SUBMISSION TO THE NUNAVIK AND EEYOU MARINE REGION WILDLIFE BOARDS

Purpose

Fisheries and Oceans Canada (DFO) submission to the Nunavik Marine Region Wildlife Board (NMRWB) and the Eeyou Marine Region Wildlife Board (EMRWB) written public hearing to consider whether to approve the request from the Anguvigaq to extend the current Beluga Management System by one year, until January 31, 2027, in accordance with the Boards authority under s. 5.2.3(a) and 5.2.3(e) of the Nunavik Inuit Land Claims Agreement ("NILCA") and s.13.2.1(a) and 13.2.1(e) of the Eeyou Marine Region Land Claims Agreement ("EMRLCA").

Background

Beluga have been harvested by Inuit for millennia. They are of profound cultural significance and an important source of food security for northern communities. Nunavimmiut harvest beluga from at least four stocks in the Hudson Bay-Strait complex: Belcher Islands-Eastern Hudson Bay (BEL-EHB); Western Hudson Bay (WHB); Ungava Bay (UNG); and James Bay (JAM).

Previous studies have suggested that some beluga populations undertake seasonal migrations, demonstrating a strong tendency to return to their natal summering areas every year, while other populations can be considered as resident, remaining in one area year-round. Knowledge of summering grounds and migratory routes are understood to be transmitted from older individuals to juveniles, and from mothers to their offspring, resulting in genetic structures among beluga populations defined by their summering location. There has been compelling evidence that beluga tend not to recolonize suitable summering habitat that was previously used as aggregation areas once they are abandoned or the local population is extirpated. Multiple populations spatially mix at different times of the year, for example, during spring-fall migrations, or they may share overlapping wintering areas.

Genetics

Beluga sampling programs have been in place in the Hudson Bay-Strait complex since the 1980s. Mitochondrial DNA (mtDNA) in the samples is analyzed to estimate the contribution of each stock to the harvest outside of summering grounds and from fall to spring. Analysis of short sequences (234 base pairs haplotypes) from the mtDNA have allowed for the identification of four distinct populations in the Hudson Bay-Strait complex: Western Hudson Bay (WHB); Eastern Hudson Bay (EHB); James Bay (JAM); and Cumberland Sound beluga (CSB). Based on short haplotype analysis, most beluga harvested in Sanikiluaq were considered to be WHB animals. A 2023 reanalysis using longer mtDNA sequences (615 base pairs haplotypes) from the mtDNA identified a fifth distinct population in the Hudson Bay-Strait complex, which is harvested year-round by Sanikiluaq residents and was therefore named the Belcher Islands (BEL) beluga population (Parent et al. 2023). This newly identified BEL population summers within the geographic summer distribution area of EHB beluga. The spatial overlap between BEL

and EHB beluga prevents estimating the abundance of these two populations separately from aerial surveys. Therefore, DFO considers beluga summering between the eastern coast of Hudson Bay and up to 60 km west of the Belcher Islands to be a mixed BEL-EHB stock.

Updated Stock Assessment

The last BEL-EHB stock assessment, carried out in 2021, suggests the stock has declined from 3,700-3,900 individuals in 2015 to 2,900-3,200 individuals in 2021 (i.e., ~3% per year), and that the decline is primarily attributed to unsustainable harvest levels throughout the BEL-EHB stock range (Hammill et al. 2023; Sauvé et al. 2024).

Management Plan

Since the mid-1980s, harvesting restrictions have been in place to ease pressures on the EHB and UNG beluga, which have been respectively assessed as Threatened and Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). BEL-EHB beluga are present in multiple jurisdictions. Management measures in the Nunavik Marine Region (NMR) and the shared zone with the Eeyou Marine Region (EMR) are detailed in the 2021-26 Nunavik Beluga Management System and include a total allowable take (TAT) of 20 beluga in the Eastern Hudson Bay Arc management zone and non-quota limitations in the rest of the NMR. The management system aims to ensure a 50% probability that the EHB stock remains stable at 2016 levels after 5 years, based on the most up to date scientific information available at the time (DFO 2020). Accordingly, total annual removals of EHB are recommended to not exceed 58 individuals (i.e. the harvest threshold). A voluntary summer closure has been in effect in Sanikiluaq since 2006 with the goal of reducing harvesting pressure on EHB beluga.

The 2021-2026 Beluga Management Plan harvest threshold was intended to identify the maximum number of harvests that the EHB stock could sustain, based on the information available at the time. The harvest threshold has been exceeded since the beginning of the plan, with an estimated 96, 73, 87, and 116 EHB harvests per year between 2021 and 2024. This corresponds to an average of 162% of the recommended harvest level since the beginning of the plan.

Implications

Consistently exceeding the harvest threshold, combined with the low 2021 estimated stock abundance and the 2023 genetic reanalysis has significant implications for the sustainability of the BEL-EHB stock. As the Boards are considering a potential one-year extension to the current management plan, it is important that the decision be informed by the most recent information available.

The 2023 genetic reanalysis indicates that a significant portion of beluga harvests in Nunavik (i.e., Northeast Hudson Bay, Hudson Strait and Ungava Bay) and Sanikiluaq previously assigned to the WHB population are instead from the BEL population. The EHB harvest numbers reported above do not include the BEL beluga harvested in the NMR and in Sanikiluaq. As such, the number of annual removals from the joint BEL-EHB stock has been underestimated. The identification of the BEL stock and the reanalysis of previous genetic samples has significant impacts on the harvest proportions in the Hudson Strait during the spring and fall migrations and around the Belcher Islands throughout the year. The genetic reanalysis suggests total

removals by Nunavik and Nunavut harvesters of BEL-EHB across their range has been underestimated by over 80% between 1996 and 2022 (TAB 1).

Boards Questions

Would the proposed extension aid co-management partners in co-developing a fulsome beluga management proposal for the Boards?

We expect an extension could help co-management partners find alignment on some management measures. It is expected that conversations pertaining to modifying specific aspects of the management plan such as TATs and the overarching plan objectives will remain a challenge regardless of timelines.

If the current beluga management system is not extended by 1 year, what alternatives are suggested to ensure beluga populations and Cree/Inuit harvesting rights are protected past January 31, 2026?

Should the Boards choose to not extend the current management plan, DFO will be ready and available to work with co-management partners to inform the development of a new or interim management plan.

If the current management system is extended by 1 year, will modification(s) to the system be necessary to ensure beluga populations and Cree/Inuit harvesting rights are protected during the extension? If so, what might these changes be?

Yes, we believe interim modifications to the management system are necessary to address significant concerns related to the sustainability of the BEL-EHB stock. Notably, interim modifications should consider the identification of the BEL population in 2023 (and associated harvest implications), and that the BEL-EHB stock was smaller than believed at the time the management plan was established.

We recommend that in the establishment of interim management objectives, that the Boards take into consideration the updated 2021 stock assessment information. The current management objectives pertaining to stock sustainability are based on the estimated population size in 2016 (3,400 individuals, 95% confidence interval: 2,300-5,400) as estimated in 2020 (DFO 2020), whereas the 2021 survey and associated abundance estimate suggest the population is closer to 2,900-3,200 individuals, or 6-15% below the previously estimated 2016 abundance (Sauvé et al. 2024). Moreover, the current management objectives were established based on the estimation at the time that the EHB stock had been increasing between 2001-2014, and had been stable since then (DFO 2020). In contrast, the 2023 stock assessment estimated that the BEL-EHB stock had been declining at an average annual rate of 1.1% between 2004-2014, and that the rate of decline had increased to an annual average of 3.0% between 2015-2021 (Hammill et al. 2023).

We also recommend consideration of the updated genetics information (Parent et al. 2023). The 2023 genetic reanalysis identified the existence of the BEL population and has significant implications for the management of beluga in the Nunavik and Eeyou Marine Regions and the Nunavut Settlement Area. A major component of the beluga management plan is estimating the total number of EHB harvests by employing the harvest proportion system (NMRWB Reasons for Decision, p. 64-65). Based on previously collected samples, a proportion of harvests

at a given time of year and location are determined to be from the various stocks. Using the updated proportions will allow co-management partners to more accurately estimate the number of BEL-EHB harvests throughout the region in a given year or season.

We recommend that the Boards consider identifying an interim harvest threshold and interim management objectives based on the updated stock assessment. Additionally, implementing a clearly defined process for what steps are to be taken, by who, and how any decisions are to be communicated with co-management partners once the harvest threshold has been, or is about to be, reached would help ensure the effective implementation of this measure.

To help inform future management decisions, it is expected that a new stock assessment based on the 2024 aerial survey will be shared with the Boards in the coming months.

Should the NMRWB approve the request to extend the current beluga management system by one year?
Recognizing the importance of the work being conducted by the Anguvigaq to gather Inuit Knowledge on beluga, and that the previous management plan took approximately 10 months from the date of the public hearings until the Minister approved the Boards final decisions, DFO supports the proposed one-year extension of the management plan. Additionally, the extension will allow for conversations between co-management partners on how the NMRWB/EMRWB and the Nunavut Wildlife Management Board could collaborate on the management of the shared stock.

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Date:
May 13, 2025

Attachments:
Tab 1 – Graphs and tables

References:
DFO. 2020. 2020 Harvest Advice for Eastern Hudson Bay Beluga (Delphinapterus leucas). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2020/031.

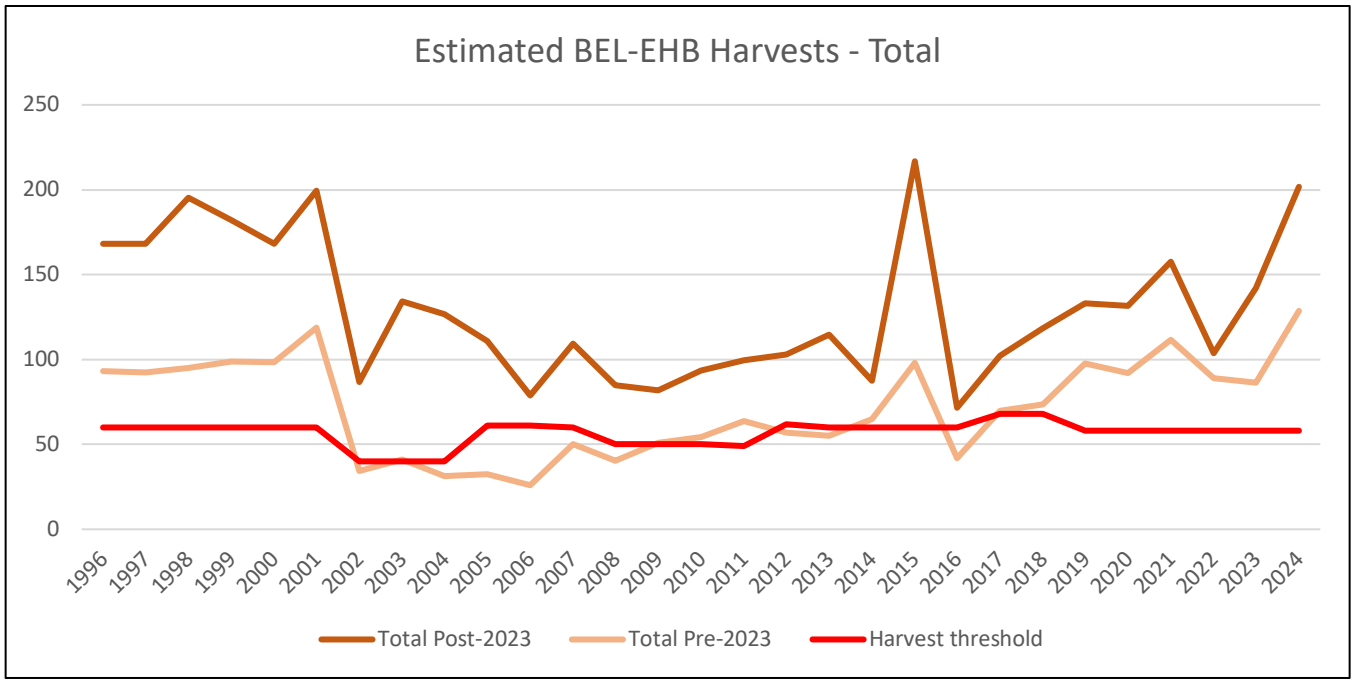
Hammill, M.O., St-Pierre, A.P., Mosnier, A., Parent, G.J., and Gosselin, J.-F. 2023. Total Abundance and Harvest Impacts on Eastern Hudson Bay and James Bay Beluga 2015–2022. DFO Can. Sci. Advis. Sec. Res. Doc. 2023/066. iv + 50 p.

Sauvé, C., Caissy, P., Hammill, M.O., Mosnier, A., St-Pierre, A. P., and Gosselin, J.-F. 2024. Recovery Potential Assessment for Beluga (Delphinapterus leucas) Stocks in Nunavik (Northern Quebec). DFO Can. Sci. Advis. Sec. Res. Doc. 2024/030. v + 70 p.

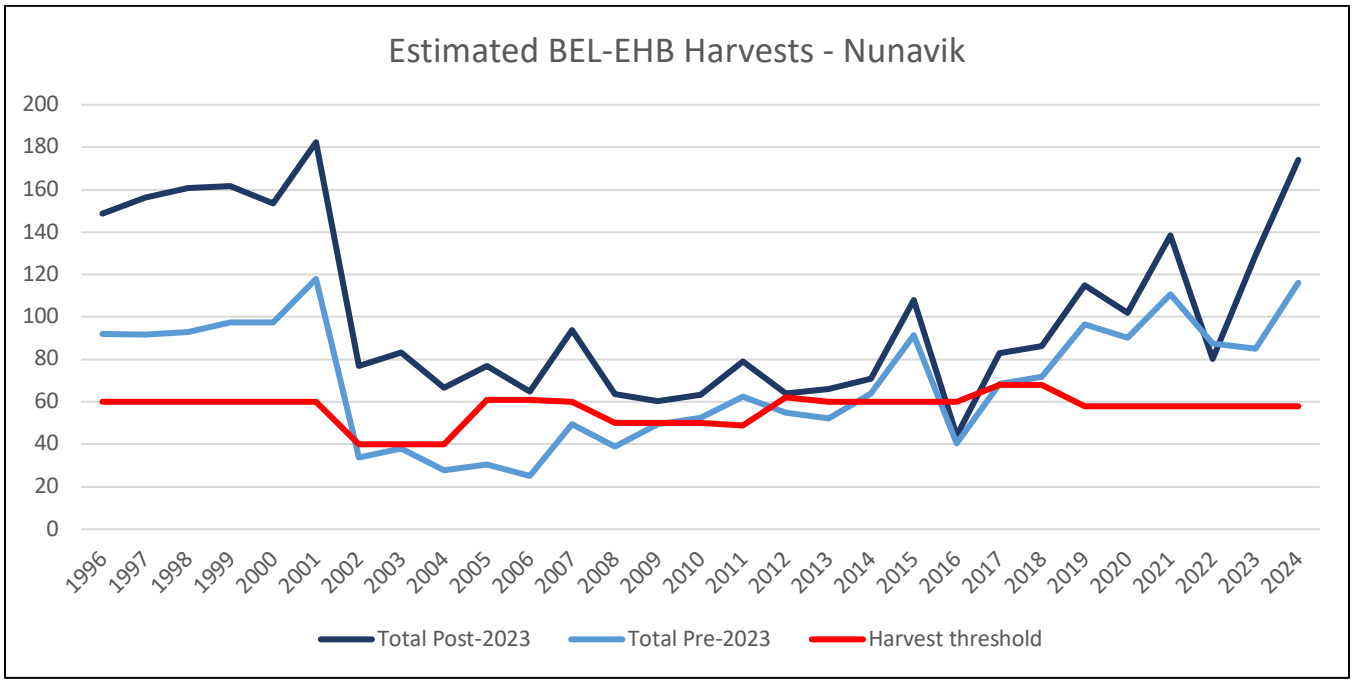
Parent, G.J, Mosnier, A., Montana, L., Cortial, G., St-Pierre, A.P., Bordeleau, X., Lesage, V., Watt, C., Postma, L., and Hammill, M.O. 2023. Re-examining populations of beluga in the Hudson Bay-Strait Complex and assessing the impact on harvests in Nunavik and Sanikiluaq management units. DFO Can. Sci. Advis. Sec. Res. Doc. 2023/004. iv + 31 p.

TAB 1 - Graphs and tables

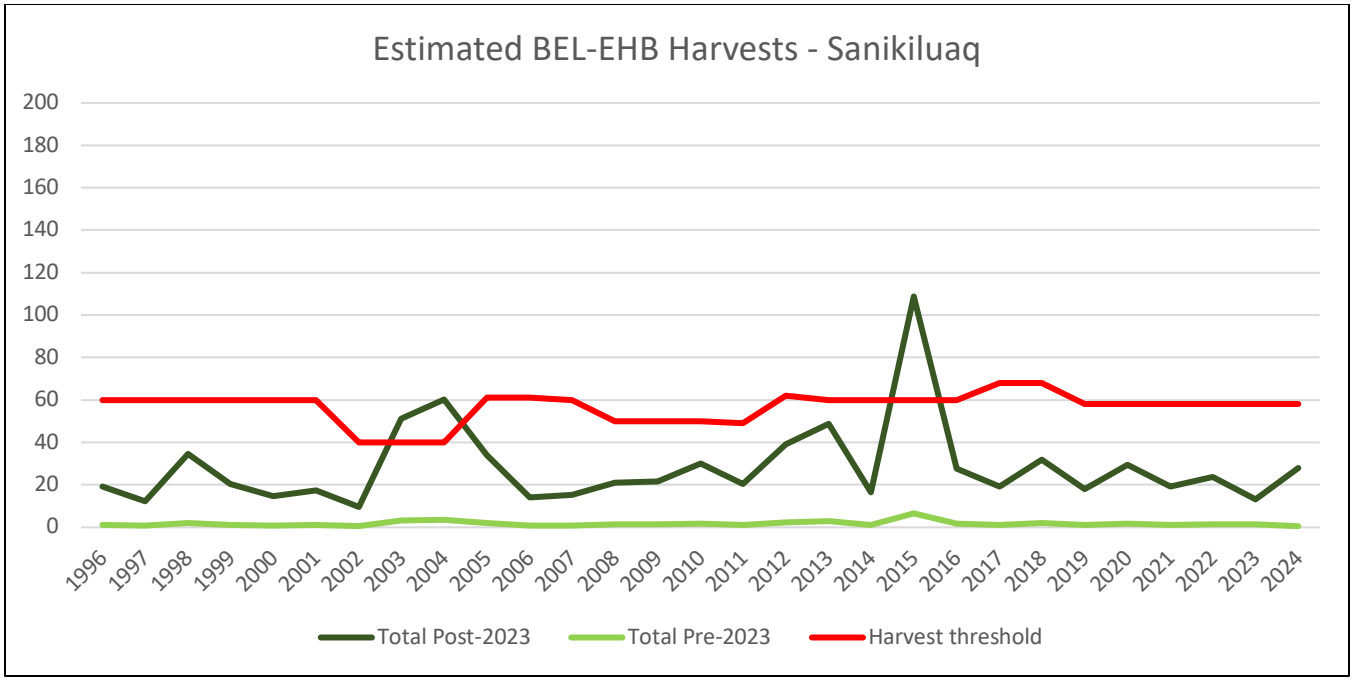
Graphs



Harvest statistics comparing estimated BEL-EHB harvest numbers pre and post 2023 genetic reanalysis. Total estimated BEL-EHB harvests in Nunavik and Sanikiluaq combined post-2023 reanalysis (dark orange) and pre-2023 reanalysis (light orange). The red line represents the Harvest Threshold of BEL-EHB animals, i.e. the maximum number of removals recommended by DFO to meet the management objectives.



Harvest statistics comparing estimated BEL-EHB harvest numbers pre and post 2023 genetic reanalysis. Total estimated BEL-EHB harvests in Nunavik post-2023 reanalysis (dark blue) and pre-2023 reanalysis (light blue). The red line represents the Harvest Threshold of BEL-EHB animals, i.e. the maximum number of removals recommended by DFO to meet the management objectives.



Harvest statistics comparing estimated BEL-EHB harvest numbers pre and post 2023 genetic reanalysis. Total estimated BEL-EHB harvests in Sanikiluaq post-2023 reanalysis (dark green) and pre-2023 reanalysis (light green). The red line represents the Harvest Threshold of BEL-EHB animals, i.e. the maximum number of removals recommended by DFO to meet the management objectives.

Figures and data from (Note: Harvest data from 1974-1995 has been excluded and data from recent years has been added):

[Total Abundance and Harvest Impacts on Eastern Hudson Bay and James Bay Beluga 2015– 2022]

Tables

Nunavik – BEL-EHB harvest proportions before and after 2023 genetic reanalysis					
		Pre-2023 Reanalysis		Post-2023 Reanalysis	
Season	Zone	%WHB	%EHB	%WHB	%BEL-EHB
Spring (Feb1-Aug31)	Hudson Strait	82.9	11.7	75.7	12.3
	NE Hudson Bay	No data	No data	No data	No data
	Ungava Bay	87.4	6.0	87.8	4.7
Fall (Sep1-Jan31)	Hudson Strait	67.6	29.1	49.6	44.0
	NE Hudson Bay	49.1	44.5	37.3	50.1
	Ungava Bay	No data	No data	No data	No data

Sanikiluaq – BEL-EHB beluga harvest proportions before and after 2023 genetic reanalysis				
	Pre-2023 Reanalysis		Post-2023 Reanalysis	
Season	%WHB	%EHB	%WHB	%BEL-EHB
Spring	77	2	7	63
Summer	62	26*	0	100*
Fall	98	0	28	61
Winter	31	37	44	40

Past genetic mixture analysis (1982-2018) using the Pella-Masuda model to determine the proportions of beluga from WHB or BEL-EHB stock in the harvest of Nunavik and Sanikiluaq management units (format modified, from Hammill et al. 2021; BEL-EHB stock was identified as EHB population in the original document). WHB: Western Hudson Bay, EHB: Eastern Hudson Bay.

Tables and data from:

Re-examining populations of beluga in the Hudson Bay-Strait Complex and assessing the impact on harvests in Nunavik and Sanikiluaq management units

Acronyms:

BEL: Belcher Islands beluga

EHB: Eastern Hudson Bay beluga

BEL-EHB: Belcher Islands-Eastern Hudson Bay beluga

WHB: Western Hudson Bay beluga