EXECUTIVE SUMMARY

Re-Assessment of the Southern Hudson Bay Polar Bear Subpopulation

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This executive summary is intended to provide to non-specialist audiences an overview of the Southern Hudson Bay Polar Bear Subpopulation Technical Working Group re-assessment report. Further details, including citations and methodological details are documented in the full report.

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The Southern Hudson Bay (SH) polar bear subpopulation includes much of eastern and southern Hudson Bay and James Bay, as well as large expanses of coastal Ontario and Québec and islands located within the bays. Management authority for the SH subpopulation is a shared responsibility of federal, provincial and territorial governments, wildlife management boards (WMBs) and similar entities, and land claims organizations that represent Indigenous rights holders. Regional and local Indigenous organizations and associations also play important roles as bodies that facilitate consultation, make management recommendations, and assist with the allocation and enforcement of harvest limits.

Current status and abundance

The current estimate of abundance for the SH subpopulation is 780 polar bears (95% CI: 590–1029). The Canadian Polar Bear Technical Committee's (PBTC) 2019 assessment of the subpopulation was:

Status and trend assessment type	Short definition	Assessment result	Primary rationale
Historic trend	Change in abundance since the signing of the *Agreement on the Conservation of Polar Bears* (1973)	Likely reduced	Comparison of recent estimate of abundance to information collected in the 1980s and 1990s.
Indigenous Knowledge (IK)	Knowledge generated from the cultural practices, lived experiences and traditions of local and Indigenous peoples	Stable in James Bay; Likely increased in east Hudson Bay	Interviews and consultations with Indigenous people describing changes over time in the number of polar bears observed, polar bear behavior, and other factors
Recent trend	Changes in abundance over the last 15 years	Likely declined	Comparison of the most recent estimate of abundance to the previous estimate collected in 2011/2012, as well as information about declines in polar bear body condition and survivorship in association with an increasing ice-free season.
Future trend	Anticipated direction in abundance over the next 10 years	Likely decline	Documented declines in body condition and survival rate in association with an increasing ice-free season.

User-to-user meetings, which were held in 2011 and 2014, resulted in voluntary agreements to better manage polar harvest in the SH subpopulation (see Appendices A and B). Participants in these meetings included harvesters from affected communities, as well as representatives from the governments, wildlife management boards, and land claims organizations with co-management responsibility. Significant compromises were made by respective Indigenous rights holders.

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The 2011 meeting, which was held in Inukjuak, QC, was called in response to a high removal of polar bears by Inuit hunters during the 2010/2011 hunting season (105 polar bears, including 30 by Nunavut Inuit, 73 by Nunavik Inuit, 1 by Eeyou Istchee Cree), and associated concern raised by domestic and international parties about the sustainability of harvest. The Inukjuak meeting resulted in a voluntary agreement that was in place for the 2011/2012 to 2013/2014 hunting seasons. The 2014 meeting, which was held in Ottawa, resulted in an updated voluntary agreement that was in place for the 2014/2015 and 2015/2016 hunting seasons.

Since 2016/2017, harvest limits have been based on the older, out-of-date estimate of 943 polar bears rather than on the current estimate of 780 polar bears. The limits are as follows:

- Nunavut Settlement Area: 25 (Nunavut Inuit)
- Nunavik Marine Region: 23 (Nunavik Inuit, with at least one polar tag allocated to the Cree of Eeyou Istchee for harvest within the Inuit-Cree overlap area).

At present, there are no take limits in the Eeyou Marine Region south of the Inuit-Cree overlap area, which is also part of the Nunavik Marine Region, or in onshore areas of Québec. Under Treaty 9, there is no formal harvest limit for Ontario Cree; however a voluntary limit of 30 bears per year that could be sealed for trade was established in 1976 through an informal agreement between the Ontario government and the coastal Cree First Nation communities. Since the listing of polar bear as a Threatened species under the Ontario Endangered Species Act in 2009 the sale of polar bear parts within Ontario has been prohibited.

In both the Nunavut Settlement Area and the Nunavik Marine Region, existing harvest limits were established assuming a sex selective harvest of two males for every female and a flexible quota system to adjust for over-harvest (subtract from base allocation the next year) or under-harvest (accumulation of credits for use in future years). Sex-selective harvesting was implemented to allow the maximum possible number of bears to be removed sustainably each year, recognizing that the removal of breeding-age female polar bears has a larger effect on population dynamics than the removal of male polar bears in most situations.

According to information provided to PBTC, the most recent 5-year (2013/14 – 2017/18), 3-year (2015/2016 – 2017/2018), and current year (2017/2018) estimates of mean harvest in the subpopulation have been 36.4, 33.7, and 33 bears, respectively. These estimates correspond to a 3.5% to 3.9% removal rate relative to the old subpopulation estimate of abundance. Harvest at a similar level moving forward would represent an annual removal of 4.2% to 4.7% of the current subpopulation estimate.

In Nunavut, the Inuit community of Sanikiluaq is the only one that harvests within the SH subpopulation. Harvest reporting is believed to approach 100%. In Québec, there are three Nunavik Inuit communities (Inukjuak, Umiujaq, and Kuujjuaraapik) and three coastal Cree communities (Whapmagoostui, Waskaganish, and Chisasibi) that potentially harvest from this subpopulation. Although there is no legal requirement for beneficiaries of the James Bay and Northern Québec Agreement to report human-caused polar bear mortalities, the Québec Government has been compiling harvest reports and issuing tags since 1985. The proportion of

the harvest reported to the Québec Government is currently unknown, but is believed to be less than 100%. In Ontario, there are five coastal Cree communities that have traditionally harvested polar bears from the SH subpopulation [Fort Severn, Winisk (Peawanuk) Attawapiskat, Fort Albany, and Kashechewan), and one community (Moosonee/Moose Factory) that has occasionally reported defense of life and property kills. The proportion of the harvest that is reported to the Government of Ontario is currently unknown.

Over the past ten years, the following harvest limits have been in place and the following harvest levels (H) reported to wildlife management officials:

Hunting season	Nunavut†		Québec‡		Ontario	
	Limit	H	Limit	H	Limit	H
2008/2009	TAH = 25	26	None	9	None[a]	3
2009/2010	TAH = 25	25	None	36	None[a]	1
2010/2011	TAH = 30	30	None	74	None[a]	0
2011/2012	TAH = 25	25	VA = 30	22	None[b]	4
2012/2013	TAH = 25	26	VA = 30	33	None[b]	2
2013/2014	TAH = 25	27	VA = 30	11	None[b]	0
2014/2015	VA = 20	20	VA = 23	22	None[c]	1
2015/2016	VA= 20	20	VA = 22	19	None[c]	2
2016/2017	TAH = 25	22	TAT=23	7	None[a]	2
2017/2018	TAH = 25	28	TAT=23	5	None[a]	0

TAH: Total Allowable Harvest; TAT: Total Allowable Take; VA: harvest limit determined by voluntary agreement among users. See full report for details about harvest limits, as well as areas where limits have been in place.

[a]A voluntary quota of 30 bears was established in 1976 through an informal agreement between the Ontario Government and coastal Cree First Nation communities, whereby a maximum of 30 hides would be sealed in any year. In September, 2009, polar bears were listed under Ontario's Endangered Species Act, which prohibits the sale of polar bear parts within Ontario. Thus, hides are no longer sealed in Ontario.

[b]A voluntary limit of 5 bears was agreed upon by the coastal Cree communities of Ontario in attendance at the 2011 Inukjuak meeting, however not all communities were present.

[c]A voluntary limit of 3 bears to be split between Ontario and Quebec Cree, with alternating division per season starting with 2 for Ontario Cree in 2014/2015 was agreed upon by the coastal Cree communities of Ontario in attendance at the 2014 Ottawa meeting, however not all communities were present.

Indigenous Knowledge

In 2018, the Nunavik Marine Region Wildlife Management Board completed a comprehensive polar bear Inuit Knowledge study. Key findings included: (a) an increase in the number of polar bears observed by Nunavik Inuit since the 1970s; (b) a wider distribution of polar bears, including the use of inland areas; and (c) polar bear condition described as very healthy. With

regard to management, a frequently expressed view was that traditional stewardship practices are sufficient for conservation and that the introduction of a quota to limit polar bear hunting is unnecessary. Common stewardship practices include hunting only based on need and not wasting any of the animal killed, not hunting polar bears during the summer, and not harvesting cubs or known mothers.

Nunavut Inuit Qaujimajatuqangit (IQ), shared by community members from Sanikiluaq at the November 2018 Nunavut Wildlife Management Board public hearing to consider the Nunavut Polar Bear Co-Management Plan, emphasized that the polar bear population is increasing rather than decreasing in Nunavut, including in the area around Sanikiluaq. Participants also stated that climate change will not cause the disappearance of polar bears. According to IQ, it is normal for the polar bear population to increase and decrease in a cycle.

A study documenting the knowledge of Cree land users, in the northern Eeyou Marine Region, conducted by the Cree Nation Government, Eeyou Marine Region Wildlife Board and Cree Trappers' Association, is currently being finalized. Preliminary results include expressions of concern about an increase in the relative abundance of polar bears in the Eeyou Marine Region and a growing number of human-polar bear interactions. Climate change, and more specifically changes in sea ice dynamics in Hudson Bay and James Bay, were mentioned as potential causes for the observed changes.

Scientific Assessment

Results from two capture-recapture studies conducted mainly along the Ontario coastline of Hudson Bay suggest that polar bear abundance was largely unchanged between 1984–1986 and 2003–2005. Following an analysis of bears captured on Akimiski Island in James Bay during 1997 and 1998, the total SH subpopulation was estimated by the PBTC to number between 900-1000 bears for management purposes.

Aerial surveys, conducted in 2011/2012 and 2016, resulted in estimates of abundance of 943 polar bears (95% CI: 658–1350) and 780 polar bears (95% CI: 590–1029), respectively. This change equates to a 17% decline in abundance. Although the 95% confidence intervals for the two estimates overlap, an 18% decline in point estimates of abundance was noted over the same time period in the neighbouring Western Hudson Bay (WH) polar bear subpopulation. The simultaneous declines in SH and WH were cited by PBTC as an additional line of evidence to suggest that polar bear numbers in the SH subpopulation had likely declined. Estimates of the proportion of yearling polar bears in the SH subpopulation also declined, from 12% of in 2011 to 5% in 2016, whereas the proportion of cubs remained similar (16% in 2012 vs. 19% in 2016). These results suggest there was low survival of cubs to the yearling age class in 2015. A supplementary aerial survey, conducted in 2018, covering a high density portion of the subpopulation (Ontario coastline and Akimiski Island), was used to examine whether the 2016 study results were indicative of a trend. Results demonstrated variable yearling proportions and a slightly lower abundance of bears in re-surveyed portions of the coastal area in 2018 (249 bears, 95% CI: 230 – 270) compared with 2016 (269 bears, 95% CI: 244 – 297) and significantly lower abundance than in 2011 (422 bears, 95% CI: 381 – 467).

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In addition to studies assessing polar bear abundance, considerable research has been conducted to evaluate changes in polar bear body condition, survival rates and reproduction. With respect to body condition, the Ontario Ministry of Natural Resources and Forestry examined trends for 900 bears captured on shore during the ice-free period in 1984-1986, 2000-2005, and 2007-2009. A body condition index (BCI), based upon measurements of a bear's mass relative to body length, indicated a decline in condition for all age, sex and reproductive classes. In Nunavut, body condition scores (BCS) of harvested bears have been reported for the SH subpopulation bears since 2010. The BCS of 191 hunter-harvested polar bears was examined between 2010 and 2017. Bears included in the Nunavut study were primarily taken on the sea ice during winter and spring. 92.7% had a BCS of average and better, while 7.3% were deemed skinny or very skinny.

The most up-to-date estimates of survival in the SH subpopulation, which are based upon capture-recapture data collected from 1984 through 2005, indicate substantial declines in survival among all age and sex classes since the 1980s.

Analysis of bear movement data, from radio-collared and hunter-harvested bears, indicate that most bears remain within the currently recognized SH subpopulation boundary, although regular movements into adjoining subpopulations in Western Hudson Bay (WH) and Foxe Basin (FB) occur, primarily during the on ice period. During the ice-free period, bears demonstrate a high degree of fidelity to onshore areas, though depending on the patterns of ice breakup, SH bears occasionally come ashore in WH. Further, preliminary analysis of data on marked bears that are subsequently harvested suggests that up to 10% of the bears harvested in SH originate in WH. Small mating season home ranges, combined with geographic isolation, is believed to have contributed to potential genetic distinctiveness among polar bears in James Bay compared to other locations across the Arctic.

Finally, a study using a standardized methodology to document trends in sea ice habitat for all 19 global polar bear subpopulations (1979-2014), found that all 19 subpopulations have experienced earlier spring sea ice retreat, later fall sea ice formation, and reduced summer sea ice areas of coverage over the last four decades. Relative to other polar bear subpopulations, the SH subpopulation, which is the most southerly of all global subpopulations, has one of the shortest duration ice seasons (approximately 210 days above the 15% sea ice coverage threshold used by the authors). While the rate of sea ice loss in the SH subpopulation has been extensive (change in spring ice retreat: -3.1 days per decade; change in fall ice advance: +4.1 days per decade; change in summer sea ice area: -11.4% per decade), the rate of loss has been less extreme than in some other subpopulations.