.



5




Management Measures for Sustainable Harvesting:

New Measures

6







Fisheries and Oceans
Canada

Pêches et Océans
Canada

Proposed Management Units and Harvest Levels

7





Fisheries and Oceans
Canada


Pêches et Océans
Canada

Establish Boundaries for walrus management units.

Management units based on:

- population and stock delineations
- Traditional knowledge on past and current distributions

8



9

Recommended Harvest Levels (Total Allowable Landed Catch)

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	Hudson Bay-Davis Strait	AW-05	-	-	-	-	-	-
Unknown	South and East Hudson Bay	AW-06	-	-	-	-	-	-

¹ Using a Recovery Factor of 1.0 in the PBR calculation.² Assuming the tagging data from a single haul-out was representative of other haul-outs in Foxe Basin.

15

Recommended Harvest Levels (Total Allowable Landed Catch)

Population	Stock(s)	Management Unit	Survey year	Abundance estimate highest adjusted	PBR/ TAR highest adjusted	TALC Range of struck and lost rates		
						15%	23%	30%
High Arctic	Baffin Bay	AW-01	2009	1,251	11	9	8	8
	West Jones Sound	AW-02	2008	503	8 (17)	7 (14) ¹	6 (13) ¹	6 (12) ¹
	Penny Strait-Lancaster Sound	AW-03	2009	727	12 (24) ¹	10 (20) ¹	9 (18) ¹	8 (16) ¹
Central Arctic	Northern Foxe Basin	AW-04	2011	10, 379 (13, 452)	135 (166) ²	115 (141) ²	104 (128) ²	95 (116) ²
	Central Foxe Basin							
	Hudson Bay-Davis Strait	AW-05	-	-	-	-	-	-
Unknown	South and East Hudson Bay	AW-06	-	-	-	-	-	-

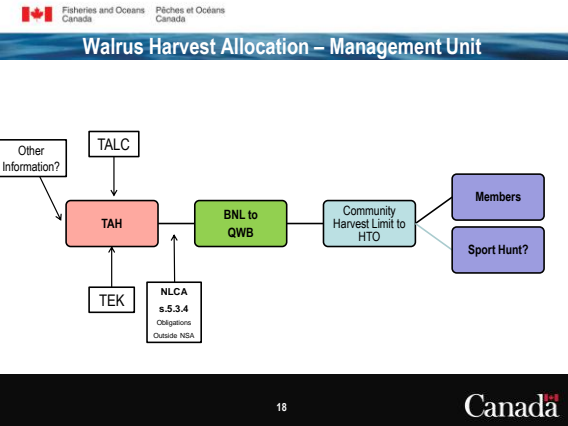
¹ Using a Recovery Factor of 1.0 in the PBR calculation.
² Assuming the tagging data from a single haul-out was representative of other haul-outs in Foxe Basin.

16

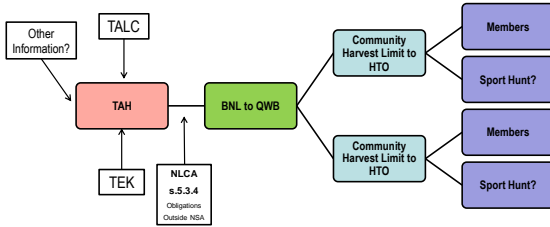
Landed Catch (Subsistence Harvests and Licensed Sport Hunts) of Walrus in Nunavut, 1997-2012

Landed Catch (Subsistence Harvests and Licensed Sport Hunts) of Walrus in Nunavut, 1997-2012																						
Community	Quota		2003/04		2004/05		2005/06		2006/07		2007/08		2008/09		2009/10		2010/11		2011/12		2012/13	
	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb	Sp	Sb
Groise Fjord	-	-	7	-	0	-	2	-	0	-	4	NR	-	7	-	2	-	4	-	NR	-	NR
Total AW-01 & AW-02	-	-	7	-	0	-	2	-	0	-	4	NR	-	7	-	2	-	4	-	NR	-	NR
Arctic Bay	-	-	0	-	1	-	NR	-	0	-	1	-	NR	-	0	-	1	-	0	-	0	-
Pond Inlet	-	-	1	-	0	-	1	-	0	-	0	-	NR	-	NR	-	3	-	0	-	0	-
Rosolute Bay	-	-	6	-	4	-	1	-	0	-	1	-	NR	-	2	-	3	-	0	-	2	-
Total AW-03	-	-	7	-	5	-	2	-	0	-	2	-	0	-	2	-	7	-	2	-	2	-
Hall Beach	-	-	1	87	NR	100	3	75	4	100	-	36	-	33	NR	70	0	36	2	33	1	107
Iqloolik	-	-	14	87	10	NR	12	100	2	104	NR	54	11	74	-	89	-	141	6	95	4	107
Total AW-04	-	-	15	174	10	NR	12	100	2	104	NR	54	11	74	-	89	-	141	6	95	4	107

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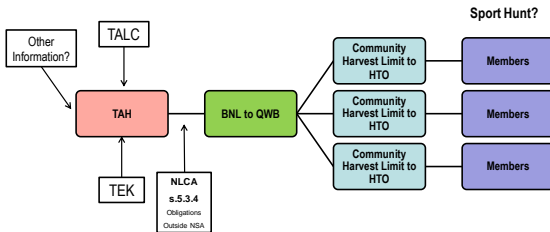
Walrus Harvest Allocation – Management Unit



SUM Community Harvest Limits = Basic Needs Level

19

Walrus Harvest Allocation – Management Unit



SUM Community Harvest Limits = AW-03 Basic Needs Level

20

Walrus Harvest Tags

- Walrus Working Group discussed options for ensuring effective management/allocation of new harvest levels.
- A type of harvest tag was suggested.
- A Walrus Harvest Tag would be similar to that currently used for other species.
- A Walrus Harvest Tag would not be a licence to hunt and would be issued without fee or administrative charge.

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Walrus Harvest Tags

- Walrus Harvest Tags would be provided to the RWO for each Management Unit.
- The RWO would allocate the Walrus Harvest Tags to the HTOs.
- The HTOs would allocate the Walrus Harvest Tags to their members.

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Walrus Harvest Tags

- Walrus hunters would pick up a Walrus Harvest Tag from the HTO office.
- Each Walrus Harvest Tag would provide for harvesting of one walrus (male or female or calf) in a specific Management Unit.
- Hunting could occur at any time during the year established by the HTO (e.g. Jan.1-Dec. 31 or April 1- March 31)

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WALRUS HARVEST TAG: AW-01-2014-001	WALRUS HARVEST TAG: AW-01-2014-001
Keep for personal record (MMR s. 17)	Return to HTO for validation
MANAGEMENT UNIT: AW-01	MANAGEMENT UNIT: AW-01
This Walrus Harvest Tag validates the harvest of one (1) walrus at any time between Jan 1, 2015 and December 31, 2015 for Management Unit AW-01.	This Walrus Harvest Tag validates the harvest of one (1) walrus at any time between Jan 1, 2015 and December 31, 2015 for Management Unit AW-01.
Sex: Male Female	Sex: Male Female
Age: Adult Juvenile Calf	Age: Adult Juvenile Calf
Struck & Sunk: No Yes Number:	Struck & Sunk: No Yes Number:
Date Harvested:	Date Harvested:
Location Harvested:	Location Harvested:
Hunter Name:	Hunter Name:
Hunter Signature:	Hunter Signature:

24



Closures

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When is Hunting Over?

1. Once the Community Harvest Limit has been reached, no further hunting is allowed, unless authorized by the RWO.
 - The RWO may approve the transfer of Walrus Harvest Tags between communities in the same Management Unit.
 - If approved, additional Walrus Harvest Tags will be provided to the HTO, by the RWO, to allow hunting of additional walrus.
2. When the sum of the Community Harvest Limits for a particular Management Unit is reached, no further hunting is allowed; **or**
3. When the Hunt Season is over

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Harvest Reporting

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Harvest Reporting

Once a walrus is harvested the following procedures would be followed:

- Walrus Harvest Tag is filled out by the hunter
- Hunter returns the appropriate portion of the Walrus Harvest Tag to the HTO office.
- Hunter keeps the appropriate portion of the Walrus Harvest Tag.
- Other information required?

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HTO Harvest Reporting

- The HTO records all harvest information from hunters and:
 - Provides DFO with a completed summary of Walrus Harvest Tag Returns (monthly and at the end of each hunt season)
 - Advises the RWO and DFO when the Community Harvest Limit is reached
 - Returns all used and unused Walrus Harvest Tags to DFO for verification and reconciliation once the hunt season is over.

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Information Booklets

DFO will develop an information booklet annually which will identify:

- Community Harvest Limits
- Walrus Harvest Tag requirements
- Management Measures
- Harvest Reporting procedures
- Export procedures
- HTOs should send out these information booklets to all walrus hunters prior to the hunting season and with Walrus Harvest Tag allocations.


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Fisheries and Oceans
Canada

Pêches et Océans
Canada




Walrus Hunting in the Nunavut
Settlement Area

DRAFT

EW-01

31

Canada



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Comments or questions?

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Canada



Fisheries and Oceans
Canada
Pêches et Océans
Canada

Central and Arctic Region

Région du centre et de l'arctique

501 University Crescent
Winnipeg, MB R3T 2N6

501, croissant University
Winnipeg (Manitoba) MB R3T 2N6

Tel: (204) 983-5000
Fax: (204) 983-5192

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To:

James Qillaq Qikiqtaaluk Wildlife Board Chairperson	Ross Tatty Kivalliq Wildlife Board Chairperson	Attima Hadlari Kitikmeot Regional Wildlife Board Chairperson
Jacobie Iqalukjuak Nangmoutaq HTO Chairperson	Qabaroak Qatsiya Aiviq HTO Chairperson	Imona Kokseak Nattivak HTO Chairperson
Barney Aggark Aqigiq HTO Chairperson	Joshua Kango Amaruq HTO Chairperson	Noah Kadlak Aiviit HTO Chairperson
Noah Mosesee Pangnirtung HTO Chairperson	Joe Arlooktoo Mayukalik HTO Chairperson	Alex Ishalook Arviat HTO Chairperson
Ross Tatty Aqiggiag HTO Chairperson	Michel Akkuardjuk Arviq HTO Chairperson	Stanley Adjuk Issatik HTO Chairperson
Eli Kavik Sanikiluaq HTO Chairperson		

June 2, 2014

Subject: Public Consultations Regarding an Integrated Fisheries Management Plan for Atlantic Walrus in the Nunavut Settlement Area

The Department of Fisheries & Oceans Canada (DFO) and Co-Management Organizations have been developing an Integrated Fisheries Management Plan (or Management Plan) for Atlantic Walrus in the Nunavut Settlement Area (NSA). A consultation process is currently being undertaken to obtain the views of Inuit, co-management organizations, interested stakeholders and the general public on the draft Management Plan.

Walrus Working Groups, made up of members for local Hunter & Trapper Organizations, Regional Wildlife Organizations, Nunavut Tunngavik Incorporated, the Nunavut Wildlife Management Board and DFO, were established for the High Arctic and Foxe Basin to initiate the development of the Management Plan. The Management Plan will identify the main objectives and requirements for the Atlantic walrus fishery in the Nunavut Settlement Area, as well as the management measures that will be used to achieve these objectives. It will provide a common understanding for the sustainable management of walrus stocks.

The Management Plan will propose some changes to management for four walrus stocks where there is new science advice. In-person consultations are planned for May 28-June 4, 2014 for the communities that harvest walrus from these stocks.

Currently, there are no changes being proposed to walrus management for the South and East Hudson Bay or the Hudson Bay-Davis Strait stocks, as there is no recent science advice. Therefore, a written consultation process is underway to give other Nunavut walrus harvesting communities, stakeholders and the general public opportunity to provide their views and comments to inform the final draft Management Plan and the proposed changes to the walrus management regime.

Consultation process for Nunavut Walrus Harvesting Communities

Public consultations regarding the draft Integrated Fisheries Management Plan for Atlantic walrus in the Nunavut Settlement Area will have both an in-person and a written component as identified in Table 1.

Table 1. Consultation process for the draft Integrated Fisheries Management Plan for Atlantic Walrus in the Nunavut Settlement Area.

Population	Stock	Proposed Management Unit	Nunavut Walrus Harvesting Communities	Type of Consultation Process and Date of Meeting
High Arctic	Baffin Bay	AW-01	Grise Fiord	In-person; May 31, 2014
	West Jones Sound	AW-02	Grise Fiord	In-person; May 31, 2014
	Penny Strait-Lancaster Sound	AW-03	Resolute Bay	In-person; May 30, 2014
			Arctic Bay	In-person; May 29, 2014
			Pond Inlet	In-person; May 28, 2014
Central Arctic	Northern Foxe Basin	AW-04	Igloolik	In-person; June 2, 2014
	Central Foxe Basin		Hall Beach	In-person; June 3, 2014
	Hudson Bay-Davis Strait	AW-05	Clyde River Qikiqtarjuaq Iqaluit Pangnirtung Arviat Cape Dorset Chesterfield Inlet Coral Harbour Kimmirut Rankin Inlet Resolute Bay Whale Cove	Written
Unknown	South and East Hudson Bay	AW-06	Sanikiluaq	Written

Through this letter, we invite your community members to participate in this consultation process. Please provide your written responses (see below for email, fax and address options), in English and Inuktitut, by no later than 5:00pm (DST) on July 15, 2014. Please clearly mark your comments with “Walrus Consultations 2014” so that we are sure to receive them.

If you have questions, comments, or require further information, please contact me directly.

Allison McPhee
Fisheries & Oceans Canada,
Central & Arctic Region
501 University Crescent,
Winnipeg, MB R3T 2N6
Email: WalrusConsultations2014@dfo-mpo.gc.ca
Fax: +1 (204) 983-3073

Attachment: Public Consultation Workbook for the Proposed Integrated Fishery Management Plan for Atlantic Walrus in the Nunavut Settlement Area)

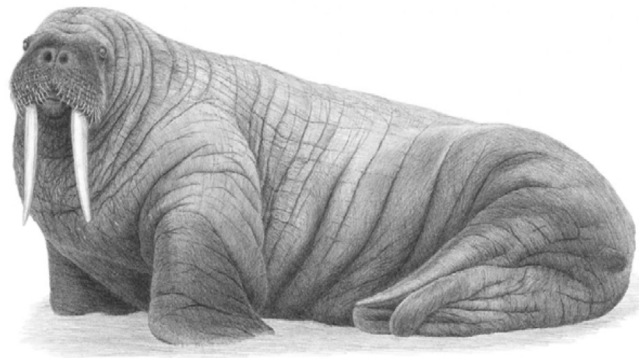
c.c.: Jim Noble, Chief Executive Officer, Nunavut Wildlife Management Board
Peter Kydd, Director of Wildlife Management, Nunavut Wildlife Management Board
Gabriel Nirlungayuk, Director of Wildlife, Nunavut Tunngavik Inc.
Scott Gilbert, A/ Regional Director Fisheries Management, C & P, Department of Fisheries and Oceans Canada
Larry Dow, Director Northern Operations, Department of Fisheries and Oceans Canada

Public Consultation Workbook

For the draft Integrated Fishery Management Plan for
Atlantic Walrus (*Odobenus rosmarus rosmarus*)
in the Nunavut Settlement Area

Public Consultation Workbook

Draft Integrated Fishery Management Plan for Atlantic Walrus (*Odobenus rosmarus rosmarus*) in the Nunavut Settlement Area



This workbook contains a summary of the draft Integrated Fishery Management Plan for Atlantic walrus in the Nunavut Settlement Area (Management Plan). The full version is available from your local Hunter and Trapper Organization (HTO) office or from the Fisheries and Oceans Canada (DFO) representative listed below.

We welcome your comments on the draft Management Plan, and any other comments you may have about the management of Atlantic walrus.

Please record your comments and return them to Fisheries & Oceans Canada by **July 15, 2014 at the latest** using one of these three options:

- a) Email: WalrusConsultations2014@dfo-mpo.gc.ca
- b) Fax: Allison McPhee, DFO Central and Arctic Region: (204) 983-3073
- c) Regular Mail:

Attention: Allison McPhee
Fisheries & Oceans Canada,
Central & Arctic Region
501 University Crescent,
Winnipeg, MB R3T 2N6

Thank you for your interest!

What is an Integrated Fishery Management Plan (IFMP, or Management Plan)?

A Management Plan for any stock or group of stocks provides information that is important for the management of a fishery. It contains a description of what we know - scientific and local knowledge - about the fishery. It describes the most important management objectives and management measures that are needed or agreed to. The intention of putting the information about a fishery in this one document is to have a common understanding of the “basic rules” for the sustainable management of a particular fishery.

A Management Plan is implemented in a manner consistent with obligations identified in settled Land Claims Agreements. In the event that a Management Plan provision is inconsistent with obligations under a Land Claims Agreement, the provisions of the Agreement will prevail to the extent of the inconsistency.

Within the Nunavut Settlement Area (NSA), Management Plans are developed *collaboratively* by an advisory committee composed of representatives from DFO and co-management organizations with fisheries management responsibilities. The advisory committee recommends management objectives and management measures for a given fishery. The advisory committee also considers feedback received during public consultation with resource users and other stakeholders.

A Management Plan is not legally binding. A Management Plan can be modified as needed and does not prevent the DFO Minister's powers granted in the Fisheries Act.

Why is DFO consulting with Nunavut communities and the public?

DFO is providing an opportunity for the public to provide their views and comments on the draft Atlantic Walrus Integrated Fisheries Management Plan in the NSA, and the proposed changes to the walrus management regime. Public consultations will have both an in-person and a written component.

- Changes to the current walrus management regime are being proposed for five walrus stocks where there is new science advice. In-person consultations are planned for May 28-June 4, 2014 with the communities that harvest walrus from these stocks.
 - There are no changes currently being proposed to the walrus management regime for the South and East Hudson Bay or the Hudson Bay-Davis Strait stocks, as there is no recent science advice. Therefore, a written consultation process is underway for the remaining walrus harvesting communities in Nunavut, along with other interested stakeholders and the general public.
-

Summary of the draft Integrated Fishery Management Plan for Atlantic walrus (*Odobenus rosmarus rosmarus*) in the Nunavut Settlement Area

1 Overview

The following is a summary of what is contained in the draft Integrated Fisheries Management Plan (Management Plan) for Atlantic walrus (*Odobenus rosmarus rosmarus*) stocks in the Nunavut Settlement Area (NSA).

This Management Plan was developed and will be implemented by the Government of Canada and co-management organizations through an adaptive co-management process. Working Groups comprised of Hunter and Trapper Organizations (HTO), Regional Wildlife Organizations (RWO), Nunavut Tunngavik Incorporated (NTI), the Nunavut Wildlife management Board (NWMB) and the Department of Fisheries & Oceans (DFO) were formed to develop the Management Plan.

This Plan reflects the conservation principles described in the Nunavut Land Claims Agreements, namely:

- (a) the maintenance of the natural balance of ecological systems within the Nunavut Settlement Area,
- (b) the protection of wildlife habitat,
- (c) the maintenance of vital, healthy, wildlife populations capable of sustaining harvesting needs,
- (d) the restoration and revitalization of depleted populations of wildlife and wildlife habitat.

This Management Plan is to be approved by the Minister of Fisheries and Oceans and the Nunavut Wildlife Management Board (pursuant to NLCA 5.2.34).

1.1 History

Walrus have been harvested by Arctic indigenous peoples for thousands of years, providing valuable products such as blubber, bones, tusks and meat. The commercial harvesting of walrus in the 19th and 20th centuries resulted in a rapid decrease of walrus across their Arctic ranges, including the extirpation of the Northwest Atlantic population. By 1928, commercial harvesting of walrus was banned in Canada by the Walrus Protection Regulations.

Walrus are a key species in the Arctic marine food web, are of high economic, social and cultural importance for Inuit, and are iconic to Canadians since they are so easily identified with the Arctic environment.

1.2 Type of Fishery and Participants

Atlantic walrus are primarily harvested by Inuit, and are valuable as a traditional source of food and other products. The hunt provides an opportunity to maintain cultural traditions and for experienced hunters to pass on their skills and knowledge to younger generations. Walrus products provide a secondary source of income for hunters as the ivory is either sold raw, or carved into fine art pieces such as jewelry or sculptures. Some communities engage in a small-scale sport hunt conducted by non-Inuit hunters.

1.3 Governance

The walrus fishery in the NSA is co-managed by DFO, the NWMB, RWOs and HTOs, in accordance with the Nunavut Land Claims Agreement (NLCA or Agreement), and the *Fisheries Act* and its regulations. The regulatory provisions that were in place upon ratification of the Agreement in 1993 have continued to be the basis for the regulation and management of the walrus fishery in Nunavut.

Specific provisions in the *Marine Mammal Regulations* (MMR) include, among others, requirements for hunters to hunt a walrus in a manner that is designed to kill it quickly, to make reasonable efforts to retrieve a killed or wounded walrus without delay and to have all necessary equipment on hand to retrieve it. Abandoning, discarding or wasting edible parts of walrus is prohibited. Inuit may harvest up to four (4) walrus in a year (MMR 6(1) (c)) unless there is a community quota. Annual quotas have been set for the communities of Coral Harbour (60), Sanikiluaq (10), Arctic Bay (10) and Clyde River (20). A Fishery Officer will notify the HTOs when the quota has been reached.

Marine Mammal Fishing Licences are issued for walrus sport hunts (MMR s.4) provided there is support from the local HTO and annual approval from the NWMB based on its Interim NWMB Sport Hunt Policy. Individuals hunting under the authority of a licence must travel with local guides approved by the HTO.

2 Stock Assessment, Science and Traditional Knowledge

The walrus is Canada's largest member of the seal family. It is a large animal with limbs that have developed into flippers, upper canine teeth that develop into long tusks (ivory) at about 2 years of age and a moustache made of quill-like whiskers. Walrus can live to 40 years of age, and are considered to be long-lived animals. As walrus have a delayed sexual maturation, fairly low reproductive rates and specialized habitat requirements, they are vulnerable to over-hunting and sensitive to environmental changes (COSEWIC 2006).

Traditional Ecological Knowledge (TEK) of walrus throughout Canada's Arctic is extensive. Each community has hunters and elders that have knowledge in areas of distribution, seasonality, migration, birthing areas and haulout sites. Inuit have observed changes with respect to impacts from climate change, past and present disturbances and development/exploration. TEK is used with scientific data and observation to contribute to management decisions, as well as to identify information gaps, areas of uncertainty, and to set research priorities.

Management Units:

There are seven stocks of walrus in Canada (Figure 1). These divisions are based in scientific information and traditional knowledge. It is proposed to manage the seven Atlantic walrus stocks based on the Management Units identified in Figure 2 and listed below:

- AW-01: Baffin Bay stock (shared with Greenland);
- AW-02: West Jones Sound stock;
- AW-03: Penny Strait-Lancaster Sound stock;
- AW-04: (northern and central Foxe Basin stocks);
- AW-05: Hudson Bay- Davis Strait stock (shared with Nunavik and Greenland);
- AW-06: South and East Hudson Bay stock (shared with Nunavik).

We encourage you to provide your views and/or comments on the proposed Management Units and their boundaries.

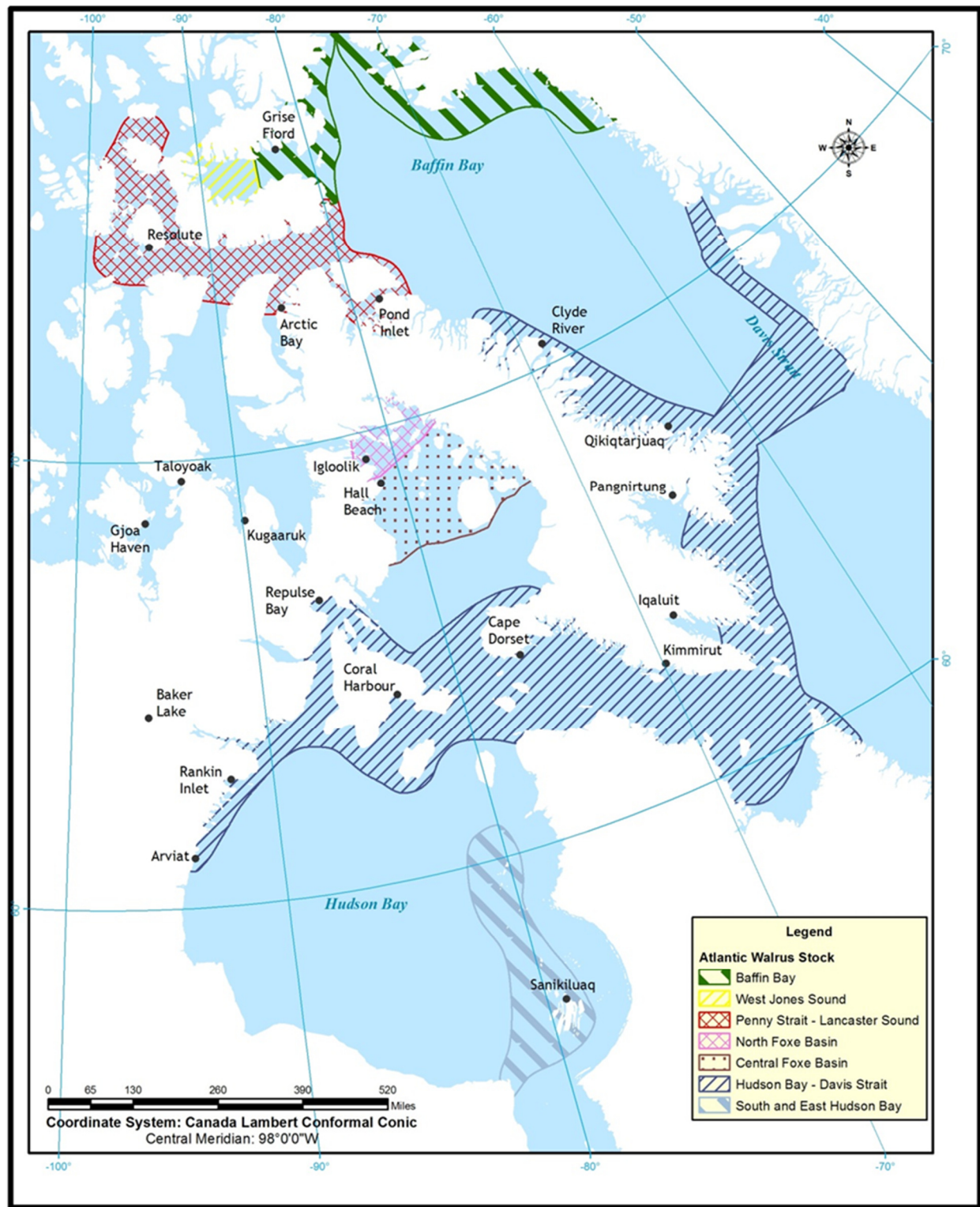


Figure 1: Map illustrating the distribution of walrus stocks in Canada. (Stewart et al. 2013)

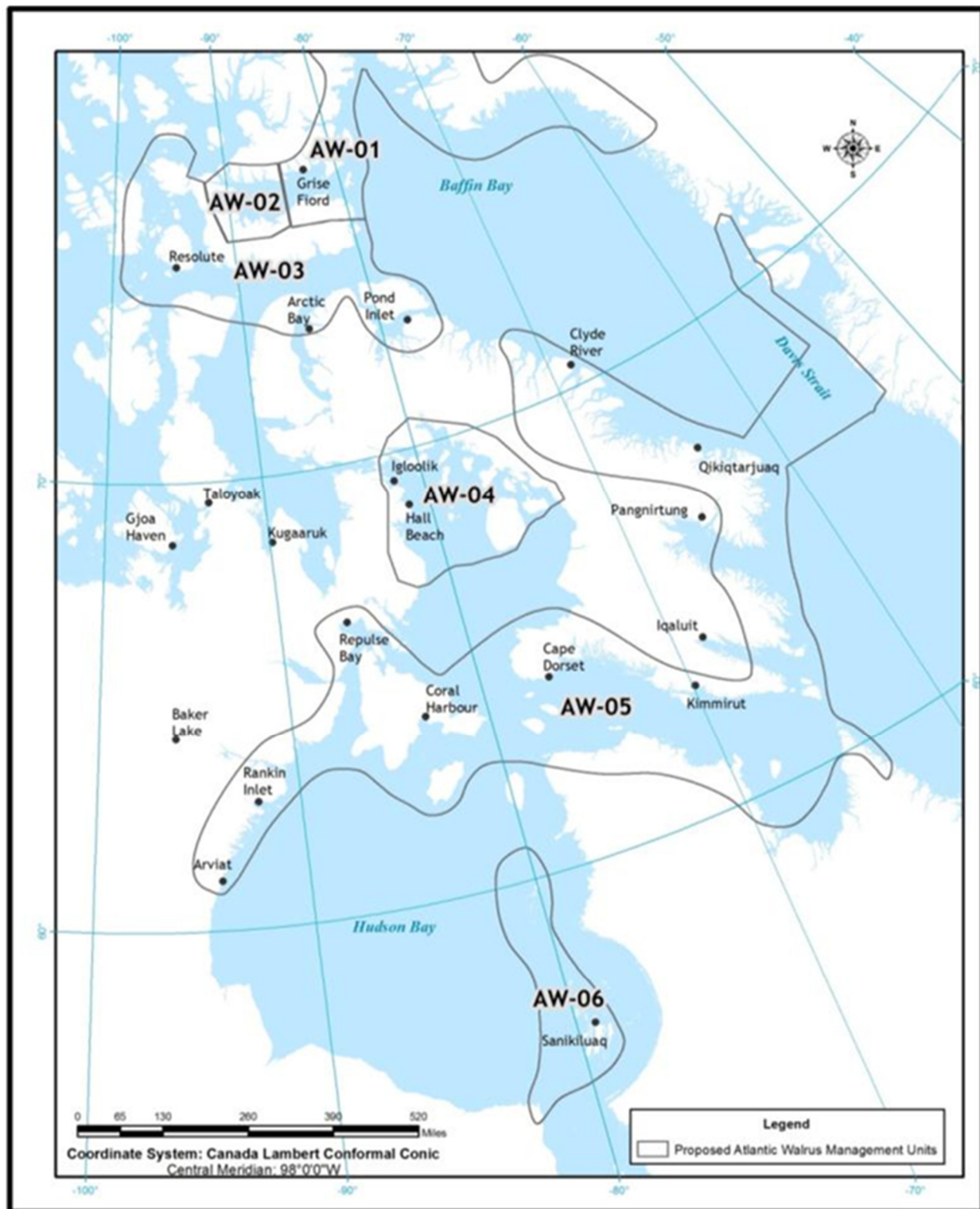


Figure 2: Proposed Management Units, for discussion at community consultations.

Sustainable Harvest Levels:

DFO Science has adopted the Potential Biological Removal (PBR) method to provide sustainable harvest advice for data-poor stocks or populations. Estimates of PBR were calculated for walrus stocks in the NSA based on abundance estimates¹. PBR represents the total number of animals that can be removed from all human sources without depleting the stock or population. This would include the total number of walrus that can be removed from direct harvest, those animals struck but lost, as well as walrus removed from other human sources, such as ship strikes or net entanglements.

The NWMB has the sole authority to establish, modify or remove levels of total allowable harvest (TAH) in the NSA. In establishing TAH, the NWMB will consider the best available information (Traditional Ecological Knowledge, Inuit Qaujimajatuqangit, and Science). DFO's sustainable harvest level recommendations are provided as Total Allowable Landed Catch (TALC) values, where known human-caused removals (e.g. struck and lost, ship strikes, net entanglements) are removed from the PBR estimate. To date, most human-caused walrus mortalities result from hunt landings and hunt losses, although this may change with increased northern development. Struck and lost rates are incomplete for Atlantic walrus stocks, but have been estimated to range from 15-32%.

DFO's sustainable harvest advice for each proposed management unit is presented as Total Allowable Landed Catch (TALC) recommendations (Table 1). Losses are not reported for any walrus stock in Canada and therefore a range of struck and lost rates based on a low, moderate and high level of risk have been applied for discussion and consultation purposes (Born et. al 1997, DFO 2002, DFO 2012, NAMMCO 2006, Stewart 2008):

- High risk: 15% struck and lost rate;
- Moderate risk: 23% struck and lost;
- Low risk: 30% struck and lost rate.

Please provide your views on the TALC levels identified in table 1 on the next page, including the struck and lost rates.

3 Social, Cultural and Economic Importance of the Fishery

For centuries, walrus have been used by Inuit as a traditional food source and for supplying important materials for day to day living. Walrus meat is more commonly used for dog food but it is also eaten in raw, cooked or fermented (*igunak*) forms by Inuit.

Historically, walrus products provided materials for numerous necessities required for arctic living such as walrus bones used for carvings, tent poles, and walking sticks, tusks/ ivory used to construct harpoons, toggles, handles, and handicrafts, sinews used for sewing thread, and skin for tents and ropes.

The walrus sport hunt in some communities can provide a major source of cash income through the hiring of local guides and sport hunters purchasing various goods and services (food, crafts, and

¹ http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2013/2013_034-eng.html

accommodations). Sport hunters are permitted to keep the tusks, baculum and head of the walrus, but the meat remains within the community for community use.

Table 1. Total Allowable Landed Catch (TALC) estimates for select Atlantic walrus stocks in the Nunavut Settlement Area.

Population	Stock(s)	Management Unit	Survey year	Abundance estimate highest adjusted	PBR/TAR highest adjusted	TALC Range of struck and lost rates		
						15%	23%	30%
High Arctic	Baffin Bay	AW-01	2009	1,251	11	9	8	8
	West Jones Sound	AW-02	2008	503	8 (17)	7 (14) ¹	6 (13) ¹	6 (12) ¹
	Penny Strait-Lancaster Sound	AW-03	2009	727	12 (24) ¹	10 (20) ¹	9 (18) ¹	8 (16) ¹
Central Arctic	Northern Foxe Basin	AW-04	2011	10,379 (13,452)	135 (166) ²	115 (141) ²	104 (128) ²	95 (116) ²
	Central Foxe Basin							
	Hudson Bay-Davis Strait	AW-05	-	-	-	-	-	-
Unknown	South and East Hudson Bay	AW-06	-	-	-	-	-	-

^[1] Using a Recovery Factor of 1.0 in the PBR calculation.

^[2] Assuming the tagging data from a single haul-out was representative of other haul-outs in Foxe Basin.

4 Management Issues

4.1 Fisheries Issues

During the development of the Management Plan, the Walrus Working Group and communities involved in the in-person consultations identified a number of management issues that should be addressed in order to be able to demonstrate a sustainable walrus fishery. These management issues are described below.

Abundance Estimates

Recent estimates are available for four of the six walrus stocks or stock units. Abundance estimates are still required for the Hudson Bay-Davis Strait stock and the South and East Hudson Bay stock.

Sustainable Harvest Levels

There is growing national and international pressure to demonstrate that walrus are being harvested at sustainable levels. Establishing sustainable harvest levels is an important step.

Struck and Lost Rates

Accurate struck and lost rates are important for understanding the impacts of hunting and to maximize sustainable harvest levels. Struck and lost rates vary or are incomplete in the NSA. Because there is uncertainty on struck and lost, there has to be extra precaution given during the establishment of sustainable harvest levels.

Hunter Training/ Reducing Loss Rates

Training for harvesters and youth has been identified as an important component for the sustainable management of the walrus fishery. HTOs may develop plans or best management practices that set out practical measures for community hunters to reduce the number of struck and lost walrus while harvesting.

Monitoring and Reporting

Once a TAH/BNL is established for walrus, a method to control removals will be required to ensure walrus harvesting remains within regulated harvest levels.

Timely, accurate reporting of walrus harvesting is essential. Without complete and accurate estimates of local harvesting activity, co-managers must exercise caution when recommending harvest limits so that vital, healthy walrus populations/stocks that are capable of sustaining harvesting needs of Inuit can be maintained.

Sport Hunt

There is a need for HTOs to develop by-laws or guidelines for communities that pursue sport hunt opportunities that would identify the community rules or best management practices for the sport hunt.

Ship Traffic/Development/Tourism

There are a number of potential impacts and threats to walrus and walrus habitat resulting from increased development and shipping activities. These could include increased oil spills, ship strikes, disruption of migration, avoidance of ecologically or biologically important areas (birthing, mating or feeding areas), noise disturbance and the introduction of alien or invasive species through activities such as ballast water exchange. Tourism is increasing in the Arctic and concern with increased disturbance to important walrus areas (e.g. haul-outs) has been expressed.

4.2 Oceans and Habitat Considerations

Ecologically and Biologically Significant Areas (EBSAs) in the Eastern Arctic were identified in 2011 by DFO. Experts from Canadian federal departments, academics, Inuit organizations and various environmental non-government organizations having expertise in a number of different areas were involved. EBSAs are intended to identify areas that have high ecological or biological significance and are useful in assisting with management decisions.

4.3 National and International Issues

Food Safety

Outbreaks of trichinosis have been reported in Nunavut over the years, most commonly from consuming meat that has been infected with a worm called *Trichinella nativa*, which lives inside the bodies of walrus and some other birds and mammals. The Government of Nunavut's department of health has responsibilities around food safety within the Nunavut Settlement Area and have established programs to test walrus meat for the parasite that causes the disease. Harvesters are asked to contact their HTO or a

Government of Nunavut Environmental Health Officer for additional information on the Nunavut Trichinosis Prevention Program.

COSEWIC and SARA

COSEWIC (Committee on the Status of Endangered Wildlife in Canada) is a committee of experts that assesses and designates wildlife species that may be in some danger of disappearing from Canada. COSEWIC uses a process based on science, Aboriginal Traditional Knowledge and community knowledge to assess the risk of extinction for wildlife species. Wildlife species that have been designated at risk by COSEWIC may then qualify for legal protection and recovery or management under the Species at Risk Act (SARA). Atlantic walrus is currently being reassessed by COSEWIC. Results are likely to be released in April 2015.

CITES

The Atlantic walrus is listed on Appendix III of the Convention on International Trade in Endangered Species (CITES). As such, anyone wishing to export walrus parts or derivatives from Canada must obtain an export permit from the Canadian CITES administration. A non-detriment finding is not required for species on Appendix III of CITES.

Shared Stocks: Nunavut

Harvesting of the Hudson Bay-Davis Strait and South and East Hudson Bay stocks occurs in both the Nunavut Settlement Area and Nunavik Marine Region. There are no population abundance estimates for these two stocks, so the existing regulatory regime and quotas identified in the *Fisheries Act* and the Marine Mammal Regulations, and provisions in the Nunavut Land Claims Agreement and the Nunavik Inuit Land Claims Agreement continue to apply.

Shared Stocks: Greenland

Some stocks of Atlantic walrus inhabit both Canadian and Greenland waters, and are subject to harvesting in each jurisdiction. It will become important to address any inter-jurisdictional sharing issues.

5 Objectives

The Walrus Working Group identified a number of long and short-term objectives to address the management issues identified in section 4.1. For a complete list of the short and long-term objectives, please refer to section 5 of the draft Management Plan.

6 Access and Allocation

6.1 Harvest Levels and Allocation

Current regulatory quotas are identified in the Marine Mammal Regulations. The NWMB is in the process of establishing TAH and BNL for each stock or population of walrus.

- I. For Management Units or areas within the NSA without an established TAH:
Current regulatory quotas identified in the Marine Mammal Regulations apply.
 - II. For Management Units or areas within the NSA with an established TAH:
There is an agreement by the NWMB and the Minister of DFO that where a TAH is established for a walrus stock or population, the Basic Needs Level (BNL) will equal the TAH. Therefore, for those stocks of walrus where a TAH has been established, the RWOs and HTOs will be
-

responsible for allocating and regulating the harvest level among their members as set out in the Nunavut Land Claims Agreement.

Walrus Harvest Tag:

Monitoring of harvest levels is very important to make good management decisions, to maximize harvests and to ensure sustainable harvest levels are not exceeded. For those stocks subject to a TAH/BNL, a Walrus Harvest Tag system is being proposed to assist with the allocation, monitoring, and reporting of walrus harvests and the collection of important walrus harvesting information.

- The Walrus Harvest Tag would not be a licence to hunt and would be issued without fee or administrative charge.
- A Walrus Harvest Tag would be proof of allocation to a share of one walrus from the walrus TAH for a particular management unit.
- The proposed Walrus Harvest Tag will help with the collection and reporting of important hunt specific information, such as: the date and location of the hunt, information about struck and lost, and sex and age data.
- Implementing a Walrus Harvest Tag system would assist RWOs and HTOs in the allocation and enforcement of community basic needs levels among members.

A Walrus Harvest Tag system is being proposed for stocks subject to a TAH/BNL.

7 Management Measures for the Duration of the Plan

A number of management measures have been in place for this fishery for some time, and these are listed in the Management Plan. The following changes are being proposed to address gaps in the management of this fishery.

Management Measures	
Harvest Levels	<ul style="list-style-type: none"> • Establish TAH levels for four (4) of the six (6) Management Units. • Harvesting cannot exceed the sum of the community harvest limits or the TAH.
Walrus Harvest Tag	<ul style="list-style-type: none"> • Where a TAH has been set for a stock or population, establish a Walrus Harvest Tag system to improve the management, allocation, reporting and monitoring of walrus harvest levels.
Harvest Reporting	<ul style="list-style-type: none"> • HTOs notify RWO and DFO when Community Harvest Limit is reached; • RWOs notify DFO when the Sum of the Community Harvest Limits is reached in each Management Unit; • HTOs to provide DFO with a completed summary of Walrus Harvest Tag returns from their members (monthly and at end of each hunt season); • Reporting of all other walrus is required (NLCA s.5.7.43), such as walrus caught in fishing nets or those struck by ships.
OTHERS?	<ul style="list-style-type: none"> • HTOs develop Community Hunting Plans and rules to regulate walrus harvesting practices and techniques among their members (sport hunt, struck and lost, youth training).

8 Shared Stewardship Arrangements

The Atlantic walrus Management Plan was initiated by the Foxe Basin Walrus Working Group in 2007 and the High Arctic-Baffin Bay Walrus Working Group in 2009. Participation on the Working Groups includes representatives from each of the HTOs, the Qikiqtaaluk Wildlife Board (co-chair), NTI and DFO (co-chair). Staff from the NWMB has attended Working Group meetings when possible. The Working Groups invite subject-matter experts to provide additional information in the development of the Management Plan as required. This has included representatives from the mining industry and community elders.

9 Compliance Plan

9.1 Compliance Strategy

Conservation and Protection collaborates with internal and external partners to identify and prioritize compliance issues and works with resource managers to address them.

Fishery Officers focus efforts on:

- Atlantic walrus conservation
- compliance with legislation, including sport hunt licence conditions
- tusk traceability / illegal trade of ivory tusks
- licence inspections

Operational Activities include:

- Monitoring of Atlantic walrus sport hunts
- Education of user groups and stakeholders
- Inspections of Atlantic walrus products from harvest to export
- Cross reference of harvest data with trade data
- Liaison with Nunavut Conservation Officers and other territorial or provincial law enforcement agencies.

10 Performance Review

This Atlantic walrus IFMP was developed through an extensive consultative process including the NWMB, NTI, RWOs, HTOs, walrus hunters and community members. Recommendations to improve management of the walrus fishery will be developed to meet the long term objectives of maintaining a sustainable Walrus fishery.

11 References:

- Born, E.W., Dietz, R., Heide-Jorgensen, M. P., and Knutsen, L. O. 1997.** *Historical and present distribution, abundance, and exploitation of Atlantic walruses (Odobenus rosmarus rosmarus) in eastern Greenland. Meddelelser om Gronland, Bioscience 46: 1-73 p.*
- DFO. 2002.** *Atlantic walrus. DFO Science Stock Status Report E5-17,18, 19, 20 (2002).*
- NAMMCO. 2006.** *Scientific Committee Working Group on the status of walruses in the North Atlantic and adjacent seas, Final Report. Copenhagen, 11-14 January 2005. 27 p.*
- Stewart, R.E.A. 2008.** *Can we calculate total allowable harvests for walrus using Potential Biological Removal? DFO Can Sci. Advis. Secr. Res. Doc. 2008/025.*
-

- DFO. 2012.** *Proceedings of the Pre-COSEWIC Peer Review Meeting for Atlantic walrus (Odobenus rosmarus rosmarus). February 28 to March 1, 2012. CSAS Proceedings series 2012/041.*
- Stewart, R.E.A., Hamilton, J.W., and Dunn, J.B. 2013.** *Results of Foxe Basin walrus (Odobenus rosmarus rosmarus) surveys: 2010-2011. DFO Can. Sci. Advis. Sec. Res. Doc. 2013/017. iv + 12 p. (Erratum: February 2014)*

**TO PROVIDE COMMENTS ABOUT THIS DOCUMENT, THE DRAFT INTEGRATED
FISHERY MANAGEMENT PLAN FOR ATLANTIC WALRUS, OR ABOUT THE
MANAGEMENT OF ATLANTIC WALRUS IN CANADA IN GENERAL...**

Please record your comments and return them to Fisheries & Oceans Canada by **July 15, 2014** at the latest using one of these three options:

- a) Email: WalrusConsultations2014@dfo-mpo.gc.ca
- b) Fax: Allison McPhee, DFO Central and Arctic Region: (204) 983-3073
- c) Regular Mail:

Walrus Consultations 2014
Attention: Allison McPhee
Fisheries & Oceans Canada,
Central & Arctic Region
501 University Crescent,
Winnipeg, MB R3T 2N6

Thank you for your interest!

Please share your views about the proposed IFMP for Atlantic walrus.

You can send us comments by email, letter, fax
or you can answer these questions and send them to us:

1 Where do you live (province/territory/community)?

2 What best describes your relationship to walrus?

- | | | |
|-----------------------------|-----|----|
| a. Hunter | Yes | No |
| b. Elder | Yes | No |
| c. Youth | Yes | No |
| d. HTO Member | Yes | No |
| e. Other (please describe): | | |

3 Which of the walrus IFMP Consultation Documents did you read?

- | | | |
|---|-----|----|
| a. The summary of the IFMP | Yes | No |
| b. The complete draft IFMP document | Yes | No |
| c. Both the summary and the complete draft IFMP | Yes | No |

4 Having read the consultation material provided, do you have any specific comments about:

- The proposed management unit boundaries?
- The struck and lost rates?
- The recommended harvest levels (i.e. Total Allowable Landed Catch values)?
- The proposed Walrus Harvest Tag system?

- 5 If this draft IFMP is approved, how do you think it would impact you and your community, your culture and your environment?

[illegible]

- 6 Do you have any comments about the proposed IFMP for Atlantic Walrus or information about walrus that occur near your community? If so, please record them below (attach additional pages if needed).

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Your name and contact information (optional):

**TO PROVIDE COMMENTS ABOUT THIS DOCUMENT, THE DRAFT INTEGRATED FISHERY
MANAGEMENT PLAN FOR ATLANTIC WALRUS, OR ABOUT THE MANAGEMENT OF ATLANTIC
WALRUS IN CANADA IN GENERAL...**

Please record your comments and return them to Fisheries & Oceans Canada by **July 15, 2014** at the latest using one of these three options:

- a) Email: WalrusConsultations2014@dfo-mpo.gc.ca
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- c) Regular Mail:

Walrus Consultations 2014
Attention: Allison McPhee
Fisheries & Oceans Canada,
Central & Arctic Region
501 University Crescent,
Winnipeg, MB R3T 2N6

Thank you for your interest!

Atlantic Walrus Draft Integrated Fisheries Management Plan
DRAFT Consultation Summary- Foxe Basin stocks (Proposed Management Unit AW-04)

Consultations in Foxe Basin on the draft Management Plan took place on May 29-30, 2014 in the communities Igloolik and Hall Beach. Two meetings were held in each community; one with the HTO Board, and the other open to the public. The purpose of the consultations was to determine support for the draft management plan in general terms, to obtain specific local knowledge to help in the refining of the draft management plan to include HTO and community input and concerns. These specifics included potential management unit boundaries, sustainable harvest levels for the establishment of a TAH, harvest reporting and monitoring procedures, and the use of walrus harvest tags.

All meetings lasted over two hours and were well attended. In general terms, there appears to be support for a management plan for walrus, but there was no support for establishing a TAH based on Total Allowable Landed Catch (TALC) recommendations from recent DFO science advice. The participants expressed a great deal of interest in further involvement and will work with their local HTO Walrus Working Group member, their Regional Wildlife Organization and Nunavut Tunngavik Incorporated during this process.

Igloolik, May 29, 2014

HTO Meeting- afternoon; Public meeting- evening

Walrus Working Group representatives: Joshua Kango (QWB; co-chair); Allison McPhee (DFO; co-chair); Paul Irngaut (NTI); Danica Crystal (NWMB); Richard Moore (DFO, Iqaluit); Lianne Postma (DFO, Science).

At both meetings, PowerPoint presentations were given (attached) that introduces the management plan, the history of the initiative, the purpose of the plan and an overview of the content. This was followed by discussion and feedback.

Specific discussions took place around the following issues:

1. Support for a Walrus Management Plan?

- Discussed the growing national and international attention being given to how Canada manages the walrus fishery and some pressures (e.g. CITES and possible request to up-list walrus, COSEWIC).
- Need to further harmonize walrus management with the NLCA (section 5.6.25 and increased role for HTOs/RWOs in walrus management).
- General agreement that a management plan is a good idea.

2. DFO Science advice:

- Concerns that the survey coverage was not complete and that not all animals were counted. Do not agree with the population abundance estimates.
- The Total Allowable Removal estimates are too low.
- There should be more local involvement in the surveys.
- Surveys need to be completed in all seasons before a TAH is established.
- Walrus population size is stable and healthy.

3. Sustainable Harvest Level Recommendations/ TAH:

- The community does not support the Total Allowable Landed Catch (TALC) recommended by DFO. The numbers presented are too low. This will cause hunters to harvest quicker every year (with more wastage), it will cause fighting between communities that harvest from the same Management Unit, hunters won't accurately report their harvests and they won't report struck and lost.
- The numbers presented will not provide for the current local demand.
- The current quota of 4 walrus/ Inuk/ year should remain.
- If a TAH is established, it should be based on how many walrus are needed by the community and set by the community.
- The TALC is too low to support the growing inter-settlement trade in walrus meat.
- Concerned that if a low TAH is established, it will stay at that level even if there is new information to support a higher TAH.
- Some concerns were raised about the amount of walrus meat that is currently wasted. It was suggested that some hunters are harvesting more for the ivory than the meat.

4. Are the proposed Management Unit boundaries correct?

- The boundary for AW-04 should be further south.
- There was no consensus on where exactly the boundary line should be. Need to ensure TEK is included.

5. What is an appropriate Struck and Lost Rate to use?

- Community has the most experienced walrus hunters and therefore the struck and lost rates are very low.
- More struck and lost by ship traffic.
- Need to improve training to reduce s/l and teach the younger generation.

6. Harvest Reporting and the proposed Walrus Harvest Tag
 - Agreement that having accurate reporting is important.
 - No agreement or disagreement with using a Walrus Harvest Tag (not a licence) to assist with the allocation, monitoring and reporting of harvests if a TAH is established. No other options/ideas were suggested.
7. Harvest Allocation and monitoring
 - There were no concerns raised with the allocation of the TAH/BNL within a Management Unit (following the NLCA);
 - There were no concerns raised with the walrus fishery being closed once the TAH/harvest level is reached;
 - No concerns were raised with developing Information Booklets for hunters.
8. Other issues
 - Community monitoring would be problematic as reporting on other hunters is not encouraged.
 - Should use community hunt rules.
 - Rules for tourism, ship traffic and exploration need to be put in place.
 - It is important to include IQ and traditional knowledge in all aspects of management and decision-making.
 - Further consideration needs to be given to how the TAH could be carried over between years if the harvest level is not reached in one year.

Hall Beach, May 30, 2014

HTO Meeting- afternoon; Public meeting- evening

Walrus Working Group representatives: Joshua Kango (QWB; co-chair); Allison McPhee (DFO; co-chair); Paul Irngaut (NTI); Danica Crystal (NWMB); Richard Moore (DFO, Iqaluit); Lianne Postma (DFO, Science).

At both meetings, PowerPoint presentations were given (attached) that introduces the management plan, the history of the initiative, the purpose of the plan and an overview of the content. This was followed by discussion and feedback.

Specific discussions took place around the following issues:

1. Support for a Walrus Management Plan?

- Discussed the growing national and international attention being given to how Canada manages the walrus fishery and some pressures (e.g. CITES and possible request to up-list walrus, COSEWIC).
- Need to further harmonize walrus management with the NLCA (section 5.6.25 and increased role for HTOs/RWOs in walrus management).
- Agreement that a management plan is a good idea.
- The Management Plan needs to include the most current and up-to-date information.

2. DFO Science advice:

- The survey coverage was not complete and not all animals were counted. Do not agree with the population abundance estimates.
- The Total Allowable Removal estimates are too low.
- There should be more local involvement in the surveys.
- Surveys need to be completed in all seasons and over a number of years before a TAH is established. Surveys are not recent enough.
- Walrus population size is stable and healthy.
- Studies on other habitat interactions and migrations between stocks should be completed.

3. Sustainable Harvest Level Recommendations/ TAH:

- The community does not support the Total Allowable Landed Catch (TALC) recommended by DFO. The numbers presented are too low. This will encourage hunters to not report, or falsely report. It will also cause fighting between communities that harvest from the same Management Unit.
- The numbers presented will not provide for the current local demand.
- The current quota of 4 walrus/Inuk/year should remain.
- If a TAH is established, it should be based on how many walrus are needed by the community and set by the community.
- The sport hunt allocation should be a separate allocation.
- The TALC is too low to support the growing inter-settlement trade in walrus meat.
- Concerned that if a TAH is established too low, it will stay at that level even if there is new information to support a higher TAH.
- Suggested that a TAH allocation for Hall Beach of 75-100 could be a reasonable number.
- The enforcement of the TAH will be important.

4. Are the proposed Management Unit boundaries correct?
 - The boundary for AW-04 should be further south.
 - There was no consensus on where exactly the boundary line should be. Need to ensure TEK is included.
5. What is an appropriate Struck and Lost Rate to use?
 - Experienced walrus hunters in Hall Beach and therefore the struck and lost rates are very low.
 - The struck and lost rate should be set after a TAH is established.
 - Need to improve training to reduce s/l and teach the younger generation.
6. Harvest Reporting and the proposed Walrus Harvest Tag
 - Agreement that having accurate reporting is important.
 - No agreement or disagreement with using a Walrus Harvest Tag (not a licence) to assist with the allocation, monitoring and reporting of harvests if a TAH is established. No other options were suggested. A tagging system works for other species and it could work for walrus.
7. Harvest Allocation and monitoring
 - There were no concerns raised with the allocation of the TAH/BNL within a Management Unit and/or between HTOs (following the NLCA);
 - There were no concerns raised with the walrus fishery being closed once the TAH/harvest level is reached;
 - No concerns were raised with developing Information Booklets for hunters.
8. Other issues
 - It is important to include IQ and traditional knowledge in all aspects of management and decision-making.
 - Inuit and local communities need more involvement in the surveys: the design, conducting the survey, reviewing results, analyzing the results, and making decisions based on those results.

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: X

Decision:

Issue: Type of Hearing Required to Establish a Management Unit Boundary and a Total Allowable Harvest for the Foxe Basin Atlantic Walrus Stock

Background:

Co-management organizations in Nunavut, through established Walrus Working Groups, have been developing an Integrated Fisheries Management Plan (IFMP) for Atlantic walrus in the Nunavut Settlement Area (NSA). The purpose of the IFMP is to identify the main objectives and requirements for the Atlantic walrus fishery in the NSA, as well as the management measures that will be used to achieve these objectives. For some stocks where there is science advice, new harvest levels will be recommended as well as non-quota limitations. Recognizing the Nunavut Wildlife Management Board's (NWMB) authority under the Nunavut Land Claims Agreement (NLCA), these requests for decision will be submitted to the NWMB. At the November 2013 Walrus Working Group meeting, the goal of having a final IFMP in place by January 2016 was established (see Appendix 1).

In November 2013, the Department of Fisheries & Oceans Canada (DFO) published the Scientific Advisory Report, "Estimates of Abundance and Total Allowable Removals for Atlantic Walrus in the Canadian Arctic" (SAR 2013/034¹), which included estimates of abundance and Total Allowable Removals for four (4) of the six (6) walrus stocks in the eastern Canadian Arctic. Based on the recent science advice and the reported landed catch data, there may be concerns with the sustainability of current harvest levels for the proposed Foxe Basin management unit. The NWMB considered the scientific information in making its 2014 Walrus Sport Hunt decisions, but determined that as a proposal for decision to establish new harvest levels had not been submitted, the existing regulatory quotas were in effect and all 2014 walrus sport hunt applications were approved².

In her letter accepting the NWMB's decision, the Minister of DFO advised the NWMB that given the concerns identified in the Science Advisory Report, the Department would be providing the NWMB with a proposal for decision to establish a Total Allowable Harvest level for the proposed Foxe Basin management unit in advance of the 2015 walrus sport hunt season to provide for the conservation of walrus in the Foxe Basin management unit³.

¹ http://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2013/2013_034-eng.html

² February 17, 2014, NWMB letter to the Minister of DFO: Re: the Nunavut Wildlife Management Board's decisions on walrus sport hunt applications for 2014.

³ April 16, 2014, Minister of DFO's letter to the NWMB on the 2014 walrus sport hunt.

Therefore, the timeline for developing the proposed walrus management system in the Nunavut Settlement Area has been modified as follows:

- July 1, 2014, submit to the NWMB a *Proposal for Decision* to: (1) establish a Management Unit for the Foxe Basin stocks of Atlantic walrus; and (2) establish a Total Allowable Harvest for the Foxe Basin Management Unit.

The remaining decisions will be submitted to the NWMB as identified in the revised process timeline included in Appendix 2.

The Walrus Working Group has been advised of the revisions to the process and timeline. This will be discussed with the communities and Hunters & Trappers Organizations during the community consultations taking place May 28-June 4, 2014 to review and discuss the draft Atlantic Walrus IFMP and the proposed new management measures.

It is requested that the NWMB provide DFO with an indication of the type of hearing that would be required to establish a Management Unit Boundary and a Total Allowable Harvest for the Foxe Basin Atlantic Walrus Stock (e.g. written, electronic or in-person), and if possible, an indication of when that hearing could be held.

Submitted by:

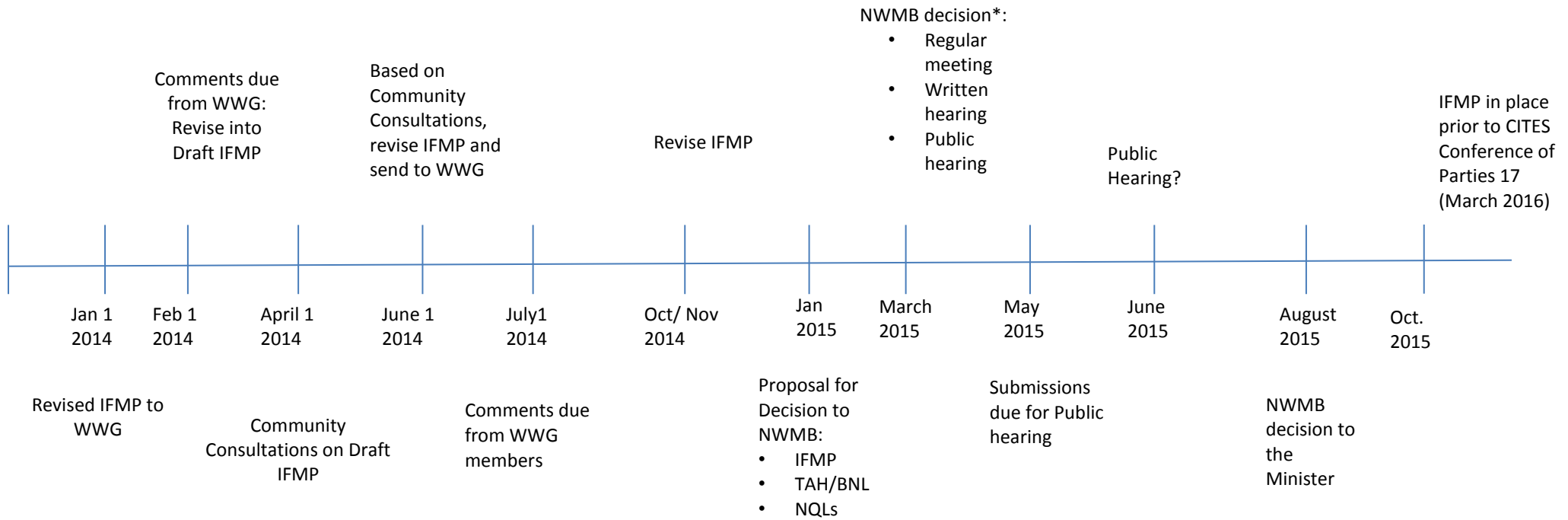
Resource Management
Central and Arctic Region
Fisheries and Oceans Canada

Date: May 05, 2014

Attachments:

- 1) Appendix 1: November 2013 Timeline
- 2) Appendix 2: Draft Revised Timeline: Key Goals/Benchmarks for Developing the Proposed Walrus Management System in the Nunavut Settlement Area

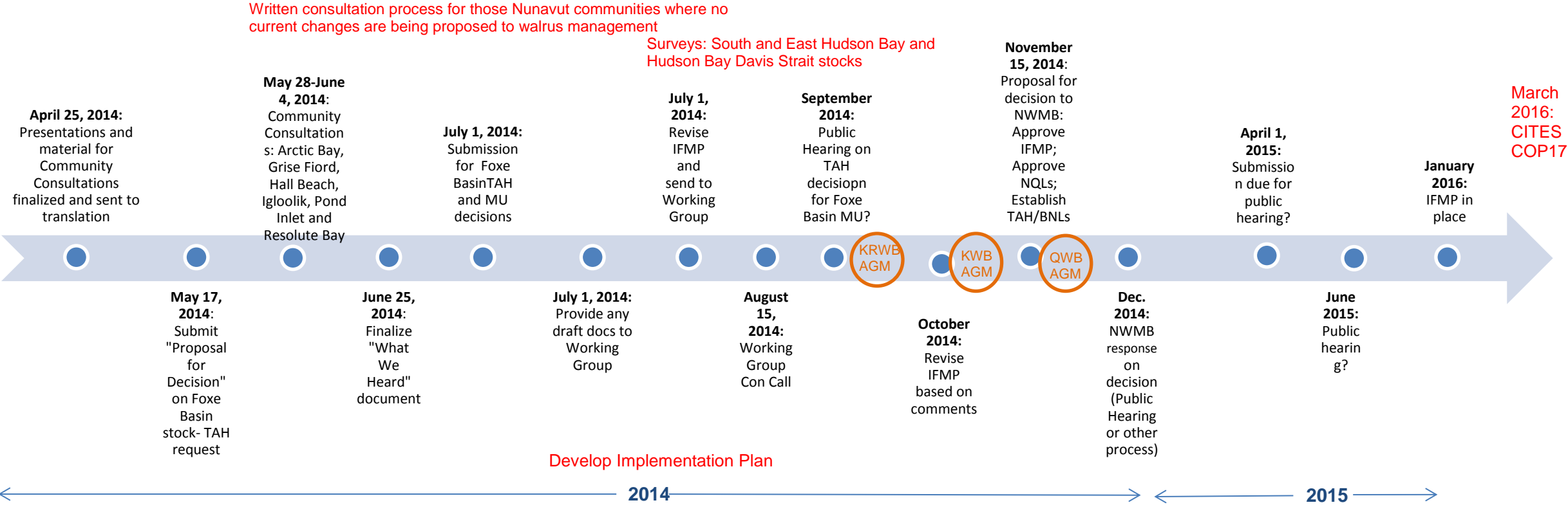
APPENDIX 1- Draft Timeline- November 2013



WWG=Walrus Working Group

* For discussion purposes, the rest of the proposed timeline will be based on the NWMB deciding to conduct a public hearing

APPENDIX 2:
Draft Revised Timeline: Key Goals/Benchmarks for Developing the Proposed Walrus Management System in the Nunavut Settlement Area



* This timeline is provided as a guide to identify the steps and processes involved in developing the walrus IFMP. The dates provided represent a best-case scenario and are largely dependent on process timelines identified in the Nunavut Land Claims Agreement or the NWMB Governance Document

2. REASONS FOR THE NWMB DECISION

The NWMB's decision is based upon the most reliable and persuasive evidence and arguments received during the public hearing process. All of the written submissions filed and considered at the hearing are publicly available for download from the Board's website (www.nwmb.com). In addition, the NWMB has produced a full transcript of the oral submissions, questions and answers delivered during the hearing. That transcript is available from the Board upon request. A brief summary of key points made during the hearing process is also attached to this letter as Appendix A.

There are two fundamental reasons for the NWMB's NLCA S.5.6.25 decision:

1. To comply with the remarkable and welcome consensus arrived at by Government and Inuit - that the BNL equal the total allowable harvest for beluga, narwhal and walrus in the NSA; and
2. To protect Nunavik Inuit rights with respect to the determination of BNLs and the allocation of total allowable harvests for beluga, narwhal and walrus in the *Areas of Equal Use and Occupancy*.

2.1 Consensus among the hearing parties

The establishment of BNLs for these three marine mammal species of such economic, social and cultural importance to Inuit is one of the most significant co-jurisdictional decisions that the NWMB and the Minister have had to make to date. Fortunately, all of the hearing parties were in agreement on one essential element of that decision: the BNL should equal the total allowable harvest for beluga, narwhal and walrus in the NSA.¹ That clear consensus among the hearing parties was very helpful to the Board in reaching its decision.

2.2 Protection of Nunavik Inuit rights in the “*Areas of Equal Use and Occupancy*”

The NWMB recognizes that the NSA includes two “*Areas of Equal Use and Occupancy*” (Area A and Area B), described in NLCA Schedule 40-1 and Schedule 27-1 of the *Nunavik Inuit Land Claims Agreement* (NILCA). Nunavik Inuit have a number of rights and related protections in the *Areas of Equal Use and Occupancy* (see NLCA Article 40 and NILCA Article 27). In undertaking its NLCA

¹ See for instance: Department of Fisheries and Oceans: “*DFO is prepared to move forward with endorsing the concept that, for beluga, narwhal and walrus, Inuit Basic Needs Level = Total Allowable Harvest in the Nunavut Settlement Area...*” (Hearing Binder, Tab 27, p.1); NTI: “*NTI proposes that the Board make the following decision: ‘1. The NWMB hereby establishes the basic needs levels for beluga, narwhal and walrus under s. 5.6.25 of the NLCA by determining that Inuit need the total allowable harvest established by the NWMB of all beluga, narwhal and walrus within the Nunavut Settlement Area...*” (Hearing Binder, Tab 26, p. 5); Government of Nunavut Department of Environment, Hearing Transcript p. 181, lines 2 - 8; Qikiqtaaluk Wildlife Board, Hearing Transcript, p. 143, lines 11 - 18; Kivalliq Regional Wildlife Board, Hearing Transcript, p. 186, lines 22 - 23; Amarak Hunters and Trappers Organization, Hearing Transcript, p. 191, lines 10 - 12; and Nunavut Qaujimaniliit, Hearing Transcript, p. 102, lines 8 - 10; p. 105, lines 9 - 10; and p. 203, lines 16 - 20.

S.5.6.25 decision-making process, the Board understood that it would be necessary to fairly address those rights and protections.²

Accordingly, starting with a pre-hearing conference invitation letter issued on January 24th 2012, the NWMB included Makivik Corporation (Makivik) in all correspondence to Inuit organizations and government departments invited to be parties at the NLCA S.5.6.25 hearing.³ Nevertheless, Makivik did not attend the hearing, nor did it file any written hearing submissions. Accordingly, the hearing record includes no input from Nunavik interests. The NWMB's Executive Director was informed by Makivik after the hearing that it did not attend because the hearing dates conflicted with other meeting commitments.

Following the hearing, on November 21st 2012, the NWMB wrote directly to the President of Makivik, inviting Makivik representatives to attend as observers at the Board's NLCA S.5.6.25 decision meeting, *"...to permit Nunavik Inuit representatives to observe NLCA Section 5.6.25 decision-making by the NWMB for the entire NSA - which fully respects both Nunavut and Nunavik Inuit rights in the Areas of Equal Use and Occupancy."*

Approximately two weeks later - two days prior to the NWMB's December 6th decision meeting - Makivik wrote to the Acting Minister, raising concerns about the process being followed by the NWMB, in particular that *"...no request [had been] received from the NWMB to have the Makivik-appointed alternate members participate in the decision-making process for the establishment of BNLs in the Areas of Equal Use and Occupancy..."*

In fact, the Board's November 21st letter had addressed this particular point: *"...Because this NWMB decision-making meeting is with respect to the establishment of basic needs levels for Nunavut Inuit throughout the NSA, Makivik-appointed NWMB members will not participate in the Board's decision-making (see NLCA S.40.2.14 and NILCA S.27.6.1). However, any subsequent NWMB decision-making to establish Nunavik Inuit basic needs levels in the Areas of Equal Use and Occupancy would include Makivik-appointed Board members."*⁴ [Emphasis added]

² Beluga, narwhal and walrus are found within the *Areas of Equal Use and Occupancy*: The NWMB regularly approves walrus sport hunts by Nunavik Inuit in Area A (which is located around – and includes – Nottingham and Salisbury Islands); narwhals from the Northern Hudson Bay stock migrate through Foxe Channel and Hudson Strait to and from their overwintering grounds, passing through Area A; and beluga are known to migrate through Area B (which is located around – and includes - the Sleeper, King George, and Bakers Dozen Islands).

³ See also the NWMB's January 30th 2012 letter (announcing the postponement of the hearing), May 1st 2012 letter (announcing the reinstatement of the hearing) and July 13th letter (addressing a late submission from the Government of Nunavut). Note that the May 1st and July 13th letters also included the Nunavik Marine Region Wildlife Board on the cc list.

⁴ The NWMB routinely makes decisions that apply to the whole of the NSA, including the *Areas of Equal Use and Occupancy* (e.g. seasons of harvest, wildlife gender or age restrictions, weapon and ammunition restrictions, etc.). The directions in NLCA S.40.2.14 neither require nor permit the replacement of 2 DIO-appointed Board members with 2 Makivik-appointed Board members for NWMB decisions that apply to the whole of the NSA, including the *Areas of Equal*

NLCA S.40.2.5 directs that the BNL for Nunavik Inuit shall be determined on the basis of available information (see also NILCA S.27.3.3). To date, the NWMB has received no such information. That section goes on to state that, “*Where the basic needs levels of the Two Groups [Nunavut and Nunavik Inuit] exceeds the total allowable harvest, the total allowable harvest shall be allocated between the Two Groups so as to reflect the ratio of their basic needs levels.*” To date, no total allowable harvest for beluga, narwhal or walrus applies in the *Areas of Equal Use and Occupancy*.

In compliance with clear NLCA instructions, the NWMB is fully prepared to determine one or more BNLs for Nunavik Inuit in one or more of the *Areas of Equal Use and Occupancy* – and to allocate any future TAH between the Two Groups so as to reflect the ratio of their BNLs. Accordingly, condition number 1 of the Board’s NLCA S.5.6.25 resolution properly reflects that NWMB commitment, and ensures the continued protection of Nunavik Inuit rights under NLCA Article 40.

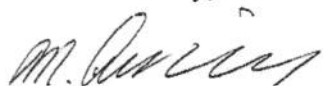
3. CONCLUSION

Once the present NLCA Article 5 decision-making process is completed, the Board reasonably anticipates receiving an appropriate *Proposal for NWMB Decision* to determine one or more BNLs for Nunavik Inuit in one or more of the *Areas of Equal Use and Occupancy*. As indicated to Makivik on November 21st 2012, NWMB decision-making to establish Nunavik Inuit BNLs in the *Areas of Equal Use and Occupancy* will include Makivik-appointed Board members, as per NLCA S.40.2.14. In accordance with NLCA S.40.2.5, the NWMB will also ensure that any future total allowable harvest applying to the *Areas of Equal Use and Occupancy* is allocated between the Two Groups so as to reflect the ratio of their BNLs.

Mr. Minister, the NWMB hereby forwards its decision to you, for your consideration pursuant to the relevant terms of the NLCA. In the meantime, the NWMB wishes to thank you and your officials for the significant attention that DFO has devoted to this challenging file, and to congratulate the Department for achieving a consensus position with Inuit on a matter of such importance to Inuit.

If you or your officials have any questions with respect to the contents of this letter, please do not hesitate to contact the NWMB at your convenience.

Yours sincerely,



Manasie Audlakiak,
A/Chairperson of the
Nunavut Wildlife Management Board

Attachment (1)

Use and Occupancy. However, in those and other circumstances, Makivik exercises the power of an HTO or RWO on behalf of Nunavik Inuit (NLCA S.40.2.6 and 40.2.16; NILCA S.27.3.4 and 27.6.3).

Appendix A – Summary of Hearing Party Submissions

PLEASE NOTE: This document note offers only a brief summary of the evidence and arguments received by the NWMB in connection with the Board's public hearing on the establishment of basic needs levels for beluga, walrus, and narwhal. The complete written submissions and all supporting written documentation are available from the NWMB's public hearing registry (2012) at www.nwmb.com or by contacting the Board. A copy of the full oral hearing transcript is also available upon request.

Nunavut Tunngavik Inc. Position: The Board should use the basis set out in the Nunavut Land Claims Agreement for “presumption as to needs” species when setting basic needs levels for beluga, walrus and narwhal. Inuit need the total allowable harvest established for these species. The total allowable harvest should serve as the basic needs level (Hearing Binder Tab 26).

Evidence and Arguments:

- The Nunavut Land Claims Agreement disqualified the Harvest Study formulae because they are based on past Inuit harvest levels alone. The decision deadline was 1997 and the Harvest Study was not complete at that time.
- Inuit are the primary harvesters of these species in the Nunavut Settlement Area.
- These species are highly important to Inuit culture, society, and economy and harvesters have been regulated. Therefore, Inuit need for these species exceeds the available supply.
- Nunavut Tunngavik and Fisheries and Oceans previously agreed that the basic needs level should be equal to the total allowable harvest for narwhal. Beluga and walrus should be treated the same.
- Fisheries and Oceans has agreed to have beluga listed as “presumption as to needs” in the Nunavik Land Claim Agreement.
- This decision will not impact harvesting until total allowable harvests are set, at which time non-beneficiaries will be eligible for assignment of harvest by the Hunters and Trappers Associations. Fisheries and Oceans could continue to employ its current suite of management tools to regulate non-Inuit harvesting of beluga and walrus.
- A reservation can be made to allow harvesting of narwhal, beluga, or walrus for scientific purposes, and predator or disease control with the Board's approval.

Department of Fisheries and Oceans Canada Position: The Department endorses the concept that Inuit basic needs level equals the total allowable harvest for narwhal, beluga, and walrus in the Nunavut Settlement Area provided that regulatory measures for the sustainable harvesting of these species are implemented (Hearing Binder Tab 27).

Evidence and Arguments:

- Setting a total allowable harvest must be based on the principle of conservation.
- In addition to a total allowable harvest, additional management measures must be in place for all stocks and populations.
- Management measures should be reflected in regulation to ensure that Canada can demonstrate that harvests are sustainable.
- The Department's position on the issue is not subject to Makivik and Nunavut Tunngavik Inc. reaching consensus on a sharing agreement (Hearing Transcript, page 130).

Government of Nunavut Department of Environment Position: The Government of Nunavut supports any points of agreement between the Department of Fisheries and Oceans, Nunavut Tunngavik, and the NWMB (Hearing Transcript, page 181; Hearing Binder Tabs 28-30).

Evidence and Arguments:

- Narwhal, beluga, and walrus are nutritionally, socially, culturally, and economically important to Nunavummiut.
- The Government of Nunavut does not have jurisdiction over marine mammals, but remains committed to involvement in management discussions and is willing to provide support where possible.
- Analyzed data from the Nunavut Coastal Resource Inventory which systematically documents local knowledge of numerous marine species, including narwhal, beluga, and walrus was submitted for consideration.
- Notes taken by Government of Nunavut staff during the 2011 and 2012 consultations on narwhal were also submitted as harvesters shared some of their relevant knowledge and experience during these meetings.

Qikiqtaaluk Wildlife Board:

- In agreement with the principles of Nunavut Tunngavik's submission (Hearing Transcript, page 143).
- Inuit dependence on the harvest of these species is especially important in the high arctic communities (Hearing Transcript, page 68).
- Harvests from Nunavik and Nunatsiavut in areas covered by overlap agreements (such as those in Section 40 of the Nunavut Land Claims Agreement) should be considered (Hearing Transcript, page 121 and 124-125).

Kivalliq Regional Wildlife Board:

- Kivalliq regional concurs with the submission that was provided by Nunavut Tunngavik Inc. (Hearing Transcript, page 186).

- Nunavik harvests should be considered (Hearing Transcript, page 47, 52); Nunavik Inuit have asked for 10 narwhal from the Northern Hudson Bay population (Hearing Transcript, page 136).
- The distribution of narwhal has changed since the signing of the Nunavut Land Claims Agreement (Hearing Transcript, page 44).
- These species are what Inuit have survived on in the past and continue to depend on today (Hearing Transcript, page 222).

Oikiqtaaluk Qaujimaniliit:

- Narwhal, beluga, walrus are a staple of Inuit diet (Hearing Transcript, page 71).
- It is not possible to provide for the needs of Inuit because of problems with diseases, changes in migration, competition from other species, and access to the animals (Hearing Transcript, page 77,134).

Kivalliq Qaujimaniliit:

- Concur with Nunavut Tunngavik's submission that basic needs levels should be on par with total allowable harvests (Hearing Transcript, page 102, 203).
- The distribution of species is always changing. The different types of species in an area and different numbers present at any given time affect what the need is for each species (Hearing Transcript, page 44-45, 187-188).
- Nunavik's request for narwhal harvest from North Hudson Bay should be addressed by Nunavut Tunngavik and Makivik (Hearing Transcript, page 139).
- The basic needs level should focus on consumption (Hearing Transcript, page 139-140).
- The population of Inuit is increasing and should be considered. People are always moving to new areas and consuming new species (Hearing Transcript, page 188).
- There hasn't been any research as to what the needs of Inuit actually are; we would like to be able to harvest more (Hearing Transcript, page 188, 190).

Kitikmeot Qaujimaniliit:

- In agreement with Nunavut Tunngavik's submission (Hearing Transcript, page 105).
- Some of these species are not readily available in the Kitikmeot Region, but are still staples in the diet of people in the region (Hearing Transcript, page 196).

Amarok Hunters and Trappers Organization:

- The needs of Iqaluit increase as a result of immigration to the community from other areas of Nunavut (Hearing Transcript, page 66-67, 157-158).

- In agreement with the positions of Nunavut Tunngavik and Fisheries and Oceans that basic need levels should equal total allowable harvest for these species (Hearing Transcript, page 191).



Ottawa, Canada K1A 0E6

JUN 12 2013

Mr. Manasie Audlakiak
A/Chairperson
Nunavut Wildlife Management Board
P.O. Box 1379
Iqaluit, NU
X0A 0H0

Dear Mr. Audlakiak:

Thank you for your correspondence of February 12, 2013 on the Nunavut Wildlife Management Board decision, which included two conditions that the Board indicated are an integral part to the decision, with respect to the establishment of basic needs levels for beluga, narwhal and walrus in the Nunavut Settlement Area.

I also wish to thank the Board for granting the extension requested by my Department for preparing this response to your decision. This extension permitted our respective organizations to commence discussions on developing a protocol to implement, in a practical way, some aspects of the conditions stipulated in the Board's decision.

This letter confirms that I accept the Nunavut Wildlife Management Board decision to "...establish the basic needs levels (BNLs) for beluga, narwhal and walrus in the Nunavut Settlement Area (NSA) to be equal to the levels of total allowable harvest established or modified by the NWMB...." This will cause the Basic Needs Levels for beluga, narwhal and walrus to fluctuate with changes to the level of the Total Allowable Harvest made in accordance with Article 5 of the Nunavut Land Claims Agreement.

I will now address the conditions stipulated in the Nunavut Wildlife Management Board decision. The first is an existing requirement of the Nunavut Wildlife Management Board under Article 40 of the Nunavut Land Claims Agreement. While the condition specifically refers to Nunavik Inuit, there is the potential that other Inuit or aboriginal groups may demonstrate traditional use of these marine mammal resources within the Nunavut Settlement Area. In such an eventuality, the requirements of the Nunavut Land Claims Agreement must be considered for those harvesters.

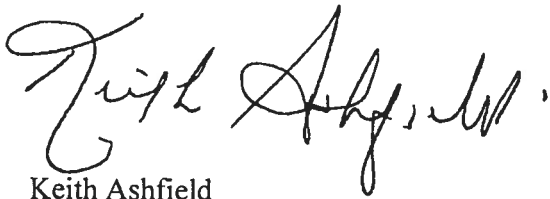
With respect to the second condition, my Department recognizes the powers, duties and functions of the Nunavut Wildlife Management Board as set out under the provisions of the Nunavut Land Claims Agreement. It is my understanding that there has been good progress to date between our respective organizations in developing an operational protocol to accommodate this contingency if necessary. However, finalization of the protocol requires further discussions amongst our staff and also other stakeholders in the management of these marine mammal fisheries in the Nunavut Settlement Area. The Department remains committed to working with the co-management organizations on this initiative.

.../2

We also look forward to working together on ensuring that appropriate management measures for beluga and walrus are in place and reflected in regulation for the conservation of all stocks and populations of beluga and walrus. This requirement will enable Canada to continue demonstrating that harvests of these marine mammal species are sustainable in support of our domestic and international obligations for the responsible management of Canadian fisheries.

In closing, I congratulate the Nunavut Wildlife Management Board and staff in successfully dealing with this requirement under Article 5 of the Nunavut Land Claims Agreement. The Department looks forward to our continuing collaboration as we implement this decision for beluga, narwhal and walrus within the Nunavut Settlement Area.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Keith Ashfield". The signature is fluid and cursive, with the first name "Keith" being more prominent and the last name "Ashfield" written in a more compact, cursive style.

Keith Ashfield

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD
FOR

Information: X

Decision:

Issue:

Atlantic Walrus Integrated Fisheries Management Plan Update.

Background:

In 2007, Fisheries and Oceans Canada (DFO) initiated the development of an Integrated Fisheries Management Plan (IFMP) for walrus, starting with the North Foxe Basin stock.

Current Situation:

DFO Science has accepted seven management units for Atlantic walrus, corresponding to geographic stocks described by Stewart (2008a). This approach has also been accepted by the North Atlantic Marine Mammal Commission (NAMMCO). Development of an IFMP for Atlantic walrus in the eastern Arctic is ongoing. This will be an umbrella IFMP comprised of chapters specific to each stock, or in some cases, groupings of stocks. The seven Atlantic walrus stocks identified in Nunavut are:

1. West Jones Sound
2. Penny Strait-Lancaster Sound
3. Baffin Bay (shared with Greenland)
4. North Foxe Basin
5. Central Foxe Basin
6. Hudson Bay–Davis Strait (shared with Nunavik and Greenland)
7. Southern and Eastern Hudson Bay (shared with Nunavik)

The IFMP will ensure the sustainable harvest of walrus consistent with the principles of conservation set out in the Nunavut Land Claims Agreement. Individual chapters of the walrus IFMP are being developed by co-management Working Groups (WGs). The WGs are comprised of representatives from the local Hunter & Trapper Organizations (HTOs), the Regional Wildlife Organization (RWO), Nunavut Tunngavik Incorporated (NTI) and DFO (Resource Management, Conservation & Protection, and Science). Others may be invited to attend meetings as requested or required (e.g. Elders, Industry representatives, or other government departments). NWMB technical staff is unable to attend WG meetings; however their input is requested on WG documents and decisions. The WGs are developing Terms of References (ToR) to guide the development of the IFMP chapters. Two WGs have been established to date.

The Foxe Basin Walrus Working Group (FBWWG) - mandate includes the North and Central Foxe Basin Walrus Stocks:

The FBWWG met in Igloolik in June 2009 and again in Iqaluit in February 2010. The HTOs that are represented on the FBWWG are Hall Beach and Igloolik. A Terms of Reference (ToR) has been finalized and the approval process will be initiated. A traditional ecological knowledge map is being produced that identifies important biological and ecologically significant areas for walrus in Foxe Basin. The FBWWG will meet again in Hall Beach in November 2010 to continue with the identification of management goals and measures for walrus in Foxe Basin. The resulting IFMP will be based on the best available knowledge, including scientific, local and Inuit and will follow the national DFO IFMP template. It is anticipated that a draft Foxe Basin chapter of the IFMP will be completed within 18 months.

Baffin Bay Walrus Working Group (BBWWG)- mandate includes the West Jones Sound, Penny Strait-Lancaster Sound, and Baffin Bay Walrus Stocks (high Arctic):

The BBWWG held its first meeting in Iqaluit on February 9-10, 2010. Co-chairs were elected, and a draft Terms of Reference tabled. The HTOs that are represented on the BBWWG are Resolute Bay, Grise Fiord, Pond Inlet and Arctic Bay (the Arctic Bay delegate did not attend the first meeting). The BBWWG agreed to develop a Management Plan for walrus in the high Arctic based on the best available knowledge, including scientific, local and Inuit, and will follow the national DFO IFMP template. The BBWWG has committed to meeting twice a year until a draft high Arctic chapter is in place. The next meeting for the BBWWG will take place in Resolute Bay, in November 2010 and will continue with the identification of management goals and measures. It is anticipated that a draft high Arctic chapter of the IFMP will be completed within 18 months.

DFO-Science, as a Working Group member, will collaborate with the HTOs to develop estimates of Atlantic walrus abundance and distribution. In 2008 DFO advised the NWMB that it was not possible to recommend sustainable harvest levels for walrus in Nunavut until more recent estimates of walrus population size and better harvest reporting were provided (Stewart 2008b). It is anticipated that information provided through the IFMP process will assist in filling these gaps.

Recommendations:

1. The NWMB consider the information provided in Stewart (2008a) that identifies management units of walrus in Nunavut based on stock differentiation as an appropriate and precautionary approach to co-management until supplementary information is collected that may allow for a further refinement of stock separation.

2. The NWMB support the development of an umbrella IFMP with stock-specific chapters for Atlantic walrus in Nunavut.

Consultations:

DFO Central & Arctic Region
DFO- Science- Winnipeg, MB.

Prepared by: A. McPhee, Fishery Management Coordinator, DFO Winnipeg.

Date: March 10, 2010

Attachments:

Stewart, R.E.A. 2008a. Redefining Walrus Stocks in Canada. Arctic. 61(3):292-308. ARCTIC

Stewart, R.E.A. 2008b. Can We Calculate Total Allowable Harvests for Walrus Using Potential Biological Removal? DFO Can. Sci. Advis. Sec. Res. Doc. 2008/025.

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Stewart, R.E.A. 2008b. Can We Calculate Total Allowable Harvests for Walrus Using Potential Biological Removal? DFO Can. Sci. Advis. Sec. Res. Doc. 2008/025.

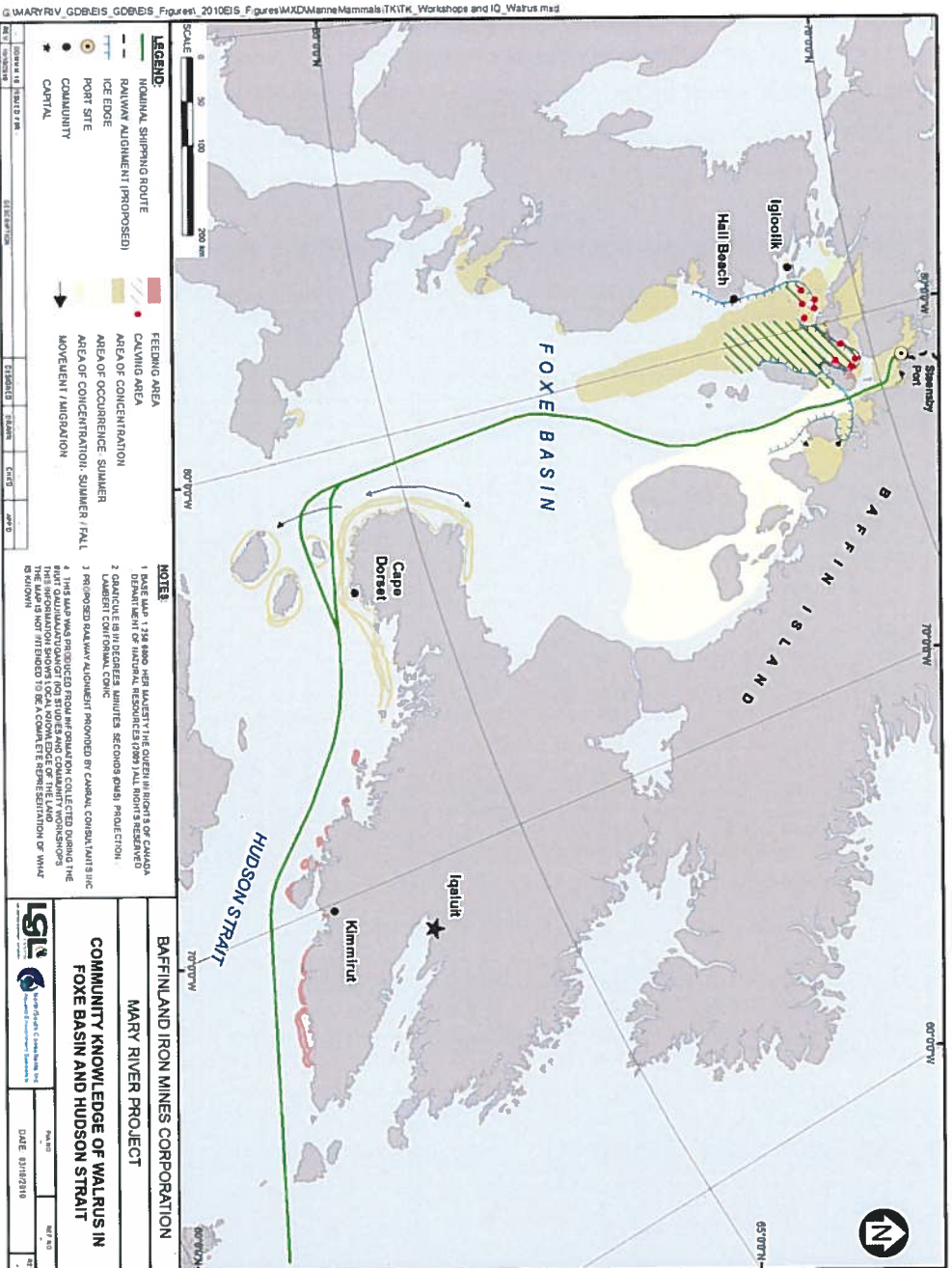


Figure 3.13 Community Knowledge of Walrus in Foxe Basin and Hudson Strait

Walrus Harvesting Locations

Stewart, R.E.A. 2008. Redefining Walrus Stocks in Canada. *Arctic*. 61(3):292-308.

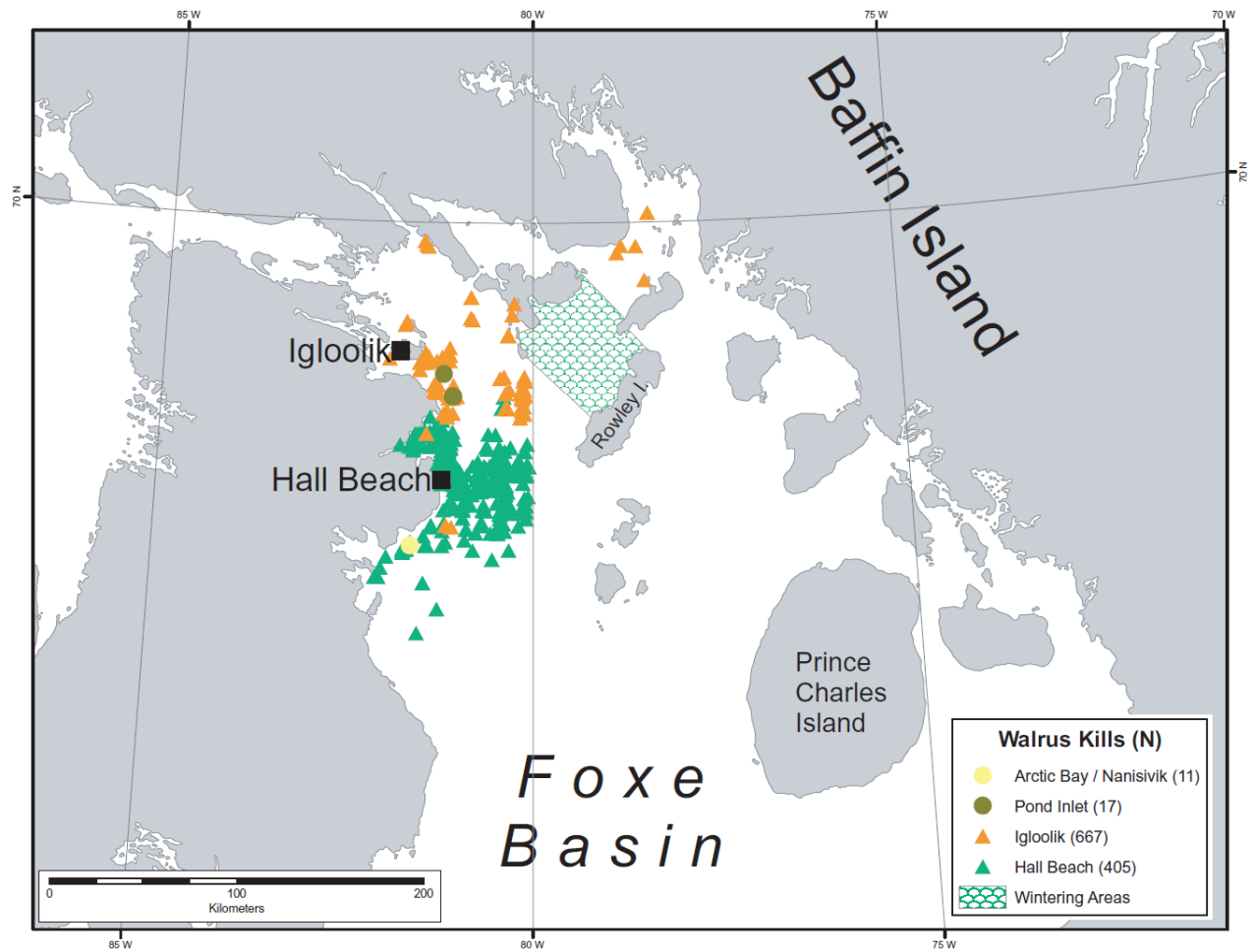


FIG. 5. Foxe Basin walrus harvesting locations for Igloolik and Hall Beach (Priest and Usher, 2004) and wintering areas (Born et al., 1995). Each kill symbol may represent more than one animal killed; N is the number of walrus reported by each community in the Priest and Usher (2004) database.

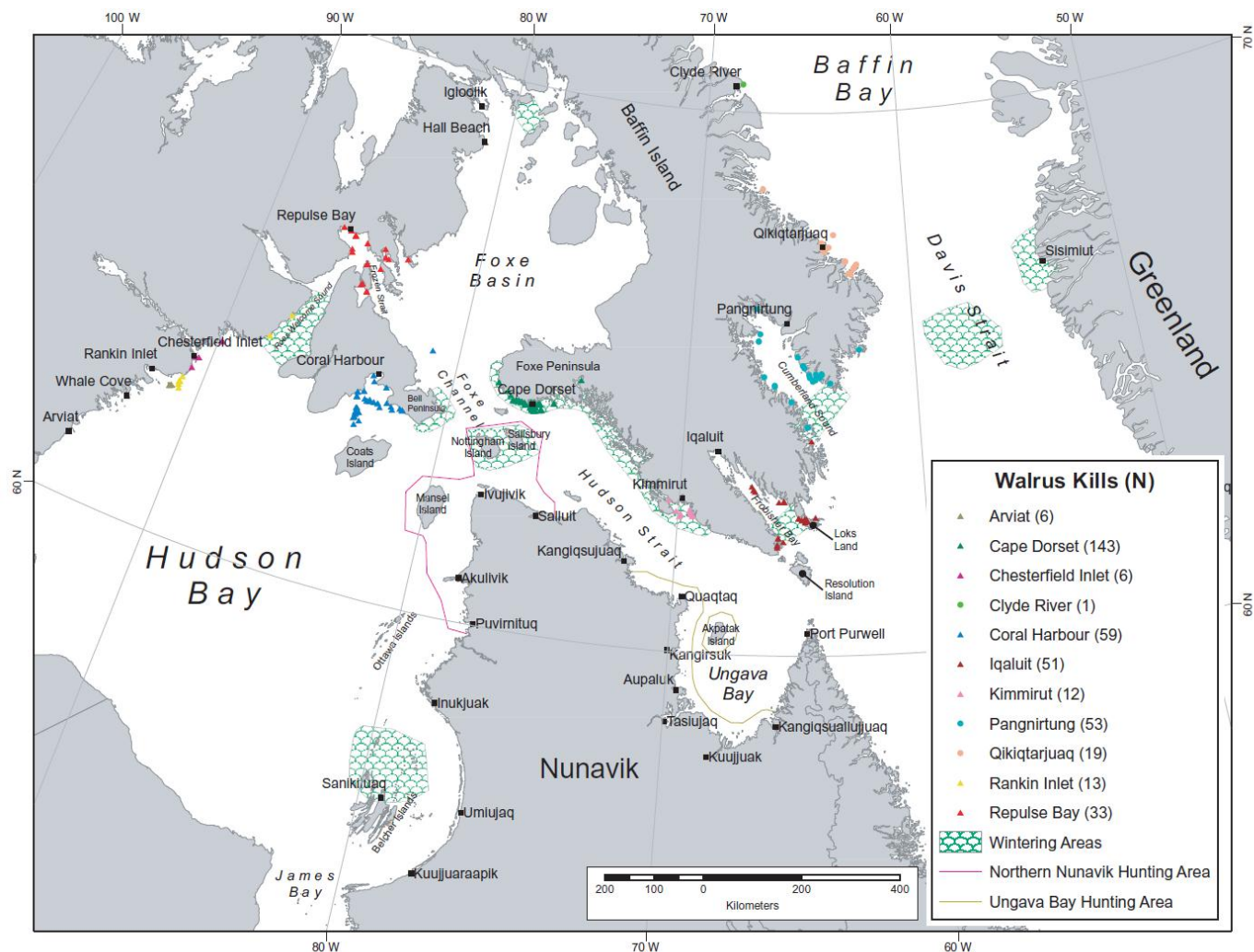


FIG. 6. Hudson Bay–Davis Strait walrus harvesting locations for Arviat, Cape Dorset, Chesterfield Inlet, Clyde River, Coral Harbour, Iqaluit, Kimmirut, Pangnirtung, Qikiqtarjuaq, Rankin Inlet, and Repulse Bay (Priest and Usher, 2004), Nunavik harvesting areas (interpreted from COSEWIC, 2006), and wintering areas (Born et al., 1995). Each kill symbol may represent more than one animal killed; N is the number of walrus reported by each community in the Priest and Usher (2004) database.

SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD
FOR

Information: X

Decision:

Issue: The Nunavut Wildlife Management Board (NWMB) requested information with which to consider Total Allowable Harvest (TAH) levels for narwhal, beluga and walrus populations distributed within the Nunavut Settlement Area.

Background:

Scientific studies conducted by Fisheries and Oceans Canada (DFO) and other researchers have shown that narwhal, beluga and walrus are hunted locally on their summer ranges, and also during spring and fall migrations within Nunavut or elsewhere. The Northern Hudson Bay narwhal population is shared with Nunavik. Belugas in western-northern-southern Hudson Bay (and possibly James Bay) are shared with Nunavik. Part of the Eastern High Arctic-Baffin Bay beluga population may be shared with Greenland. Walrus populations in Hudson Bay are shared with Nunavik, and walrus occurring around Baffin Island and in Baffin Bay may also be shared with Greenland.

Since 2004, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has recommended that certain Canadian populations of beluga, narwhal and walrus be listed under Canada's Species at Risk Act (SARA). Currently, the listing process outlined in the SARA legislation is being harmonized with provisions of settled land claims agreements.

The Canada-Greenland Joint Commission on Conservation and Management of Narwhal and Beluga (JCNB) meet approximately every two years, to discuss and develop management recommendations for shared stocks of narwhal and beluga stocks in the greater Baffin Bay region. Nunavut Inuit delegates attend JCNB meetings. The NWMB Chairperson is a Co-Commissioner of the JCNB.

Canada belongs to the Convention on International Trade in Endangered Species (CITES). CITES authorities monitor global trade of beluga, narwhal and walrus products to ensure that foreign demand does not become a conservation concern.

Current Situation:

DFO's Centre for Science Advice (CSAS) has completed two documents which are publicly available on the DFO website. These documents provide scientific

analysis of interest to discussions about sustainable harvesting of marine mammal populations in the Nunavut Settlement Area (NSA).

Science Advisory Report 2008/035 ** produced Total Allowable Landed Catch (TALC) levels for summering stocks of beluga and narwhal whose range includes the NSA. Nunavut beluga and narwhal populations are considered data-poor, because there is insufficient recent information to conduct a full stock assessment. Therefore, DFO used Potential Biological Removal (PBR) estimates as the basis for its analysis. PBR estimates are stock specific limits of human induced mortality (e.g. total hunting mortality, net entanglements, and ship collisions). To account for uncertainty about total hunting mortality, information reported as part of the trial Community Based Management program was used to develop Total Allowable Landed Catch (TALC) estimates. PBR estimates do not account for animals that die from natural causes, such as old age, disease, entrapments or predation.

It is not possible to generate harvest advice for walrus populations at this time (Stewart 2008). With the exception of West Jones Sound, there are no reliable data on which to estimate minimum population numbers. There have been no abundance estimates made for Nunavut walrus populations in the past 5 years and there are no existing abundance estimates that include the entire stock. However, some Inuit communities have identified local declines in walrus populations. More recent estimates of walrus population size and better harvest reporting are needed before DFO can recommend sustainable harvest levels for Nunavut walrus populations.

Analysis:

The PBR and TALC estimates provided in SAR 2008/035** are based entirely on scientific analysis, they do not include management considerations relevant to individual marine mammal stocks. The NWMB ensures full public consideration of wildlife management issues within the NSA, such as the establishment of TAH. As public meetings are scheduled to consider levels of TAH for populations of beluga, narwhal and walrus in the NSA, DFO will prepare submissions that include an assessment of population-specific management issues to be considered in establishing sustainable harvest limits.

The wildlife harvesting rights of Nunavut Inuit under their land claims agreement are protected by Section 35 of the *Constitution Act, 1982* and modest increases in existing harvest levels would accommodate increased Inuit need. However large increases in subsistence hunting levels for these species are likely to draw national and international attention. The NWMB should consider both the pros and cons of large increases in future harvests of beluga, narwhal and walrus in the NSA.

Beluga, narwhal and walrus populations distributed within the NSA have been assessed by COSEWIC and subsistence harvesting of marine mammals is monitored closely by the international community. COSEWIC has identified subsistence hunting as a potential threat to beluga, narwhal and walrus populations in the NSA. In addition, CITES authorities monitor global trade of beluga, narwhal and walrus products to ensure that foreign demand does not become a conservation concern.

Beluga, narwhal and walrus are hunted locally on their summer ranges, but also during spring and fall migrations within Nunavut or elsewhere (e.g. Nunavik, Greenland). The NWMB should encourage the completion of sharing arrangements with other jurisdictions, before considering TAH levels for the NSA, to avoid future conflict over sharing arrangements.

Formal sharing arrangements involving shared marine mammal populations would be viewed positively by co-management partners and the international community. There may be some risk to sustainability of these populations if arrangements on harvesting are not established

Consultations:

DFO Central & Arctic Region – K. Fisher, P. Richard, R. Stewart
DFO Ottawa – S. Romberg

Recommendations:

1. The NWMB consider the information provided in SAR 2008/035** and Research Document 2008/025, as well as stock-specific management issues, in developing materials for future public discussion regarding sustainable harvest levels.
2. The NWMB encourage the completion of sharing arrangements with Nunavik and Greenland, for shared stocks of beluga, narwhal and walrus.

Prepared by: P. Hall, Fishery Management Coordinator, DFO Winnipeg

Date: 11 May 2009

Attachments:

DFO. 2008. Total allowable harvest recommendations for Nunavut narwhal and beluga populations. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2008/035. **

Stewart, R.E.A. 2008. Can We Calculate Total Allowable Harvests for Walrus Using Potential Biological Removal? DFO Can. Sci. Advis. Sec. Res. Doc. 2008/025.

** note: NWMB Staff have identified typographic errors in the current version of SAR 2008/035. DFO thanks NWMB for pointing out these errors, and will forward revisions of the current document to NWMB as soon as possible.

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Proceedings of the Pre-COSEWIC Peer Review Meeting for Atlantic walrus (*Odobenus rosmarus rosmarus*)

**February 28 to March 1, 2012
Iqaluit, NU**

**Meeting Chairperson: Don Bowen
Editor: Lia Kruger**

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Canada

January 2013

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings may include research recommendations, uncertainties, and the rationale for decisions made during the meeting. Proceedings may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

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SUMMARY

In fall 2011, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) included Atlantic Walrus (*Odobenus rosmarus rosmarus*) in their Call for Bids to update the status report in preparation for a re-assessment of this species. Fisheries and Oceans Canada (DFO), as the primary generator and archivist of information on marine species, is to provide COSEWIC with the best information available to ensure that an accurate assessment of the status of a species is undertaken. To that end, DFO held a peer review meeting on 28, 29 February and 1 March 2012 in Iqaluit, Nunavut, to peer review information relevant to the COSEWIC status assessment for Atlantic walrus. Meeting participants were from DFO Science and Species at Risk programs, relevant wildlife management boards, aboriginal organizations and communities, and COSEWIC sub-committees. In addition, the status report authors and an external expert from Greenland participated in the review. During the meeting, participants discussed a range of topics including calving, mortality, diet, catch history, movements, distribution and numbers, features walrus need in their environment to survive, threats, and special significance Atlantic walrus hold for Inuit.

This Proceedings report summarizes the relevant discussions from the meeting and is available on the DFO Canadian Science Advisory Secretariat Website at <http://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm>.

SOMMAIRE

À l'automne 2011, le Comité sur la situation des espèces en péril au Canada (COSEPAC) a inclus le morse de l'Atlantique (*Odobenus rosmarus rosmarus*) dans son appel d'offres concernant la mise jour du rapport de situation en prévision d'une réévaluation de la situation de cette espèce. Pêches et Océans Canada (MPO), en tant que principal producteur et archiviste de l'information sur les espèces marines, doit fournir au COSEPAC la meilleure information disponible pour permettre à ce dernier d'évaluer de façon précise la situation des espèces visées. À cette fin, le MPO a organisé une réunion du 28 février au 1er mars 2012 à Iqaluit, au Nunavut, pour procéder à l'examen par les pairs de l'information pertinente à l'évaluation de la situation du morse de l'Atlantique par le COSEPAC. Les participants à la réunion représentaient les programmes scientifiques et des espèces en péril du MPO, les conseils de gestion des ressources fauniques compétents, les organisations et collectivités autochtones et les sous-comités du COSEPAC. Les auteurs du rapport de situation et un expert externe venu du Groenland ont également participé à cet examen. Au cours de la réunion, les participants ont discuté d'une variété de sujets, notamment le vêlage, la mortalité, le régime alimentaire, l'historique des captures, les déplacements, la répartition et le dénombrement, les caractéristiques nécessaires à la survie des morses dans leur environnement, les menaces et l'importance particulière du morse de l'Atlantique dans la culture inuite.

Le présent compte rendu résume les discussions pertinentes qui ont eu lieu durant la réunion et est disponible sur le site Web du Secrétariat canadien de consultation scientifique du MPO, à l'adresse suivante : <http://www.dfo-mpo.gc.ca/csas-sccs/index-fra.htm>.

INTRODUCTION

In April 2006, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated the Atlantic walrus (*Odobenus rosmarus rosmarus*) as Special Concern. COSEWIC intends to update its status report and re-assess walrus in the near future. In anticipation of this Fisheries and Oceans Canada (DFO) held a peer review meeting on 28, 29 February and 1 March 2012 in Iqaluit, Nunavut, for the purpose of ensuring that COSEWIC has the best available information for its assessment (see Terms of Reference, Appendix 1). During the meeting, participants discussed a range of topics relevant to walrus in Canada including calving, mortality, diet, catch history, movements, distribution and numbers, features walrus need in their environment to survive, threats, and special significance for Inuit.

The meeting was attended by experts (Appendix 2) from DFO Science and Species at Risk programs, the Government of Nunavut, Nunavut Wildlife Management Board (NWMB), Nunavik Marine Region Wildlife Board (NMRWB), Torngat Secretariat, Nunavut Tunngavik Incorporated, Makivik Corporation, 15 Nunavut communities, two Nunavik communities, Greenland Institute of Natural Resources, COSEWIC ATK and marine mammal subcommittees, and the status report authors. Two local interpreters provided simultaneous translation services. The meeting generally followed the agenda in Appendix 3.

This Proceedings report summarizes the relevant meeting discussions. Place names mentioned in the document are shown in Figure 1.

DISCUSSION

Following introductions, the Chair provided introductory remarks including an explanation of the purpose of the meeting. This was followed by four presentations that described the wildlife species assessment process in Canada.

WILDLIFE SPECIES ASSESSMENT PROCESS

Overview

Presenter: Sam Stephenson, DFO Species at Risk Program

The first presentation provided an overview of the process used to assess, designate and list wildlife species in Canada and the status of walrus in relation to that process.

COSEWIC is a committee of experts that assesses and assigns wildlife species to risk categories according to their potential risk of extinction or extirpation from Canada. Each wildlife assessment is made on the basis of a status report that is written by one or more authors on contract to COSEWIC for the particular assessment. The status report contains the best available science and Aboriginal or community knowledge relevant to assessing a wildlife species' risk of extinction or extirpation including its basic biology, distribution in Canada, population sizes and trends, habitat availability and trends, and threats to the species and its habitat. COSEWIC has subcommittees that review and edit each status report. When the status report is considered complete, it is distributed to all COSEWIC members who use the report as the basis for their discussions and decision about the risk category to which a wildlife species should be assigned. COSEWIC assessments are guided by the precautionary principle which means that the lack of full scientific certainty about the status of a species does not justify delaying or avoiding actions that would minimize threats to that species.



Figure 1. Map of the eastern Canadian Arctic and western Greenland showing place names mentioned in the text.

In April 2006, COSEWIC assessed Atlantic walrus. All populations were combined for the assessment because COSEWIC thought there was not enough information available to assess them individually. Walrus were given a status designation of Special Concern due to gaps in knowledge, relatively small population sizes based on available estimates of abundance, and the lack of management plans. Following the COSEWIC assessment, DFO held consultations in a number of communities in Nunavut and Nunavik to ask people whether they supported listing of walrus as Special Concern under the *Species at Risk Act*. Almost everyone consulted said “No”. Inuit thought that the decline in walrus numbers reported by COSEWIC was not supported by hunters’ observations or the available scientific evidence, thus a Special Concern designation was not warranted. The federal government decided to delay making a listing decision until a harmonized listing process had been worked out with the NWMB and the NMRWB. A Memorandum of Understanding (MOU) between the Federal Government and the Boards has been signed with the NWMB but not yet with the NMRWB.

COSEWIC plans to re-assess the status of walrus in Canada in the near future. To that end, in late January 2012 the Committee selected two co-authors to update the status report. The purpose of this meeting was to help the co-authors by reviewing the most up-to-date scientific information relevant to the COSEWIC assessment. All participants were encouraged to contribute their knowledge of walrus as it relates to the assessment.

COSEWIC status report

Presenter: Bruce Stewart, 2006 and 2012 COSEWIC status report author

All available published information was used for the 2006 status report as well as summarized information from people who had handled walrus or conducted surveys in the past. Researchers identified gaps in knowledge and uncertainties associated with past surveys. The co-authors will now update the 2006 status report with new information available since then. The report will include both scientific and local knowledge on a range of topics including walrus biology, population sizes and trends, distribution, habitat use, threats and limiting factors, protection and status. During the next assessment COSEWIC will assess walrus populations individually if enough information is available. Knowledge gaps will be identified and COSEWIC will help the co-authors identify sources of aboriginal traditional knowledge (ATK) and prepare maps. DFO will provide information on its research. Meeting participants encouraged DFO to share all available information, whether complete or not, with the co-authors and COSEWIC. The first draft of the report is due in November 2012 after which the report will go through many reviews and any errors will be corrected.

The 2006 COSEWIC status report summarized the ATK available at that time. The co-authors will update the status report with ATK published since that time and information obtained from talking with people who harvest walrus. The importance of sharing knowledge of walrus during this meeting was stressed, as well as Inuit contacting the co-authors after the meeting if there is any further information to share. Incorporating oral history into the status report from people outside of this meeting will be a challenge. Meeting participants noted the importance of contacting people in Igloodik and Hall Beach because they hunt walrus year-round. Due to budgetary constraints the co-authors are not able to visit people in communities to gather information. Instead they will depend on information collected by people who are in a better position to interpret it, including the Igloodik Pilot Project of the Nunavut Coastal Resource Inventory. The meeting participants reported that Inuit believe that walrus are currently not at risk.

COSEWIC Aboriginal Traditional Knowledge Subcommittee

Presenter: Dean Trumbley, COSEWIC ATK subcommittee co-chair

The COSEWIC ATK subcommittee is composed of two co-chairs and ten members who help to incorporate traditional knowledge into COSEWIC wildlife species assessments. ATK is a world view or way of knowing that includes ecological, utilitarian, social, and spiritual values. It consists of long-term descriptive information held by elders and resource users about the biology of a species that is passed down orally over many generations or published in reports, as well as present-day information collected on Aboriginal lands. The ATK subcommittee is looking for information on aboriginal names of species, species distribution, movement patterns, habitat types and health, changes in population size, body condition noticed in harvest, species interaction, potential threats, and existing aboriginal management. COSEWIC does not need detailed information on cultural significance, medicinal, or spiritual use as it will not benefit the wildlife assessment process.

The use of ATK in COSEWIC assessments follows several guiding principles. Aboriginal communities are presumed to be the primary bodies to facilitate access to ATK in species assessment. Access to ATK is subject to local laws, protocols, and practices. To use ATK in a species assessment, permission must be secured from the ATK holders. ATK is to be treated as public knowledge only with the approval of the ATK holders, in culturally appropriate ways. ATK is to be given equal recognition and value with Western Science and Community Knowledge.

The ATK sub-committee does not have the budget to look at all wildlife species being assessed so every species is initially scored using a decision matrix. For those species with the highest scores (highest priority), a knowledgeable Aboriginal person or organization investigates sources of ATK that should be examined and produces a source report. The next step in the ATK portion of the overall process would be development of an assessment report. The ATK subcommittee developed their process based on consultations with Aboriginal groups including a North Elders workshop held in Rankin Inlet in July 2009. In the case of walrus, a source report was recently drafted and will be finalized sometime in March or April 2012. A working group within the ATK subcommittee has been struck to help with integrating the walrus ATK into the status report.

Some participants encouraged the ATK subcommittee to collect information about walrus from all knowledge holders. The ATK subcommittee does not have the resources necessary to do that so better communication with all jurisdictions and people is needed to gather/incorporate ATK. This meeting is an excellent opportunity for Inuit to share their knowledge of walrus so that it can be included in the COSEWIC assessment.

COSEWIC Marine Mammal Subcommittee

Presenter: Andrew Trites, COSEWIC marine mammal subcommittee member

Once the status report co-authors have written the status report, the marine mammal subcommittee will review it. The role of the subcommittees is to help COSEWIC decide which risk category is most appropriate for each assessed species. COSEWIC uses the status report as the basis of its assessment, in particular three types of information in the report: (1) factors that limit population growth of a species, (2) population size, and (3) whether the population is stable, decreasing, or increasing in size. To assist with the assessment, COSEWIC would like more information on hunting patterns and any changes in hunting patterns over time. COSEWIC would also like to know where people think walrus go when they leave an area.

This meeting gives participants the opportunity to contribute to the COSEWIC assessment by sharing their knowledge of walrus with the status report co-authors and with the ATK and

marine mammal subcommittee members present. The purpose of this meeting is not to determine a risk category for walrus, which is COSEWIC's role, or a listing decision, which is the federal government's responsibility. The federal government has the authority to make the final decision about whether walrus should be listed under the *Species at Risk Act*.

It was noted that COSEWIC is not involved in setting hunting quotas.

Following the initial presentations, participants began to discuss key areas of walrus biology relevant to the COSEWIC assessment.

SPECIES BIOLOGY

COSEWIC used a generation time of 21 years as a yardstick for measuring the population trend of walrus based on the age at which a female gives birth to her first calf and last calf (7 and 35 years, respectively). DFO has no new information to add to the 2006 status report for this section.

Participants reported that in the Inuktitut language there are only two terms used to describe the age of walrus: infants and elderly or old animals. Walrus can start reproducing at age 7 and produce calves every 2-3 years after that. Sometimes a female will give birth to two calves. No one commented about when females might reach reproductive senescence. As males grow older they change to different shades of brown. Walrus are in better condition in the fall and lose fat in spring when mating and pupping occurs. This species is negatively affected by disturbance, especially handling; they flee and may become susceptible to infection or disease. Inuit have reported that walrus stranded on ice in winter and starving will walk across land to reach water. Walrus will also approach people when near death.

CATCH HISTORY

Presenter: Bruce Stewart

There are no historical population estimates for walrus. It is possible to estimate past numbers using available catch records from ship logbooks/records, Hudson Bay Company trade records, RCMP game reports, information held by Wildlife Management Boards, discussions with hunters and elders, oral history accounts, scientific papers and popular accounts. Uncertainties in the data include missing information, especially kill dates and locations, struck-and-loss rates, reporting differences (e.g., between seasons, landed versus killed, types of animal products, ages of animals) and product conversions (e.g., how hide or ivory weights or numbers of Peterhead boatloads convert to numbers of walrus killed).

A few participants commented on how many walrus could be transported in a Peterhead boat. One said that perhaps 40 walrus could be hauled, leaving only a small part of the boat visible above the waterline. Historically, hunters would de-bone walrus so they could take more meat. Another participant reported carrying 10-12 walrus depending on the marine conditions. They would haul de-boned walrus for about 10-15 miles. Penis bones (baculum) were also important to whalers.

Whalers and traders harvested walrus mainly the thick hides but also for ivory, oil, and meat. Three commercial harvest periods have been identified: early commercial whaling (1820-1870), late commercial whaling (1870 to 1910), and land-based trade (1910 to 1928). Whaling started in earnest in Lancaster Sound about 1820, in Cumberland Sound about 1840 and Hudson Bay about 1860 (Figure 1). Between 1885 and 1913, whalers harvested at least 4,000 walrus from Baffin Bay-Davis Strait. And, between 1831 and 1914 they harvested at least 4,750 walrus from northern Hudson Bay-Cumberland Sound. Inuit were involved in these fisheries. Few whalers

visited Foxe Basin or southeastern Hudson Bay. Whalers in the eastern Canadian Arctic harvested primarily bowhead whales until about 1975, when these whales became scarce, and thereafter took more walrus and other species. The value of walrus hides increased dramatically around 1875 but declined around 1914. Very high numbers of walrus were taken in the late 1890s and early 1900s, when as many as 1,400 walrus were taken in one year. A period of land-based whaling followed (1910-1928), when walrus were harvested for trade and subsistence by trading companies and Inuit.

The Inuit subsistence harvest of walrus dates back at least 4,000 years. In the harvest records of ship-based and land-based whaling, it is often difficult to determine which animals were taken primarily by Inuit for subsistence and which for commercial purposes. Better records have been kept for more recent subsistence catches. Inuit have many uses for walrus products (e.g., fermented walrus meat, stomach contents, hides, ivory and bone). Where walrus were more readily available the people often had larger, healthier dog teams and better living conditions. In 1928, killing of walrus was limited to Inuit for their own use. In 1931, the export of walrus hides and un-carved tusks was prohibited and the yearly catch of walrus was limited to seven per family. The introduction of motorized boats, such as Peterheads in the early 1900s and motorized canoes in the 1950s, changed the availability of walrus during the open-water period by enabling hunters to travel farther offshore and to harvest and transport more animals. The transition from dog teams to snowmobiles beginning in the 1960s reduced the need to harvest walrus for dog food.

Before about 1949, there were no records of walrus takes in Foxe Basin probably because the Hudson Bay Company was not often in the community of Igloolik, and Hall Beach was not established until about 1972. Over 7,300 walrus have been taken by Igloolik since 1949 and over 2,600 walrus by Hall Beach since 1972. The walrus harvest was much smaller in southeast Hudson Bay, and most of it taken by Inukjuak in the 1920s and early 1930s. In Northern Hudson Bay and Hudson Strait, there was a gap in harvest statistics during World War II and later between about 1969 and 1973. In Baffin Bay, the harvests fell off in the 1960s as dog teams declined.

Sport hunts began in Nunavut in 1995 and in Salluit (Nunavik) in 1996. Few walrus are taken in sport hunts relative to the subsistence harvests. In Igloolik, sport hunts were suspended for two years, starting in 2008, over concern that walrus were being disturbed.

The status report co-authors would like to know how many walrus Inuit needed historically versus today to support their families. They were able to determine that at least 3,600 were taken from Nunavik and Labrador; at least 4,750 from the Kivalliq (Western Hudson Bay) region and at least 6,600 from the Qikiqtaaluk (Baffin) region. They had found reports of at least 36,000 walrus having been taken from the eastern Canadian Arctic. The actual number is likely significantly higher¹.

Not all Nunavut participants agreed that more walrus were taken in the past than now. They pointed out that walrus were not killed unnecessarily, but only according to the needs of the hunter and community. A number of participants said they distrust the accuracy of the Hudson Bay Company records because the Company was only interested in the information from a monetary perspective and there was no accountability or auditing associated with it. In Foxe Basin, more seal pups than walrus are harvested now for dog food compared to the 1960s, however aged walrus meat is still considered a valued food for human consumption. In addition to local consumption, the communities of Hall Beach and Igloolik sell this product to other

¹ Since the meeting, harvest reports for another 4,000 walrus have been located (D.B. Stewart, pers. comm.).

communities, such as Resolute, where increasing destruction of caches by polar bears has made it difficult to produce aged walrus meat. Participants noted the sea ice in Foxe Basin has become thinner and less stable in recent years, making it more difficult to hunt.

A Nunavut participant shared his knowledge of historical catches. While living near Coral Harbour, hunters made three trips to harvest walrus for the winter using five Peterhead boats. Part of the harvest was put away for human consumption and the rest was prepared for dogs. By the time the dog food was gone, seals were basking on the ice and easier to hunt. The participant also gave an example about how walrus react to disturbance on haulout sites. After he had moved to Rankin Inlet in the 1940s or early 1950s about 50 or more walrus were taken by RCMP while en route to Churchill. They continued to shoot in spite of being asked to stop. Only tusks were removed from the animals killed. The haulout site near Chesterfield Inlet had been a gathering place for walrus but following this incident the animals did not return for a long time. Walrus seem to be coming back now.

Nunavik participants felt their region was poorly represented in the historical catch history analysis. They reported that walrus were regularly harvested in Nunavik waters in the 1960s for dog food. Occasionally people would hunt for walrus by boat for periods of up to a month. Fewer animals are currently taken because Nunavimmiut do not use dog teams. Today, hunters travel faster and are more efficient at harvesting walrus. Walrus are not shot until after they leave their haulout sites (*ooglit*), otherwise they will abandon the area. Medium-sized animals are usually taken. The area between Nunavik and Baffin Island is a good place to hunt them. Near Ivujivik, walrus are harvested in September and October. The walrus population in that area appears to be increasing.

The catch history research focused on the eastern Arctic and did not include the St. Lawrence. Historically there were many walrus in the Gulf of St. Lawrence but they were hunted to extinction in the 1700s. Today walrus move through the area periodically but do not remain. The co-authors will consider whether there is any value in including the St. Lawrence catch history.

DISTRIBUTION, MOVEMENTS AND DISPERSAL

Presenter: Rob Stewart, DFO walrus researcher

At the time of the 2006 COSEWIC assessment, groups of walrus were identified on the basis of their movements, chemicals in their teeth, and traditional knowledge. Walrus were known to be present in various areas within the Canadian Arctic: in the High Arctic, Foxe Basin, Hudson Strait-Davis Strait, and southern and eastern Hudson Bay. The High Arctic population consists of three stocks (Penny Strait-Lancaster Sound, West Jones Sound and Baffin Bay) that can interbreed fairly well. Since the 2006 COSEWIC assessment the scientific understanding of the overall distribution of walrus has changed little but a better understanding of walrus populations and stocks has started to emerge. Overall, it appears there are two walrus populations in the Canadian Arctic: a High Arctic population and a Central Arctic population. It was noted that most of the scientific studies of walrus undertaken in recent years in Canadian waters and along the western coastline of Greenland are in the process of being reviewed and published.

The Central Arctic population is composed of walrus that reside in Hudson Strait, Davis Strait and Foxe Basin. Some walrus tagged in West Greenland in recent years moved west to Hoare Bay and around Cumberland Sound along the southeastern coast of Baffin Island. One or more walrus tagged by DFO and the Hunters and Trappers Organizations (HTOs) in Qikiqtaaluk and Pangnirtung moved from Canadian waters east to West Greenland. These movements indicate these walrus are shared between Canada and Greenland. It is likely there are small groups of walrus throughout Hudson Strait and Davis Strait. Recent research has shown that walrus samples from west Greenland and Hudson Strait are different while walrus samples from

Canadian waters in Davis Strait and Hudson Strait are similar. It appears there is a continuous, progressive gradation of genetic differences among walrus between West Greenland, Davis Strait and Hudson Strait (i.e., a clinal distribution). In Foxe Basin, both scientific and traditional knowledge suggest that walrus belong to two stocks: one in the northern region and the other in the central region near Hall Beach and south of there. A participant noted that walrus are returning to the waters around Rankin Inlet.

Walrus also occur in south and east Hudson Bay but researchers know little about these animals. No tagging has been conducted there to date and no current or accurate past estimates of abundance are available. Obtaining walrus samples from harvesters in that area might provide useful information. Heavy metal isotope research conducted on walrus teeth in the past suggested that some individuals born in Foxe Basin near Hall Beach travelled to northern Quebec before eventually returning home. The number of animals that made these movements was equivalent to the proportion needed to prevent genetic differentiation. A participant reported that walrus haulouts on the Quebec side have been active during the past two years.

Some participants reminded others that walrus move according to the seasons in search of food and better conditions and will move beyond the usual places where biologists find them. Known locations of haulout sites are not shared with biologists to prevent walrus from being disturbed while they rest. Walrus can easily smell the presence of a camp nearby and will leave a haulout site in response to a minor disturbance of this nature. If the Mary River mine goes ahead there will be year-round shipments of iron ore through Foxe Basin and Hudson Strait. A participant recommended more research on walrus numbers in Foxe Basin before shipping commences to better understand how that level of traffic would affect walrus migratory routes.

Participants shared their knowledge of the past and current distribution of walrus. In the High Arctic there used to be a walrus congregation area near Pond Inlet in the 1940s. Walrus also used to occur in Lancaster Sound, in the 1980s, in an area bounded by Bylot Island and Borden Peninsula (northern Baffin Island) on the south and Devon Island on the north. No walrus were seen there in summer 2011 although there was evidence that walrus had been using haulout sites in the area. DFO researchers also saw few walrus when they surveyed there in recent years.

Around Frobisher Bay there is a healthy population of walrus. Local people travel to the mouth of the Bay and even towards Pangnirtung to hunt walrus in October or November. In the past two years, walrus have starting moving into Frobisher Bay to within 100 km of Iqaluit, perhaps in response to harassment from shrimp and turbot fishing boats around the islands near the mouth of the Bay.

In Hudson Bay walrus are found around Marble Island, near the community of Rankin Inlet, at some times of the year, but not in July when the water is calm. Farther north, around Chesterfield Inlet, walrus are harvested in spring. There are no haulouts near the community; it takes 45 gallons of gas to reach areas where they can be hunted. Hunters in the Belcher Island usually have year-round access to walrus.

It was noted that walrus also used to occur in eastern Canada along the coasts of Labrador and Newfoundland, as well as in the Gulf of St. Lawrence.

HABITAT

Participants discussed whether there is a link between water depth and dietary preferences. Walrus that inhabit shallow waters are known to eat clams while those that inhabit deeper

waters are thought to be more likely to eat seals (e.g., ringed seal (*Phoca hispida*), bearded seal (*Erignathus barbatus*) and harp seal (*Pagophilus groenlandicus*)). In Greenland, walrus usually occur in shallow water and most eat shellfish (clams) although a few eat seals. Samples obtained from walrus that were eating seals contained high levels of polychlorinated biphenyls (PCBs). It has been commonly reported that only male walrus take seals but some females will too though perhaps only to teach their young or they are scavenging not preying on seals. A participant added that when a walrus is hungry it will eat anything. It was noted that the meat from walrus that live farther off shore tastes different than from those that live near shore; these differences may reflect different groups of walrus. The fat in “offshore” walrus is also firmer and more similar to seal and polar bear (*Ursus maritimus*) fat. One participant noted that walrus that reside in shallow waters are reported to have scratched tusks and shorter whiskers than those in deeper waters. Another participant said that once walrus start eating seal meat, their tusks turn a yellowish colour and become more scratched. Walrus that prey on seal are known to be more aggressive and solitary than those that eat clams. Age does not appear to affect a walrus’ preference for eating seals. Many participants reported observing walrus hunting seals in water, but not on ice. Ringed seals appear to be afraid of walruses and avoid using areas frequented by them.

Research conducted in Alaska showed that walrus there are very dependent on sea ice for resting. In Canada this may be less of an issue because most walrus habitat in the eastern Arctic is near land. Participants reported observing walrus mating on land and ice and calving on land and moving pack ice. Off Greenland, research has shown that water depth is more important to walrus than the presence of sea ice. In Canadian waters, the availability of certain water depths for feeding may also be more critical for walrus habitat than the amount of sea ice.

POPULATION SIZES, TRENDS AND UNCERTAINTIES

Presenter: Rob Stewart

The High Arctic population consists of three stocks: Penny Strait-Lancaster Sound, West Jones Sound and Baffin Bay). Surveys were conducted in this region over a period of about nine years using helicopters, boats, and planes (Twin Otter). When possible, Inuit participants have been invited to participate in the surveys. Coastlines were flown to survey haulout sites and walruses on ice. The objective was to count as many walrus as possible to determine the Minimum Known Alive number (MNA). In 1977, the MNA count for Penny Strait-Lancaster Sound was 565. The highest MNA count obtained in recent years was 557 in 2009. Although the survey coverage was incomplete and the number of haul out sites counted varied somewhat over time, this was taken into account by the analysis. Based on the available data there is no evidence of an upward or downward trend in population abundance in Penny Strait-Lancaster Sound. In West Jones Sound the MNA count was 290 in 1977. The highest MNA count obtained in recent years was 404 in 2008. There is no evidence of a statistical trend based on the analysis.

There are a number of well-known difficulties associated with estimating population abundance in walrus. Researchers recognize there are more walrus present than the number counted because some will be “at sea” during the survey and walrus are very difficult to count when they are in water. If a site or area is counted at least twice in a year then a “bounded count” method can be used to produce an estimate of walrus abundance not just a count. The bounded count method uses the two biggest counts for a haulout to estimate the maximum number of walrus expected on that haulout. Another approach to correct for walrus at sea during a survey is to use data from tagged animals to determine what proportion is hauled out at one time. In Alaska and Norway, researchers found that no more than 76% of tagged walrus were hauled out at one time. So to account for those animals, the highest estimates of walrus abundance were adjusted upward by 24%. The 2009 MNA count for Penny Strait-Lancaster Sound was adjusted for walrus “at sea” using the maximum proportion hauled out to produce an estimate of 711 (557-

807) walrus. The 2008 MNA count for West Jones Sound was similarly adjusted to produce an estimate of 492 (404-559) walrus.

Walrus surveys have also been conducted along the eastern coast of Ellesmere Island. In 2009, 571 walrus were counted which produced an estimate of 1,300-1,500 individuals.

The Greenland government flew surveys in northwest Greenland over ice using a grid pattern which produced an estimate of 2,676 (1,146-4,920) walrus. Satellite tags were deployed prior to the surveys to adjust for the number of walrus underwater (i.e., availability bias) and double observers were used during surveys to adjust for observer (i.e., perception) bias.

Some estimates of abundance are available for the Central Arctic population. Early numbers are available from surveys flown in Foxe Basin and some tagging was also conducted there to estimate how many walrus are at sea during surveys. Photographic counts are still underway but a preliminary estimate indicates there may be about 6,000 walrus in Foxe Basin. If “at sea” animals were accounted for then the estimate may increase to about 8,000. These data may change once the counts are completed and reviewed. Surveys conducted along the southeast coast of Baffin Island in 2005-2008 produced counts of 700-1,000 walrus which produced an estimate of about 1,500 animals. Along the coast of West Greenland an estimate of 2,978 (2,597-3,415) walrus was produced based on data collected in 2006 and 2008. They counted 106 walrus (population estimate: 3,162) in 2006 and 211 walrus (population estimate: 1,625) in 2008. In the High Arctic, walrus use haulouts in some years and not in others. A similar changing pattern of haulout use may account for the observed discrepancy between years in West Greenland. It was noted that all the walrus survey results presented were under review before they will be published.

No current population estimates are available for south and east Hudson Bay. In 2006, approximately 270 walrus were seen at Cape Henrietta Maria, at the northwestern corner of James Bay.

A participant reported that adult walrus can stay under the water for almost four hours. Information from older walrus surveys were thought to be unreliable because they are out of date. A participant asked if there was a critical number or a minimum population size that was used as a threshold for deciding if walrus warrants a designation of Special Concern or Threatened under COSEWIC. The presenter responded that the walrus that reside in West Jones Sound, and are estimated to number around 500, seem to be doing fine so that may not represent a minimum threshold for sustainability. A participant said that walrus along the floe edge in Jones Sound number in the thousands and are so numerous that seals have left the area. Other participants provided examples of other species (bowheads, muskox and polar bears) which have undergone noticeable changes in levels of abundance which do not necessarily correspond with scientists' views and data. Researchers were asked to consult with elders and communities before reaching conclusions about their assessments and the population estimates are set in stone.

Participants then shared their local knowledge of walrus abundance. In Foxe Basin, walrus numbers have fluctuated little in recent years although animals have moved farther from the communities, perhaps north to the corner of Foxe Basin. Walrus appear to be healthy and congregate in the fall around the islands, including those off Southampton Island. After incidents of harvesting on haul out sites, walrus stopped using haul out sites. Around Repulse Bay walrus numbers are not thought to be dwindling. Walrus usually come closer to the community in the fall and local hunters will also travel to Southampton Island, White Island and farther north to take walrus. On the Nunavik side of Hudson Strait, more walrus have been seen in recent years and at different times of year than in the past. Walrus appear earlier in the summer, in June

instead of August, and stay in winter, due to climate change, so Inuit can now hunt on an annual basis. At the community of Quaqtaq, walrus can be seen from town in December and from a boat in July. These changes in seasonal distribution may be due to the sea ice being pushed back.

More walrus surveys will be conducted in the future. Researchers are currently deciding if more surveys in Foxe Basin are needed or if they can move forward with surveying Hudson Bay and Hudson Strait. To date, DFO has not conducted walrus surveys near Kimmirut. Baffinland Iron Mines Corporation plans to conduct winter surveys in Hudson Strait in March (2012). DFO plans to test different aircraft than can travel faster and thus survey larger areas. Participants noted that faster aircraft would make it more difficult to count walrus but make it possible to survey a larger area over a relatively short time so all the animals could be counted before they move away. This is important because walrus can travel quickly.

COSEWIC requires information about walrus abundance over a period of three generations in order to assess population trend. The status report authors have compiled historical catch information up to the 1950s which covers three generations. It may be possible to conduct detailed trend analysis for the later time periods when more information was recorded, but likely not for earlier periods.

A participant said that in the past more walrus were present around the Belcher Islands than now and they used to migrate between the Islands and the mainland coast. Hunters had to avoid them while travelling across the bay. Walrus numbers subsequently declined in response to industrial activities (e.g., damming by Hydro Quebec). Inuit would like researchers to study walrus before any further changes/additions are made to dams in the region.

Participants asked whether a total estimate of the numbers of walrus in Arctic waters was available. DFO researchers responded there is no total estimate currently available and there is considerable uncertainty in the available survey results. If there are about 2,700 walrus in the High Arctic population and as many as 9,000 in the Central Arctic population (i.e., about 6,000 in Foxe Basin and as many as 3,000 in West Greenland, some of which may be shared with walrus off the southeast coast of Baffin Island) then there may be as many as 12,000 walrus in the waters of the eastern Canadian Arctic, excluding south and east Hudson Bay for which there are no current estimates.

Whether there has been an increase or decrease in walrus abundance since the 2006 COSEWIC status report is difficult to say with any certainty. Some estimates of abundance reported in 2006 were simply educated guesses so the only legitimate comparison with current estimates would be the 1977 LGL survey results. When the survey techniques used for the older and recent surveys were matched so they could be compared, there was no evidence of changes in walrus abundance. Participants noted that walrus numbers can vary from one year to the next depending on the movements and migration they undertake to meet their dietary needs.

SPECIAL SIGNIFICANCE OF WALRUS

The importance of walrus for Inuit who live in coastal communities in Nunavut and Nunavik was discussed. Historically, Inuit had many uses for walrus products (e.g., meat, hide, ivory and bone). Most families had a dog team so walrus were killed for human and dog consumption. Although many communities do not harvest as many walrus or use as many parts of the animal as they did in the past, they still value this species especially for aged walrus meat. Inuit view traditional foods as akin to medicine. A participant described the process of making aged walrus meat. Dog team racing for quests and races has undergone a resurgence in recent years so

more walrus meat has been taken to feed the dogs. Walrus ivory is used for carving. Communities that have walrus living nearby, such as Hall Beach and Igloolik, continue to hunt this species. Their harvests probably have changed little over the years. Some communities located some distance from walrus are willing to travel to hunt. For example, people in Arviat journey to Marble Island near Rankin Inlet and the people in Kugaaruk travel to Repulse Bay. However, the skin of walrus is tough making it difficult to cut. And when a walrus is butchered, polar bears often eat the meat so it is necessary to bring the meat closer to the community. Consequently, many communities now order their meat from Igloolik rather than conduct their own hunts. There is inter-settlement trade of both walrus meat and tusks.

In northwest Greenland, harvesters filled their quota in October and November 2010 and had to wait until January 2011 before they could hunt again which caused hardship for the harvesters. They use walrus meat for both human consumption and feeding dog teams. Ivory is mostly used for making tools and crafts (e.g., earrings). Tusks are very good for making harpoons and connections used for dog teams. There is currently an import ban on ivory in the European Union so the market for ivory products is restricted to Greenland.

POTENTIAL THREATS

Hunting in Nunavik

Presenter: Kathleen Martin, DFO Science

The landed catch of walrus was presented for subsistence harvests conducted in Nunavik between 1994 and 2010. The source of the data was Makivik Corporation. Salluit is the major harvesting community in Nunavik and Quaqtaq has also consistently harvested walrus over the years. Harvest data comes from the sample collection program to test the meat for trichinosis. A participant from Nunavik said that walrus have been harvested in low numbers throughout much of Nunavik in recent years. Only a few communities hunt near their communities and the numbers presented at the meeting are not accurate. Walrus samples are not always sent for testing if they come from a young animal or if the meat is not intended for human consumption. So the numbers reported through the sample testing program underestimate the actual numbers taken. The low catches reported for 2000-2003 likely reflect poor reporting rather than a decrease in takes although hunting patterns may have changed as fewer people are eating walrus now than in the past. Quaqtaq typically harvests only 6 -12 walrus a year, mostly for fermented meat. No Nunavik communities harvest walrus in significant numbers to feed dog teams.

Sex and age structure information is needed to conduct stock assessments. Harvesters do not report that information in Nunavik because they fear further regulation. Makivik conducted a harvest study between 1989 and 1996/97 which showed the break-down of harvests. Participants noted that younger harvesters are more likely to hunt for walrus with a tusk while the older generation tends to hunt females which have more tender skin.

Integrated Fisheries Management Plans and hunting in Nunavut

Presenter: Amanda Currie, DFO Resource Management

The landed catch of walrus was presented for subsistence harvests conducted in Nunavut between 1997/98 and 2011/12. DFO compiled the information based on reports from HTOs and wildlife officers. Four communities have yearly quotas that were instituted many years ago under the Marine Mammal Regulations: Arctic Bay (10), Clyde River (20), Coral Harbour (60) and Sanikiluaq (10). The rest of the communities are allowed to harvest 4 walrus a year per Inuk. Sport hunts have been conducted in Cape Dorset, Hall beach, Igloolik and Coral Harbour although harvests have not been high for the past few years. Hall beach and Igloolik harvest

significantly more walrus for subsistence than the other communities which typically take fewer than 20 per year. The Nunavik community of Salluit is located within the Area of Equal Use and Occupancy under the Nunavut Land Claims Agreement so their landed catches were also presented.

There is a requirement under the Marine Mammal Regulations and the Nunavut Land Claims Agreement for hunters to report their catches. Participants said that the difficulty of filling out the harvest form and the inadequate remuneration they receive for collecting samples discourages them from providing walrus harvest information and samples to DFO. Additionally, reporting harvest numbers might lead DFO to incorrectly conclude that walrus numbers are dwindling. A participant commented that in his community there are a handful of hunters who refuse to report their catches. His HTO uses the local radio to remind hunters to report and they tried to distribute the reporting booklets last year in an effort to improve reporting. Participants suggested DFO provide one booklet for all species, small enough to fit into a pocket. The presenter noted that DFO has developed new reporting booklets to address concerns previously raised.

Participants noted that in general more females used to be harvested historically. In recent years, more males are harvested in the spring for tusks and males and females are harvested for food in the fall when both sexes are heaviest.

Two walrus working groups (Foxy Basin and Baffin Bay-High Arctic) are currently working together to draft an Integrated Fisheries Management Plan (IFMP) for walrus in Nunavut. Representatives from DFO, Nunavut Tunngavik Incorporated, the Qikiqtaaluk Wildlife Board, and communities of Arctic Bay, Pond Inlet, Grise Fiord, Resolute Bay, Igloolik and Hall Beach participate in this joint effort. The Foxy Basin and Baffin Bay-High Arctic working groups were established in 2007 and 2010, respectively. To date, both groups have developed Terms of Reference, discussed management issues, developed maps, drafted text for the IFMP, and consulted with their communities. The IFMP is still under development. Some concerns raised by the working groups are the same as those mentioned in this meeting: increased shipping and mining, and the need for more scientific information, stock assessment and accurate reporting of landed catches. The value of collecting age and sex information as part of catch reporting, to facilitate stock assessments, has not been discussed by the working groups. In Nunavut, an MOU that sets out requirements for harvest reporting for polar bears was developed among co-managers. It was suggested that a similar approach for walrus might be useful. A participant asked if DFO collected struck-and-loss information from walrus hunters. Struck-and-loss reporting is a requirement of the license for sports hunts. Similar reporting is not required for subsistence hunts, although DFO records struck-and-loss information provided by HTOs. Struck-and-lost rates vary by season, hunting conditions and hunter experience. The 2006 COSEWIC status report reported a maximum of 32% struck and lost for Foxy Basin. No new information was provided by meeting participants on this topic.²

The landed catch of walrus was presented for sport hunts conducted in Nunavut and Salluit since 2004. The NWMB, which has the authority to set any non-quota limitations for Total Allowable Harvests, reviews walrus sport hunt applications annually and transmits its approval decisions to DFO. Approved sport hunts are conducted under a DFO license which is required because the hunter is a non-beneficiary. Sport hunts are led by an outfitter from the local community. Specific rules dictate what parts of the killed walrus the hunter can take from the community for personal own use. Cape Dorset and Grise Fiord have requested small numbers for sport hunts while Hall Beach, Igloolik and Coral Harbour have been quite active in

² Since the meeting, we have been informed that the Walrus Working Groups report that struck-and-lost rates can range from 5% to 32% (A. McPhee, pers. comm.).

requesting and conducting sport hunts, although a relatively small number of walrus have been landed. During 2008/2009 and 2009/2010, there was a sport hunt moratorium in Igloolik. Kimmirut received approval to conduct sport hunts for three years (2004-2006) and Qikiqtarjuaq for two years (2005-2006) but no walrus were landed. Resolute Bay and Arviat were approved last year for sport hunts but no walrus were taken.

Hunting in Greenland

Presenter: Fernando Ugarte, Greenland Institute of Natural Resources

Walrus occur along the eastern and western coasts of Greenland. The walrus in Northwest Greenland are part of the Baffin Bay stock (Canadian High Arctic population) while those in West Greenland are part of the Davis Strait-Hudson Bay stock (Canadian Central Arctic population).

An overview of walrus research in Greenland was given. Much of the research has been conducted using satellite tagging for a variety of purposes including calibration of aerial surveys and to study walrus movements and stock identity. DNA analysis has also been used to identify stocks as well as sex distribution of the catch. All harvesters who hunt walrus were required to give a piece of meat to the local health clinic to test for trichinosis. Researchers would like to do more intensive sampling in the future. Greenland conducts aerial surveys for different marine mammal species and populations including walrus. In 1998, they interviewed 100 hunters to ask about their catches, climate and other factors. These were not the same interviews conducted for polar bear. It is hoped the report will be completed in 2012. The Greenland government also collects catch statistics for walrus including the location where the animal was killed, the transport hunters used, length of tusks, and whether it was a male or female. There is a lot of seismic exploration in West Greenland for oil and gas. Lately the Greenland government has been using catch report information for environmental impacts assessments so that information about where people hunt can be used in making decisions about the oil industry.

Since 2007, a small satellite tag, which can be deployed without anesthetics, has been used on walrus. The equipment and methods were developed in collaboration with hunters. Researchers work with hunters to conduct a walrus expedition (sledges, boats and dogs) to tag along the ice edge; hunters do the tagging. To assess the effect of the tagging on walrus, tests were conducted on walrus in a colony in the Northeast Greenland National Park. An air gun with an arrow, the same equipment used in West Greenland, was used to deploy a tag on the backs of three identifiable walrus. One of these walrus, estimated to be 20 years of age, had been previously tagged using tusk tags in 1999 and again in 2002. The three walrus continued to behave normally after being tagged. One tag worked for only a short period while the other two worked for one and six months.

New and stronger regulations for walrus, including quotas, came into force in 2007. Walrus can be taken only by full-time hunters, those who derive more than 50% of their income from hunting and fishing. Only small boats and sledges can be used for transport during walrus hunts. Calves and females are protected except in Qaanaaq (Northwest Greenland). Walrus are now found only on the ice; no terrestrial haulouts remain in West or Northwest Greenland. The regulations forbid walrus hunting on land or in summer, though they are not around at that time of year. Walrus must be harpooned before they are shot. Quotas are set in three-year blocks and transfer from one year to the next within that period is allowed. There are wildlife officers in most of Greenland except in the Baffin Bay area.

There are two ways of hunting walrus in Greenland: by boat and from the ice edge. In Davis Strait, Inuit only hunt from boats while in Northwest Greenland they mostly hunt from the ice edge, although there has been more boat hunting in recent years due to deteriorating ice

conditions. It has been difficult to obtain information about struck-and-loss rates because hunters are reluctant to talk about it. So the government has made the assumption that boat and ice hunts have struck-and-loss rates of about 15% and 0%, respectively.

The most recent assessment of walrus by the North Atlantic Marine Mammal Commission (NAMMCO) took place in November 2009. Greenland adjusted the walrus quotas following the 2009 assessment. According to the Convention on International Trade in Endangered Species (CITES), species on Appendix I cannot be exported at all, those on Appendix II require a CITES permit and non-detriment finding (NDF) to allow export, and those on Appendix III require a CITES permit but not an NDF finding. The Greenland government instituted a requirement of an NDF finding for their species on Appendix III including walrus. In 2007, there was a negative finding for walrus in Greenland but this changed to a positive finding in 2011.

Analysis of historical catches in West Greenland, that are part of the Davis Strait-Hudson Bay stock, provided an estimate of about 9,000 walrus in 1900. Those numbers were later depleted by European and North American whalers and have remained relatively stable since 1960. Surveys conducted in 2006 and 2008 estimated walrus in West Greenland to number around 3,000. The science advice for this stock is a removal of 89 animals per year (including animals taken in Canadian waters) which would give a 70% probability of increase (annual replacement yield of 130 walrus (90% Confidence Interval (CI): 61-190)). In Greenland the quota for this stock is 61. Between 2007 and 2011 actual catches ranged between 28 and 62 walrus. The expected catch in Iqaluit, Pangnirtung and Qikiqtarjuaq was about 16 walrus. Assuming a struck-and-loss rate of 15% yields an expected annual removals of 89 (i.e., $(61+16) \times 1.15$) which is within the advice.

In northern Baffin Bay, walrus abundance in 2009 was estimated at 2,700. The modelling suggests this population was severely depleted from about 10,000 walrus in 1900 but there is much greater uncertainty about the historical data than for West Greenland. The science advice for this stock is a removal of 68 animals per year (including animals taken in Canadian waters) which would give a 70% probability of increase (annual replacement yield of 84 walrus (90% CI: 31-140)). In Greenland the quota for this stock is 64. Between 2007 and 2011 actual catches ranged between 60 and 91 walrus. The expected catch in Grise Fiord is four walrus. Assuming a struck-and-loss rate of between zero and 15% yields expected annual removals of 68-78 depending on the struck-and-loss rate used (i.e., $(64+4) \times 0$ or $(64+4) \times 1.15$). An annual removal of 68 is within the advice while an annual removal of 78 is within the replacement yield. After much debate, Greenland decided the combined catches for Greenland and Canada are sustainable for both stocks. New population estimates and diving data will help with re-assessments in the future. It would also help to have sex and age break-down of the landed catch for future assessments.

Various questions and comments were raised about the material presented. The presenter did not know whether the population model used was age based or stage based. Compliance reporting in Greenland is very good. Hunters must provide their catch information for the previous year in order to get a new license. Hunters report their catches to their municipality which forwards the information to the relevant government department. Now hunters realize there is a higher probability of higher catches in the future if they accurately report their harvest information. Along the western coast of Greenland, there are five larger communities (> 1,000 people) and about 20 smaller communities. Most walrus are taken by three communities in Northwest Greenland and another three in West Greenland. The remaining communities take a relatively small number of walrus per year. The walrus harvest is based on a single tag for each animal and only one hunter gets a tag so there is no over-reporting.

Historically there were a lot of walrus haulouts near Sisimiut (central-western Greenland) and a little north of there. Sometime in the first half of the last century those haulouts were abandoned most likely due to hunting. Walrus now haul out on the ice edge offshore. If sea ice continues to recede, walrus may be forced to haul out on land. That is why no hunts are allowed on land now. The walrus seemed to have moved offshore before tourism became a problem.

One participant questioned why Canada has not joined NAMMCO. As this is a policy question, this topic was not pursued.

A participant asked whether there has been any evidence of skin diseases in walrus as a result of the crash of a U.S. B-52 bomber plane near the Thule Air Base in Northwest Greenland in 1968. The plane, which crashed onto the sea ice, had been carrying atomic bombs which ruptured and dispersed radioactive contamination. There has been no evidence of skin diseases in walrus in the region. The presenter noted that in recent years, tourism, fishing, seismic and drilling exploration have increased, even during winter, along with associated shipping activities. Their effects on walrus have not yet been studied. In response to another question the presenter said he is not aware of any serious volcanic activity in Greenland although sometimes ash arrives from Iceland.

Another participant asked if age or sex is taken into account for the quotas. Only adult males are allowed to be taken from the Davis Strait stock. Most hunters report taking adult males but DNA samples indicate that many females have been taken too. It seems that identifying males from females in the field is more difficult than initially thought. It will take considerable discussion with hunters to determine how to regulate this. Uncontrolled hunting of marine mammals no longer occurs in Greenland as previously reported in COSEWIC reports. The current annual quotas for both walrus stocks along the western side of Greenland are around 60-70. The catch prior to the early 2000s was about 30% higher than this.

Participants discussed whether the 32% struck-and-loss rate that occurs in Canadian waters could be reduced to 15% as it is in Greenland if hunters harpooned first. The 32% rate reported in the COSEWIC status report was an upper limit. In Greenland, 0% was used for ice-based hunts and up to 15% for boat hunts so all the reported loss rates are based on the same studies. That said, if animals are harpooned first it would reduce hunting losses.

Several participants said that the impact of hunting on walrus is quite small relative to other threats.

Nunatsiavut

Presenter: Julie Whalen, Torngat Secretariat

Walrus are rarely seen in the Nunatsiavut region (in Labrador) now. The main role of the Nunatsiavut participant at this meeting was to learn how ATK is used for COSEWIC processes. Based on that information, the Torngat Secretariat and Nunatsiavut Government will determine whether they have relevant information to share with COSEWIC.

Research

Some participants believe that tags cause sickness and disorientation in walrus. DFO researchers indicated that the tags were about the size of a BIC lighter. They were deployed using a harpoon smaller than a seal harpoon which inserted the tag into the skin to a depth of about 1.5". The tags only lasted about three months so they did not provide information on long-term movements. The first drug administered to walrus during tagging was temperamental so they changed to another drug that was effective on walrus in the High Arctic but ineffective on

walrus around southeast Baffin Island. Between 5 and 10 walrus died in response to tagging over the years. In 2007, Canadian researchers stopped using drugs on walrus. Many participants said they do not approve of studies that involve handling and attaching satellite tags to walrus because of the risk of a wound and subsequent infection which could cause disease and death in walrus herds. Researchers said they have found no evidence of the spread of infection from one animal to another from tagging. Another participant commented that walrus occasionally draw blood just by scratching their skin.

Predation

Polar bears and killer whales are known predators of walrus. Polar bears typically hunt around haulout sites and take females and young animals rather than large males. They have been known to kill pregnant females and dig the foetus out of the mother walrus. A participant noticed that as ice has broken up earlier during the past few years in his region, polar bear predation has increased at both walrus haulout sites and the nesting grounds of ducks like eiders (genus *Somateria*). A participant asked whether a haulout site would be abandoned if a walrus is killed there. No one knew for sure. A DFO researcher reported seeing walrus and bears co-existing at Manning Island in Foxe Basin during the past couple of years. Death among walrus is also caused by fighting and from trampling. In recent years, more walrus have been seen in northern Foxe Basin than in the past including a few animals that had been trampled and then taken by bears. Participants predicted that walrus would then avoid those haulout sites.

There was a discussion about a walrus found with a circular wound on its back. It was suggested that the wound may have been the result of a shark attack although some participants doubted whether a shark could bite through a walrus' tough hide. Circular bite marks attributed to sharks have been seen on narwhal in southern Greenland.

Disease

A participant described an incident in which the skin of a tagged walrus in Foxe Basin turned red. The animal was later killed by a hunter near Hall Beach and the meat fed to dogs. No samples from the animal were provided to DFO. He thought that chemicals in the water make walrus more susceptible to disease. At least one other recent case of a sick walrus with reddish skin "lesions" weeping blood has been documented in Foxe Basin. Photographs, but no samples, were taken and shared with the DFO disease specialist in Winnipeg. This may be similar to the recent and unusual reports of sick and lethargic seals and walrus in Alaskan waters. No sick walrus have been reported in Greenland.

In Igloolik, tongue samples from harvested walrus are sent for testing to determine whether an animal contains *Trichinella* worms. In Nunavik, Makivik Corporation has a research centre that tests walrus samples submitted by communities for trichinosis. Female walrus often are not tested because they rarely have trichinosis. The turn-around time for obtaining the test results is typically about 24 hours. Some samples are sent out for further analysis and all received samples are archived. Nunavut participants said that if disease becomes prevalent in walrus there should be a way to quickly test the meat before selling to other communities.

Industrial development

Some participants reported there is an increasing prevalence of underwater acoustic transmitters in Arctic waters and they are having a negative impact on marine mammals. These devices were reported to be used by mining companies (e.g., Baffinland Iron Mines Corporation) and government scientists to conduct their research. Four transmitters were seen being deployed from a ship in Foxe Basin in summer 2011 following which a signal was sent from the

ship to the mooring. These devices are believed to emit sounds audible to marine mammals, but not humans, causing seals and whales to alter their movements and migration routes. Fewer ringed seals, bearded seals and walrus have been sighted in recent years in areas where these devices have been deployed and this change is attributed to the presence of acoustic transmitters.

Participants discussed whether these devices are acoustic transmitters or passive listening devices or oceanographic moorings that do not transmit sound. The seismic arrays used in Greenland waters can produce loud signals. Near Vancouver, powerful sonar devices have caused whales to beach themselves. No Canadian researchers at the meeting were aware of similar transmitters being used in the Canadian eastern Arctic. Along the west coast of Greenland in Davis Strait the Greenland government has deployed passive acoustic receivers to measure currents and water temperature in areas where large whales occur, but those devices do not transmit sounds. They also put out “rowboats” (gliders), which produce a beep sound, to orient in the water so they can see how the water is moving. DFO deployed three passive acoustic and tide pressure devices in Hudson Strait 40 miles off the coast of Nunavik in fall 2011 to record noise pollution.

Seismic activity in Greenland waters was discussed. Testing must be conducted between August 1 and September 30, after narwhal have migrated to Melville Bay and Lancaster Sound. The scale of seismic testing is massive: throughout Baffin Bay and at the northern end of Davis Strait, up to the maritime boundary between Canada and Greenland. Oil drilling has occurred closer to the coastline of Greenland. The biggest threat to marine mammals from oil and gas development is an oil spill from an underground well or from a ship. This would be a problem for Canada because wind and currents would push the spill west into Canadian waters. The Greenland government supports seismic testing because of the economic benefits.

A participant commented that the international community has an interest in the Northwest Passage for maritime passage. It has been stated that the ocean floor must be mapped in order to claim it. Relatively little underwater mapping has taken place in the Canadian archipelago to date, although there has been more farther north. If mapping is undertaken using seismic or even laser, it would produce powerful sounds that would affect marine mammals.

Mining activities in Nunavut and Nunavik are increasing. There are many minerals in Nunavik region and a number of mining efforts are now underway. One of these is the Raglan Mine, near Salluit, that has produced nickel since 1997 and may increase production in the future. Mine concentrate is transported by cargo ship from Deception Bay east through Hudson Strait during the shipping season. Ice break-up from the ship is negatively impacting reproducing seals. Another mine (Nunavik Nickel), south of the Raglan Mine, is expected to start production soon and continue for many years. A mine is also planned for around Quaqtaq.

In Nunavut, some mining is already underway and more is proposed. Baffinland Iron Mines Corporation has proposed to mine and transport iron ore from the Mary River on North Baffin Island in Nunavut. If the project goes ahead, high grade iron ore will be shipped from Steensby Inlet, in northeastern Foxe Basin, to market in Europe using cape-sized vessels with ice-breaking capabilities. The huge ships would transit Foxe Basin and Hudson Strait every two days year-round for 21 years. The Final Environmental Impact Statement has been submitted by Baffinland Iron Mines Corporation to the Nunavut Impact Review Board. It will be distributed to DFO and other jurisdictions for review once it has passed the compliance test. In addition to the Mary River mine, there will be at least one or two mines for precious and other metals, with associated shipping, developed around Rankin Inlet. Mining potential is also being explored in the Belcher Islands and at Roche Bay near Hall Beach. It is possible the Roche Bay mine will be

an even larger project than the Mary River mine. All mining operations that depend on shipping to export their products have the potential to negatively affect walrus.

Participants asked what effects residents of Arctic Bay have noticed during and after the Nanisivik mine closed. While the mine was in operation, concentrate was shipped south between late-May and mid-November for many years³. Ships dumped their ballast water after arriving at Nanisivik. During that period, the number of narwhal at the floe edge diminished and seal densities declined. Cod and other fish moved away in response to the dumping of ballast water at the port. Since the mine closed and ship traffic stopped, more narwhal are now using the floe edge and seal and fish densities near the port site have increased. In Nunavik, similar negative effects have been noticed on char in response to loading and unloading at port facilities associated with mining activities and at communities that receive visits from cruise ships.

An increase in shipping traffic in the eastern Arctic, especially large ships on a regular basis, would present problems associated with ballast water. Participants discussed the process by which ships use ballast water and its impact on benthic flora and fauna and the food chain. If ships are from within Canada they don't have to exchange ballast. Ships from outside Canada have to exchange ballast in mid-Atlantic. There are new international regulations that will make it so ships have to hold the ballast water in the ship and treat it there using methods such as heat or light. Ships must meet a certain standard for this, such as killing a certain number or percentage of exotic organisms in the ballast water.

The impacts of the proposed Mary River mine on walrus were discussed. Noise from the gigantic ore-carrying ships along the shipping route, including sonar used to guide the ships, as well as aircraft servicing Steensby Port will disturb walrus in the region. Ballast water dumped from the ore carriers at Steensby Port and its impact on local flora and fauna could also be significant. Other threats to walrus from the project were also touched on. Although some participants thought that walrus would habituate to shipping, most emphasized that walrus are highly affected by disturbance and agreed that shipping activities associated with the proposed number and likely scale of future mining developments in the eastern Arctic would pose a significant threat to walrus.

A participant reported on the impact of sediment turnover from Hydro Quebec activities on the diet of walrus. Another participant asked about possible dangers associated with shipping uranium if a proposed mine near Baker Lake goes ahead. Someone else asked about whether walrus sanctuaries could be established.

Pollution: Contaminants and toxic substances

Dumping of raw sewage by cruise ships in the Arctic was identified as a concern because it could negatively affect filter feeders, like clams, that walrus eat. It was noted that Transport Canada has regulations that control dumping at sea. One participant thought that ships are required to hold sewage until they reach port where they can dump into tanks. Oil spills and shipping accidents that result in vessels sinking were also identified as concerns for walrus due to the potential release of contaminants and pollution. The international Arctic Monitoring and Assessment Programme (AMAP) monitors pollutants in arctic waters. Pregnant women are recommended to not eat walrus because of current levels of contaminants in the meat.

³ Several visits were made by ore carriers annually in addition to regular sealift operations.

Disturbance from noise or ecotourism

Hunters report that walrus are easily disturbed by noise and will temporarily flee from boat noise regardless of whether it is from large ships or small boats. Tourism is increasing in the Arctic and some tourists now travel to walrus haulout areas in rigid-hulled inflatable boats. It is important to keep those areas undisturbed and for that reason there are regulations against tourists visiting haulout sites. It is not clear how to effectively monitor haulout visitations and enforce the regulations. A participant noted the Nunavut Marine Council has recently been created as called for under Section 15.4.1 of the Nunavut Land Claims Agreement. During preliminary meetings, tourism, development, and ballast water have come up as issues and a symposium will be held next year to discuss these concerns.

As mentioned in the Industrial Development section, noise related to mining activities at port sites and along shipping routes is a significant concern for a species as sensitive as walrus. They may not habituate to ongoing noise pollution and instead move into sub-optimal habitat which could result in detrimental impacts at the stock or population level.

Climate change

Participants wondered whether marine productivity would increase or decrease in response to climate change. A study in Greenland investigated productivity in different years and recorded higher productivity in years with no ice, possibly because the growing season started earlier in those years. However, it was noted that the type of algae would influence whether and how marine productivity increases or decreases according to ice conditions. The discussion was not pursued as no one with oceanographic expertise was available to provide useful information.

Current climate change models predict that in 50 years there will no longer be any sea ice although the models do not take into account other factors, such as volcanic eruptions, that could lead to cooling. Participants were generally concerned about potential impacts of climate change but there is no evidence yet of the effects on walrus in Canadian waters. They may be less significant for walrus than other species such as ringed seals because walrus can, and do, haul out on land. One participant shared that his father said when the seas are rough it is a signal for walrus to start to migrate. This year walrus started to migrate earlier because of the ice melt.

The adaptability of walrus to changing environmental conditions was considered. It often depends on how quickly the environment changes. Walrus can probably adapt to some extent but if the distribution or kind of prey changes then it makes predictions more difficult. Historically, this species lived farther south than it does today, so it appears walrus can live without sea ice so long as they have places to feed and rest.

Invasive species

The threat of invasive species was discussed. The European Green Crab (*Carcinus maenas*), Chinese Mitten Crab (*Eriocheir sinensis*) and some tunicates (Tunicata) that feed shellfish could be a problem because they feed on shellfish, thus may compete with walrus for food. Little information is available on the distribution of those species. They are currently found along the Newfoundland coast so they could become a threat if they get to Hudson Strait where they can easily move to Hudson Bay.

CLOSING REMARKS

Once a report summarizing the meeting discussions has been completed, it will be translated into Inuktitut and French. English and Inuktitut language versions will be distributed to participants and all versions will be posted on the DFO website. All meeting attendees, including the interpreters, were thanked for participating in the meeting.

PERSONAL COMMUNICATIONS

Allison McPhee, DFO Fisheries Management, Central and Arctic region, Winnipeg, MB
D. Bruce Stewart, Arctic Biological Consultants, Winnipeg, MB

APPENDIX 1: TERMS OF REFERENCE

Pre-COSEWIC Peer Review Meeting for Atlantic walrus (*Odobenus rosmarus rosmarus*)

Zonal Advisory Process – Central & Arctic, Gulf, Quebec, Maritimes, Newfoundland & Labrador

28 February to 1 March 2012
Iqaluit, Nunavut

Chairperson: Don Bowen

Context

The implementation of the federal *Species at Risk Act* (SARA), proclaimed in June 2003, begins with an assessment of a species' risk of extinction by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). COSEWIC is a non-government scientific advisory body that has been established under Section 14(1) of SARA to perform species assessments which provide the scientific foundation for listing species under SARA. Therefore, an assessment initiates the regulatory process whereby the competent Minister must decide whether or not to accept COSEWIC's assessment and add a species to Schedule 1 of SARA, which would result in legal protection for the species under the Act. If the species is already on Schedule 1 of SARA, the Minister may decide to keep the species on the list, reclassify it as per the COSEWIC assessment, or to remove it from the list (Section 27 of SARA).

Fisheries and Oceans Canada (DFO), as the primary generator and archivist of information on marine aquatic species and some freshwater aquatic species, is to provide COSEWIC with the best information available to ensure that an accurate assessment of the status of a species can be undertaken.

The Atlantic walrus (*Odobenus rosmarus rosmarus*) was listed on COSEWIC's fall 2011 Call for Bids to produce a status report.

Objectives

The overall objective of this meeting is to peer-review information relevant to the COSEWIC status assessment for Atlantic walrus in Canadian waters, considering data related to the status and trends of, and threats to this species inside and outside of Canadian waters, and the strengths and limitations of the information. This information will be available to COSEWIC, the authors of the status report, and the Chairs of the COSEWIC Species Specialist Subcommittee. Output from the peer-review (see below) will be posted on the Canadian Science Advisory Secretariat (CSAS) website.

Specifically, DFO information relevant to the following will be reviewed to the extent possible:

1) Life history characteristics

- Growth parameters: age at maturity and maximum age
- Total and natural mortality rates and recruitment rates (if data is available)
- Fecundity

-
- Generation time
 - Early life history patterns
 - Specialised niche or habitat requirements (see also critical habitat and residence)

2) Review of designatable units – See COSEWIC 2008 “Guidelines for Recognizing Designatable Units below the Species Level” at http://www.cosewic.gc.ca/eng/sct2/sct2_5_e.cfm

Discussion on the species will consider available information on population differentiation, which could support a COSEWIC decision of which populations below the species’ level would be suitable for assessment and designation.

3) Review the COSEWIC criteria for the species in Canada as a whole, and for designatable units identified (if any) according to the information presented in Appendix 1.

4) Describe the characteristics or elements of the species habitat to the extent possible, and threats to that habitat

It is necessary to scope out the characteristics of a species’ critical habitat prior to the COSEWIC assessment, with full identification and quantification occurring at the stage that a recovery strategy is developed. Critical habitat is defined in SARA as “the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species’ critical habitat in the recovery strategy or in an action plan for the species”. Habitat is defined as “in respect of aquatic species, spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced”.

The following guidelines are from the DFO Science Advisory Report “Documenting Habitat Use of Species at Risk and Quantifying Habitat Quality” (http://www.dfo-mpo.gc.ca/csas/Csas/status/2007/SAR-AS2007_038_E.pdf).

- a) Describe the “functional properties” that a species’ aquatic habitat must have to allow successful completion of all life history stages.

In the best cases, a functional property will include both features of the habitat occupied by the species and the mechanisms by which those habitat features play a role in the survivorship or reproduction of the species. However, in many cases the functional properties cannot be described beyond reporting patterns of distribution observed (or expected) in data sources, and general types of habitat feature known to be present in the area(s) of occurrence and suspected to have functional properties. Information will rarely be equally available for all life history stages of an aquatic species, and even distributional information may be missing for some stages. Science advice needs to be carefully worded in this regard to communicate uncertainties and knowledge gaps clearly.

- b) Provide information on the spatial extent of the areas that are likely to have functional properties.

Where geo-referenced data on habitat features identified are readily available, these data could be used to map and roughly quantify the locations and extent of the species’ habitat. Generally however, it should be sufficient to provide narrative information on what is known of the extent

of occurrence of the types of habitats identified. Many information sources, including Traditional Ecological Knowledge (TEK) and experiential knowledge, may contribute to these efforts.

- c) Identify the activities most likely to threaten the functional properties, and provide information on the extent and consequences of those activities.

COSEWIC's operational guidelines require consideration of both the imminence of each identified threat, and the strength of evidence that the threat actually does cause harm to the species or its habitat. The information from the Pre-COSEWIC assessment should provide whatever information is available on both of those points. In addition the information should include at least narrative discussion of the magnitude of impact caused by the threat when it does occur.

- d) Recommend research or analysis activities that are necessary to satisfy the requirements for advice on habitat issues, if needed for the species

Usually knowledge gaps are identified and any recommendations made and enacted at this stage in the overall process could result in much more information being available should a Recovery Potential Assessment (RPA) or recovery planning be required for the species.

5) Describe to the extent possible whether the species has a residence as defined by SARA

SARA s. 2(1) defines Residence as “a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating.”

6) Threats

A threat is any activity or process (both natural and anthropogenic) that has caused, is causing, or may cause harm, death, or behavioural changes to a species at risk or the destruction, degradation, and/or impairment of its habitat to the extent that population-level effects occur. Naturally limiting factors, such as aging, disease and/or predation that limit the distribution and/or abundance of a species are not normally considered threats unless they are altered by human activity or may pose a threat to a critically small or isolated population. Distinction should be made between general threats (e.g., shipping activity) and specific threats (e.g., ship strikes), which are caused by general activities.

List and describe threats to the species considering:

- Threats need to pose serious or irreversible damage to the species. It is important to determine the magnitude (severity), extent (spatial), frequency (temporal) and causal certainty of each threat.
- The causal certainty of each threat must be assessed and explicitly stated as threats identified may be based on hypothesis testing (lab or field), observation, expert opinion or speculation.

7) Other

Finally, as time allows, review status and trends in other indicators that would be relevant to evaluating the risk of extinction of the species. This includes the likelihood of imminent or

continuing decline in the abundance or distribution of the species, or that would otherwise be of value in preparation of COSEWIC Status Reports.

Working Paper(s)

Any working paper(s) related to the status of the Atlantic walrus being reviewed at the meeting will be made available to all participants by 14 February 2012.

Expected publications

The key conclusions/recommendations will address the basis for assessing status of the Atlantic walrus to be considered by COSEWIC. The final version of the minutes of the meeting will be part of the CSAS Proceedings series.

Participation

Participation is expected from:

- Relevant DFO sectors and regions
- COSEWIC status report author(s)
- Members of COSEWIC (Co-Chairs and/or SSC experts)
- Aboriginal groups
- Other invited external experts as deemed necessary

COSEWIC Criterion – Declining Total Population

- a. Summarize overall trends in population size (both number of mature individuals and total numbers in the population) over as long a period as possible and in particular for the past three generations (taken as mean age of parents). Additionally, present data on a scale appropriate to the data to clarify the rate of decline.
- b. Identify threats to abundance— where declines have occurred over the past three generations, summarise the degree to which the causes of the declines are understood, and the evidence that the declines are a result of natural variability, habitat loss, fishing, or other human activity.
- c. Where declines have occurred over the past three generations, summarize the evidence that the declines have ceased, are reversible, and the likely time scales for reversibility.

COSEWIC Criterion – Small Distribution and Decline or Fluctuation: for the species in Canada as a whole, and for designatable units identified, using information in the most recent assessments:

- a. Summarise the current extent of occurrence (in km²) in Canadian waters.
- b. Summarise the current area of occupancy (in km²) in Canadian waters.
- c. Summarise changes in extent of occurrence and area of occupancy over as long a time as possible, and in particular, over the past three generations.
- d. Summarise any evidence that there have been changes in the degree of fragmentation of the overall population, or a reduction in the number of meta-population units.
- e. Summarise the proportion of the population that resides in Canadian waters, migration patterns (if any), and known breeding areas.

COSEWIC Criterion – Small Total Population Size and Decline and Very Small and Restricted: for the species in Canada as a whole, and for designatable units identified, using information in the most recent assessments:

- a. Tabulate the best scientific estimates of the number of mature individuals.
- b. If there are likely to be fewer than 10,000 mature individuals, summarize trends in numbers of mature individuals over the past 10 years or three generations, and, to the extent possible, causes for the trends.

Summarise the options for combining indicators to provide an assessment of status, and the caveats and uncertainties associated with each option.

For transboundary stocks, summarize the status of the population(s) outside of Canadian waters. State whether rescue from outside populations is likely.

APPENDIX 2: MEETING PARTICIPANTS

NAME	Affiliation / Community
Akkuardjuk, Michel	Arviq Hunters and Trappers Organization (HTO) (Repulse Bay)
Arlooktoo, Kiponik	Mayukalik HTO (Kimmirut)
Arreak, Lazarus (interpreter)	Innirvik Support Services Ltd
Bowen, Don (Chair)	DFO (Science, Maritimes region)
Cleator, Holly	DFO (Science, Central and Arctic region)
Currie, Amanda	DFO (Fisheries Management, Central and Arctic region)
Curtis, Martyn	DFO (SARA, Central and Arctic region)
Delisle-Alaku, Adamie	Makivik Corporation
Hamilton, Jason	DFO (Science, Central and Arctic region)
Hidgon, Jeff	COSEWIC status report co-author
Idlout, Simon	Resolute HTO
Ikkidluak, Elisapee (Interpreter)	Innirvik Support Services Ltd
Irngaut, David	Igloolik HTO
Irngaut, Paul	Nunavut Tunngavik Inc.
Kango, Joshua	Amaruq HTO (Iqaluit)
Kaunak, Levi	Hall Beach HTO
Kilabuk, Patrick	Pangnirtung HTO
Kimmaliardjuk, Eli	Aqigiq HTO (Chesterfield Inlet)
Kruger, Lia	DFO (Science, Central and Arctic region)
Magera, Anna	Nunavut Wildlife Management Board
Martin, Kathleen	DFO (Science, Central and Arctic region)
Natanine, Jerry	Nangmoutaq HTO (Clyde River)
Newkingnak, Toomasie	Nattivak HTO (Qikiqtarjuaq)
Ningiuk, Joanassie	DFO (Fishery Officer, Quebec region, Inukjuak)
Nirlungayuk, Gabriel	Nunavut Tunngavik Inc.
Noah, Charlie	Iviq HTO (Grise Fiord)
Oovaut, Johnny	Nunavik Marine Region Wildlife Board
Oyukuluk, Qaumayuq	Ikajutit HTO (Arctic Bay)
Qaunaq, Matthias	Mittimatalik HTO (Pond Inlet)
Sala, Harry	Sanikiluaq HTO
Schneidmiller, Adam	Nunavut Wildlife Management Board
Stephenson, Sam	DFO (SARA, Central and Arctic region)
Stewart, Bruce	COSEWIC status report co-author
Stewart, Rob	DFO (Science, Central and Arctic region)
Tapaungai, Kovianatuluaq	Aiviq HTO (Cape Dorset)
Tarqriasuk, Quitsaq	Ivujivik Hunting, Fishing and Trapping Committee
Tatty, John	Kivalliq Wildlife Board
Trites, Andrew	COSEWIC marine mammal subcommittee
Trumbley, Dean	COSEWIC ATK subcommittee co-chair
Ugarte, Fernando	Greenland Institute of Natural Resources
Whalen, Julie	Torngat Secretariat

APPENDIX 3: MEETING AGENDA

Zonal Pre-COSEWIC Assessment for Atlantic walrus

Salons A and B, Navigator Hotel, Iqaluit, Nunavut

Chairperson: Don Bowen

February 28, 2012

- 9:00 Prayer and round table introductions
- 9:10 Opening remarks (D. Bowen)
- 9:20 Wildlife species assessment process
 - Overview (S. Stephenson)
 - Status report (B. Stewart)
 - COSEWIC Aboriginal Traditional Knowledge Subcommittee (D. Trumbley)
 - COSEWIC Marine Mammal Subcommittee (A. Trites)
- 10:00 Species biology
- 10:20 Coffee break
- 10:35 Species biology (continued)
- 11:45 Lunch break
- 1:00 Catch history (B. Stewart)
- 1:30 Distribution, movements and dispersal (high Arctic, central Arctic and southern areas) (R. Stewart)
- 3:30 Habitat (requirements, trends, knowledge gaps and “residence”)
- 4:30 End of Day 1

February 29, 2012

- 8:30 Recap of Day 1
- 8:40 Limiting factors
- 8:55 Population sizes, trends and uncertainties (R. Stewart)
- 10:00 Coffee break
- 10:15 Population sizes, trends and uncertainties (continued)
- 11:45 Lunch break
- 1:00 Special significance of walrus
- 3:15 Coffee break
- 3:30 Special significance of walrus (continued)
- 4:30 End of Day 2

March 1, 2012

8:30 Recap of Day 2

8:40 Potential threats (extent, frequency, magnitude and certainty)

- Integrated Fisheries Management Plans and hunting in Nunavut (A. Currie)

10:15 Coffee break

10:30 Potential threats (continued)

- hunting in Nunavik (K. Martin)
- hunting in Greenland (F. Ugarte)
- research

11:45 Lunch break

1:10 Potential threats (continued)

- predation
- disease
- industrial development
- contaminants

3:15 Coffee break

3:30 Potential threats (continued)

- disturbance from noise or ecotourism
- climate change
- invasive species

4:00 Closing remarks

4:30 Meeting adjourns