

**Executive Summary**  
**55<sup>th</sup> Meeting of the Polar Bear Technical Committee**  
**5-8 February 2024**  
**Iqaluit, Nunavut**

The 55<sup>th</sup> meeting of the Polar Bear Technical Committee (PBTC) was held 5-8 February 2024 in Iqaluit, Nunavut. The meeting was divided into 3 different sessions; a 2-day “open” session on February 5<sup>th</sup> and 6<sup>th</sup> which provided a forum for broader participation and information exchange. This session was attended by 18 members (14 in person, 4 virtually), 2 permanent participants, 7 invited specialists (3 in person, 4 virtually), 3 observers (2 in person, 1 virtually), 5 support staff / alternates and 1 secretariat staff. This was followed by a one day “closed” session on February 7<sup>th</sup> which allowed the members to address specific Committee business. Finally, an extra day (February 8<sup>th</sup>) was dedicated to an open discussion supported by an external facilitator to explore the possibility of organizing a forum/workshop with the aim of sharing knowledge, improving communication, and building relationships between polar bear researchers and communities.

### **Days One & Two – Open Session**

Following approval of the meeting agenda, the meeting started with an announcement from Jodie Pongracz that she had completed her 2-year term as a co-chair and that the Committee will need to elect a new co-chair to replace her. As per the guidelines that were established, the new Co-Chair would ideally be from a government organization in order to continue having both a government and Indigenous organization representative co-chairing the committee. Jason Dicker will be continuing to co-chair for another year representing the Indigenous organization piece as per the Terms of Reference. The PBTC approved the final minutes from both the 2023 PBTC meeting in Québec City as well as those from the November 2023 PBTC teleconference. The Co-Chairs then presented an overview of the various action items from the committee that were either completed during the year or were still ongoing and still needed to be addressed and completed.

PBTC members then presented an overview of the various research as well as management related activities that were conducted by their jurisdiction or organization in 2023. Environment and Climate Change Canada (ECCC) presented their long-term research/monitoring programs which involved both a spring and fall program. ECCC also completed a sixth year of biopsy darting within the Western Hudson Bay (WH) and Southern Hudson Bay (SH) subpopulations, in collaboration with the Government of Ontario, looking at movement dynamics between those two subpopulations. ECCC then provided an update on their collaborative project with the University of Manitoba looking at epigenetic aging for polar bears using DNA methylation rates of blood and tissue samples. This project’s objective is to evaluate how biological aging is affected by environmental stress and how it varies across the various subpopulations. ECCC then presented a brief summary of the project that they started in Navy Board Inlet, close to Pond Inlet, in collaboration with the Mitimatalik Hunters and Trappers Organization (HTO), collecting observations of polar bear foraging on ringed seal and narwhal carcasses to better understand their foraging ecology, preferential tissue consumption, etc. In addition, ECCC presented an update on the various management related activities that were conducted by the federal government, including the updated Non-Detriment Finding (NDF) report by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Scientific Authority and the National Polar Bear Management Plan. They also presented a short update on the advancement of the SH and the Davis Strait (DS) committees

that were established for coordinated subpopulation management and decision-making, as well as their implication in various human-polar bear co-existence projects with Cree communities in Ontario and Québec.

Government of Northwest Territories (GNWT) presented a summary of harvest data within their jurisdiction, noting the relatively low harvest in 2022-2023 compared to past harvest seasons. GNWT then informed the PBTC that the latest Viscount-Melville survey analysis manuscript was submitted for publication, but a detailed presentation of the results was to be shared later as part of the subpopulations reassessment portion of the meeting. GNWT then also presented a summary of their 4<sup>th</sup> field season (2023) as well as overall results from the 2019-2023 genetic mark-recapture study in Northern and Southern Beaufort Sea (NB/SB) subpopulations.

Government of Nunavut (GN) presented a summary of management changes that occurred during the last year. The GN is planning consultations with the SH and WH communities to present the results from the surveys in these subpopulation zones, and the GN is collaborating with ECCC to prepare a harvest risk assessment for WH, similar to the one that was developed for SH, to inform the decision-making process on the recommended harvest level in WH. Details from the Lancaster Sound (LS) survey, which was conducted in March 2023, were presented. Data is currently being analyzed and a concurrent IQ study in LS is planned to be conducted in collaboration with Nunavut Tunngavik Incorporated (NTI) and ECCC. The next subpopulation survey that the GN is planning is the Foxe Basin (FB) subpopulation. This survey would include a combination of an aerial survey, with similar coverage as the 2010 survey, as well as a genetic sampling component (through biopsy darting and possibly through hair snag stations, depending on community interest to participate in the study) to better understand movements occurring within that subpopulation and between adjacent subpopulations, as requested by many FB communities. NTI also gave a short update of their activities and mentioned their continued support of a polar bear patrol program in Whale Cove, Nunavut to support community safety and minimize human-polar bear conflict. The Kitikmeot Regional Wildlife Board (KRWB) reminded the Committee of the importance of active participation by Inuit in polar bear research and management considering the large impacts that those decisions have on their life. The Qikiqtaaluk Wildlife Board (QWB) gave a brief update on various aspects of polar bear management issues in which they were involved during the last year and are currently collaborating with HTOs to develop local bylaws that they wish to implement in regard to polar bear harvest management.

The Ontario Ministry of Natural Resources and Forestry provided a brief summary of the WH/SH genetic sampling study that they have been conducting in collaboration with ECCC. They also provided a few details on their various initiatives that they developed in collaboration with ECCC and Polar Bears International to reduce polar bear conflicts in Cree Communities in Ontario, including a funding program to train and maintain some seasonal polar bear guardian positions in those communities.

The Government of Manitoba provided a summary of their Polar Bear Alert (PBA) program for the 2023 season. They reported handling a similar number of bears to previous years, but they had an influx of bears earlier in the season than usual. They also shared a paper that was recently published looking at post-conflict bears' movements and behavior from the data collected by the GPS ear transmitters on the released bears handled through the PBA program. The Government of Manitoba also shared some recent changes that the province made to their policies regarding tourism companies.

The Government of Québec did not lead any research projects in 2023. They presented a summary of the reported harvest data for the 2022-2023 harvest season, which had the lowest reported harvest in Québec since the 1980s. The Québec government explained that this low reported harvest is due to both a reduction in the actual harvest but also of the reporting rate, probably due to the current low market value of polar bear hides. They however noted the higher number of bears harvested in Defense of Life

and Property (DLP) situations, notably in the Eeyou Marine Region (EMR) where human-bear conflicts appear to have been increasing in the last few years. On the management side, the Québec-EMR-Nunavik Marine Region polar bear management plan has been approved by ECCC and Québec government but was still waiting final approval by the GN. It was later confirmed during the meeting that the management plan had also been officially approved by the GN, and the approval letter was shared with the management authorities. The Québec government will now start working on the implementation of the management plan, particularly on the objective aimed at reaching complete reporting of harvested bears. The Eeyou Marine Region Wildlife Board (EMRWB) provided some additional details on the DLP kills that occurred in the EMR in 2022-23 and provided details on workshops that were organized by the board to provide training to community members on polar bear deterrence. The EMRWB and Nunavik Marine Region Wildlife Board (NMRWB) gave an update on the developments regarding the joint SH management decision making process to re-assess the SH subpopulation in collaboration with the NWMB. Makivvik provided an update on their continued efforts to ensure Inuit participation in research and management decisions, including organizing a workshop to prepare communities for the NMRWB public hearing on Non-Quota Limitations (NQL) in the fall of 2024.

There was no jurisdictional update from Newfoundland & Labrador.

The permanent participants from the U.S. presented a short summary of the research they conducted in their region. The U.S. Fish & Wildlife Service (USFWS) started with a presentation on several research projects that are ongoing in Alaska including projects looking at the behavioral response of polar bears to aircrafts, molecular age determination for polar, grizzly, and black bears from DNA methylation analysis, identifying the presence/absence of cubs with females from movement data, as well as non-invasive tools to evaluate ursid mass. They also presented several projects related to human-bear conflicts, looking at the effectiveness of various deterrent methods on polar bears, estimating possible impacts from oil spills on polar bears, as well as projects to better monitor, understand and mitigate human-polar bear conflicts in the North Slope oils fields (patrol program, den emergence monitoring, etc). The United States Geological Survey (USGS) then presented an update on their work in the collaborative study between Canada and the US to estimate the abundance of NB and SB subpopulations by genetic mark-recapture. The North Slope Borough then provided an update on their projects looking at non-invasive methods to collect DNA from hairs, snow/footprint and saliva, the latter of which seems to provide the highest quantity of quality DNA. They also mentioned that their polar bear health monitoring program allowed them to detect a first case of Highly Pathogenic Avian Influenza (HPAI) from a dead male polar bear cub that was found by a resident of Utqiagvik in August 2023.

These jurisdictional updates were followed by presentations by 4 invited specialists. The first presentation was given by Eric Regehr (University of Washington) about demographic models of ringed seal abundance in the Chukchi sea. Ringed seal abundance was projected from 2015-2100 under 23 scenarios representing different combinations of modeling inputs and assumptions. Demographic parameters (e.g., vital rates, strength of density dependence), relationships between environmental variables and pup survival, predation, harvest, and greenhouse gas emissions pathways were specified within plausible ranges. The relationship between habitat variables and seal pup survival rates were the most important factors in the models. The modeling results demonstrated that ringed seals in this area can be productive even if average April snow depth on ice is below 20-30 cm, which is the primary habitat requirement assumed in the U.S. Endangered Species Act (ESA) listing.

The second presentation was done by Alexandra Langweider (PhD Candidate, McGill University). Alexandra presented the results from her project to acquire knowledge on polars bears in Eeyou Istchee (Québec Cree territory). The project used a community-based approach to obtain info on the genetics of polar bears in that area, their diet, body condition and habitat use. The project had a field work

component based on hair snares deployed along the coast and on islands in James Bay as well as a Traditional Knowledge component based on interviews conducted with community members. Field work results so far demonstrate that there is a variability in the genetics of polar bears in James Bay and 5 different genetic clusters of bears were identified based on genetic distance, which corresponds to the spatial distribution of samples throughout the bay. Alexandra is considering expanding her project within the Nunavik Marine Region depending on the interest of the communities.

The third presentation was given by David McGeachy (PhD Candidate, University of Alberta and ECCC). David presented some preliminary analysis results from the work that was conducted between 2017 and 2023 in SH and WH to better understand the demography and movements of bears between the 2 subpopulations based on the genetic mark-recapture of bears along the coastline of MB and ON. The modelling analysis aimed to evaluate the rate of movements between both subpopulations and the impacts on their demography. The modelling supported an important directional movement of bears in 2021 from WH towards SH based on the recapture of multiple bears in SH in 2021 that were previously marked in WH, while movements in the opposite direction, from SH towards WH, appears to have occurred both in 2022 and 2023. Most of the movements between the 2 subpopulations seems to happen in the Cape Tatnam area where there is a high density of bears and apparently lots of movements on each side of the border which appears to be influenced by Hudson Bay remnant ice spatial distribution patterns. Most bears in Cape Tatnam, however, do not seem to be vulnerable to harvest; most of the bears that have been harvested in SH were previously biopsied in SH while most of the bears harvested in WH were bears that were previously sampled in the ECCC long-term core area, north of Cape Tatnam. Several comments were raised regarding the modeling methodology, interpretation of the results as well as management implications for both subpopulations.

The last presentation was given by Kt Miller (MSc, Royal Rhodes University) and Georgina Berg (collaborator, Cree elder). Their work focussed on Indigenous knowledge related to human-polar bear coexistence in and around Churchill, Manitoba in the distant past, past, present and future. This was a community-based research project aiming at a coproduction of knowledge and a collaborative development of the themes that would be addressed according to participants interests. The approach to gather knowledge was based on small group discussion (sharing circles/story telling approach) to share knowledge among Indigenous knowledge (IK) keepers. Participants from 5 different nations present in the area (Dene, Cree, Inuit, Metis, Sioux) were part of the project, including elders as well as youth. The project led to the development of four podcast episodes. It addressed several topics looking at how things changed from the 'Distant past' (prior to 1956-57 when Swamp Cree and Sayisi Dene were relocated to present day Churchill) when there were few bears in the area and they were harvested for fur and food up, to the Past (1957 when people were relocated from York Factory to Churchill up until 2005 when the open dump was closed and moved into an old military warehouse building) when people had little fear of polar bears and people highly respected the bears and to the 'Present' (from closing of the open dump in 2005 to the time of this study in 2022). The recent increase of tourism in the Churchill area significantly modified their relationship with the bears.

The meeting then continued with a presentation by GNWT and Eric Regehr of the latest analysis results from VM abundance modelling which has been submitted for publication. The modelling included data collected intensively from 2012-2014, as well as intermittently since the 1970s. The small sample size and low recapture rate created some analytical challenges but overall the results suggested that there is a 94% chance that the abundance in VM was higher in the 2012-2014 period (N = 235) compared to the 1989-1992 period (N = 145). Total survival (i.e., including harvest mortality) of all sex and age classes increased between the early and late periods except adult female survival rate which declined from 0.95 to 0.89. The population appears to have grown since the moratorium and reduced harvest period in the late-1990s

and 2000s, but some modelling results suggests that this subpopulation might now be close to the carrying capacity of the ecosystem. The availability of telemetric and harvest data allowed to look at movements of bears and temporary emigration of bears outside of the study area to obtain an estimate of the abundance of the superpopulation using VM subpopulation area which was estimated at 340 bears for the 2012-2014 period compared to 222 for the 1989-2012 period.

The membership then had a roundtable discussion about community engagement and consultations processes in relation to research projects that are conducted by the different jurisdictions. This topic was added to the agenda with an objective to better understand and ideally improve how communities are being involved/consulted in different steps of research projects. The NU, NWT, QC and ON governments presented a summary of the consultation process in their respective jurisdictions before and after they complete a research project, as well as the legislative framework applicable in their jurisdiction. The level of consultation and community engagement varies between jurisdictions and are often largely based on the legal requirements. The jurisdictions explained how they either directly consult communities or consultative bodies/management boards when designing abundance surveys or other research projects and try to incorporate their feedback into the final study design. This was followed by a discussion about the need to also, or not, consult communities and integrate their comments and interpretation of the project results in the reports and/or management recommendations derived from the studies. Various views were presented, such as the importance of conserving the scientific integrity of the analysis in the study reports, the possibility of incorporating IK in the research designs and interpretation of results, but overall the importance of having meaningful engagement with communities in research projects was underlined. It was reminded that even though the legislative requirement differs between jurisdictions and are sometimes limited, there are generally significant benefits the stem from involving communities in projects as much as possible and as early as possible in the process.

This was followed by a short update from the various Working Groups within PBTC. The IK working group gave a short summary of the work that they've done on the IK columns of the PBTC status table and encouraged any interested members to join the working group. The human-polar bear coexistence working group, which was created in response to the increase in conflicts observed in recent years, reminded the objective of this working group, which is to facilitate information exchange and share best practices for dealing with conflicts. The working group had a single meeting in December 2023 and are working on the database trying to obtain a better portrait of the temporal and spatial distribution of conflicts events and the efficiency of the various deterrence methods.

Item 6.3 of the agenda addressed technical research issues/emerging concerns. The confirmation of the first case of Highly Pathogenic Avian Influenza in Alaska was raised as a potential issue that jurisdictions should be aware of and potentially invest efforts to monitor its prevalence elsewhere.

ECCC then gave an update about the recent Polar Bear Range States Meeting of the Parties which was hosted virtually by Canada and chaired by Caroline Ladanowski from October 30 to November 2, 2023 under the theme "Indigenous relationships". The Polar Bear Range States drafted and presented objectives and actions for the 2023 – 2025 Circumpolar Action Plan (CAP) implementation plan. Work is intended to continue on climate change communications, commonly used habitat, sustainable harvest, reporting human-polar bear conflict data, and Indigenous and Traditional Ecological Knowledge. The open session ended on the morning of February 7<sup>th</sup> with the members reviewing and briefly discussing the three internal, 'living' datasets (harvest, human/bear conflict, research) maintained by the PBTC. The first is the human caused removals database, which records all human-caused removals on an annual basis according to subpopulation and jurisdiction for the last 5 years. Removals table will be used to populate 'historic annual removal 5-year mean', '3-year mean', and 'annual removal for 2022/2023'. The removals table will also be included in the subpopulation narratives document. The second is the

human/bear conflict database, which incorporates all defense kills of bears as well as human deaths and injuries caused by polar bears. Some jurisdictions pointed out that numbers in this table represent minimum numbers since there is not always a proper system in place to record all conflict situations that occurred. Furthermore, both NU and NWT pointed out that some hunters in their jurisdictions can decide to declare a bear as a subsistence harvest if they have a tag available even though it was harvested in a conflict situation, which might bias the numbers in the DLP database (it was noted that this is an uncommon, if not rare situation). A second table was also presented for human-polar bear conflict, which includes more comprehensive data about the circumstances of defense kills, including the possible attractants and deterrence methods that were used. The third database presented was the research data table, which summarized the types and intensity of research on polar bears undertaken in the previous year. The objective of that table was to evaluate the level of disturbance on polar bears related to research. In 2023, there was mostly genetic mark-recapture research that was conducted in SH and WH as well as NB and SB. This was followed by a discussion on a potential centralized database for genetic data of polar bears. ECCC explained that there used to be a National polar bear database, but it hasn't been maintained over the last several years. There was a general agreement among the membership that it would probably be useful to have this kind of database considering that bears move between jurisdictions, and it would be important to standardize/calibrate the sequencing methodology between jurisdictions to be able to compare genetic data from different labs. Several concerns were raised, however, in regard to data ownership that would need to be thought through and discussed with partners. A working group was established to compile the genetic information available in the various jurisdictions, the methodology used for the genetic sequencing, and the steps needed to create such a centralized genetic database.