

Sold out

Polar Bears: Caught between skin trade, climate change and guns





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Efforts to save polar bears from extinction have been dominated by tackling climate change and loss of sea ice, which deprives the bears of a place to live and hunt. In contrast, threats resulting from the international trade in polar bear skins and trophy hunting have received almost no attention. New research by Norwegian wildlife photographer and conservationist, Ole J Liodden, shows that the growing international trade in skins poses an immediate and largely unrecognized threat to polar bear survival. Bears are killed by trophy hunters and native hunters to supply a growing demand for polar bear skins in China. Both activities focus on the largest and strongest bears in the best physical condition. In doing so they shorten the odds that polar bears will be able to cope with receding sea ice and other environmental challenges. Eliminating this threat to polar bears must become an urgent conservation priority, as polar bears are caught between skin trade, climate change and guns.

Strong but vulnerable

Polar bears (*Ursus maritimus*) are our planet's largest terrestrial carnivore. But despite their strength, size and ability to thrive in one of the earth's harshest environment, these majestic giants of the Arctic are more vulnerable than ever before. The IUCN Red List classifies polar bears as a threatened species whose numbers continue to dwindle.

Polar bears reproduce very slowly as result of slow maturation, small litter sizes, long offspring dependency and high cub mortality (CMS 2014). Females don't breed until they are four to six years old (Stirling 2011). They usually have two cubs, which stay with their mothers for two and a half years. At best, females breed every three years. Polar bear males mature more slowly than females and reach sexual maturity around the age of six (Taylor & Dowsley 2008). Initially, male mating success tends to be low due to competition from older, larger males (Hrdy 1979). Average cub survival is 64% (34.5% - 90.5) depending on the subpopulation. Once polar bears have reached adulthood, survival levels rise to an average 95% (89.2% - 99.7%). Both males and females live for 20 to 25 years (Stirling 2011). This means that females typically give birth to a maximum of five litters. Such low reproductive rates mean that population recovery, too very slow, which renders polar bears vulnerable to overexploitation.

Scientists believe that today's population of polar bears stands at between 23,000 (Hamilton & Derocher 2018) and 25,000 (PBSG 2016) individuals. Canada is home to, or shares around 60% of the global population with other range states. The remaining polar bears are distributed across Russia, Norway (Svalbard), Greenland and the US (Alaska). However, polar bears do not comprise a single global population but instead occur in 19 more or less discrete subpopulations (Figure 1).

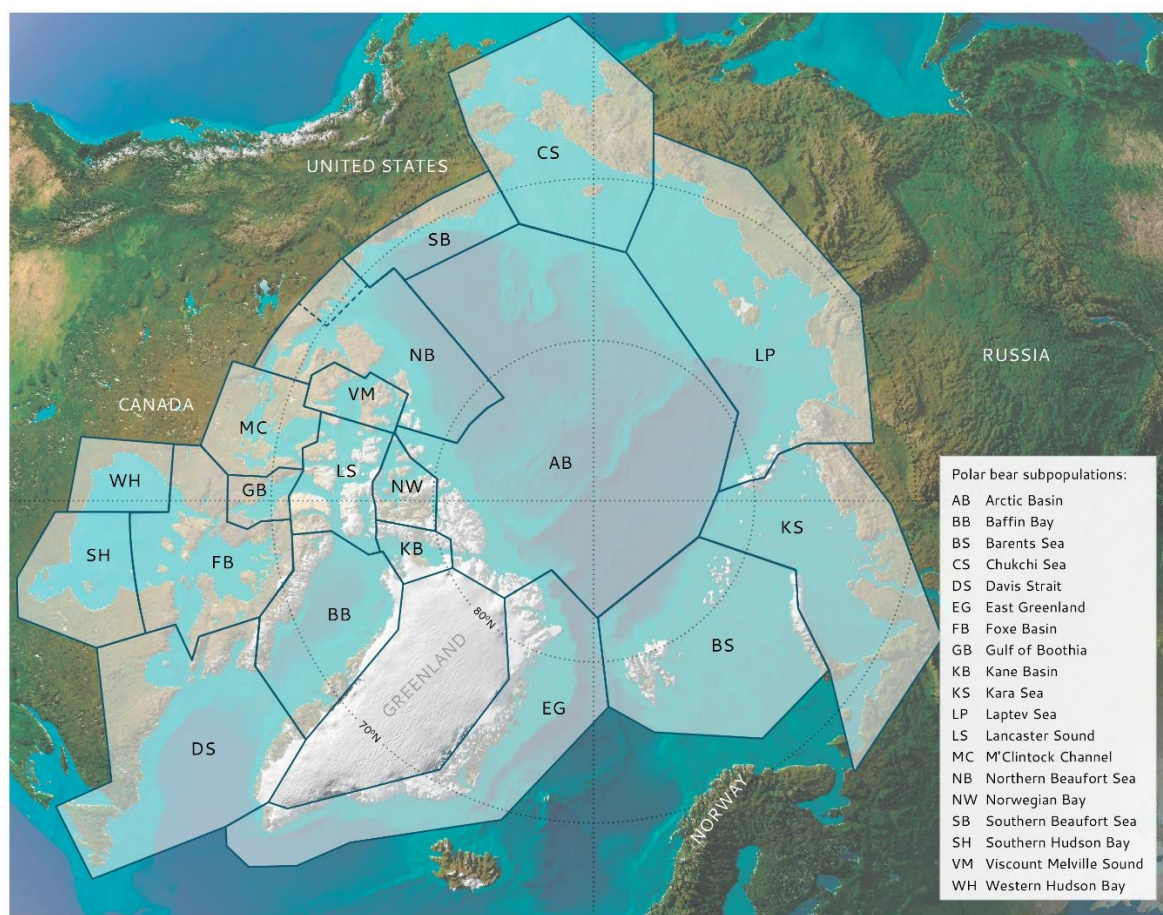


Figure 1. Arctic distribution map of the world's 19 polar bear subpopulations. The dashed blue line in NB indicates the former NB-SB boundary, which was adjusted in 2014. From Liodden 2019

Polar bears depend on sea ice to hunt seals, find mates, and to breed. Scientists from the U.S. Geological Survey have predicted that by 2050, shrinking sea ice will reduce polar bear numbers to about a third. Arctic sea ice loss is progressing faster than most climate models had predicted. By 2040, summer sea ice is expected to retreat to a band around Northeast Canada and Northern Greenland, taking polar bears along with it. This remote area will provide the very last bastion for sea ice dependent Arctic species like polar bears.

Two polar bear subpopulations, for which long-term data are available, are already suffering the effects of this Arctic meltdown and provide important insights into the possible future of polar bears in other regions. At the southern end of their distribution range, around Canada's Hudson Bay, lack of food has caused a decline in the bears' physical condition, fewer cubs are born and fewer survive. Between 1987 and 2017 this population has undergone a 30% decline as a direct result of longer periods without sea ice and unsustainable hunting. Similarly, the Southern Beaufort Sea population along the northern coast of Alaska and western Canada has fallen from some 1,500 to 900 bears between 2001 and 2010 - a drop of around 40%.



Photo: Ole J Liodden

Polar bears in the crosshair

European, Russian and American hunters and trappers heavily impacted several polar bear populations from the 1600s right through to the mid-1970s. The situation began to change when the Soviet Union banned both native and trophy polar bear hunting in 1956. In 1972, the United States made trophy hunting of polar bears illegal in Alaska, and a year later Norway's followed the Russian example of banning all forms of hunting. Today, Canada is the only country to permit the export of polar bear trophies and skins, and polar bear hunting by non-native and foreign citizens. Between 1963 to 2016 hunters killed close to 53,500 polar bears - more than twice as many as are alive today.

The Canadian government supports both activities and actively promotes the international trade in polar bear skins, including in China. In November 2018, the government owned Fur Canada exhibited at the China International Import Expo in Shanghai for the first time. Their website also offers Chinese buyers purchasing information in their own language. In an article headlined “Canada's fur trade is booming again — thanks to demand from China's new capitalists” the owner of Capilano Furs & Taxidermy Studios in North Vancouver enthusiastically declares, That’s crazy. But China is crazy, crazy for Canadian polar bear furs - the rarest gems in a booming international fur trade” (O’Conner 2013).

⇒ Between 1963 to 2016 hunters killed close to 53,500 polar bears - more than twice as many as are alive today.

Subsistence polar bear hunting was culturally important for some native Arctic communities. But the lure of high fees paid by trophy hunters and the high prices of polar bear skins on the international market, have transformed what was once traditional subsistence hunting into commercial ventures for many indigenous hunters. Polar bear trophy hunts are led by native guides who sell part of their quota to non-native or foreign hunters. They are also permitted to sell polar bear skins from native hunts to international buyers through intermediaries. In the eyes of many local hunters and their communities, polar bears have become relegated from an ancient Inuit symbol of power to a means for ready cash.

⇒ For the past 54 years, native and trophy hunters killed 817 - 1,325 polar bears a year.

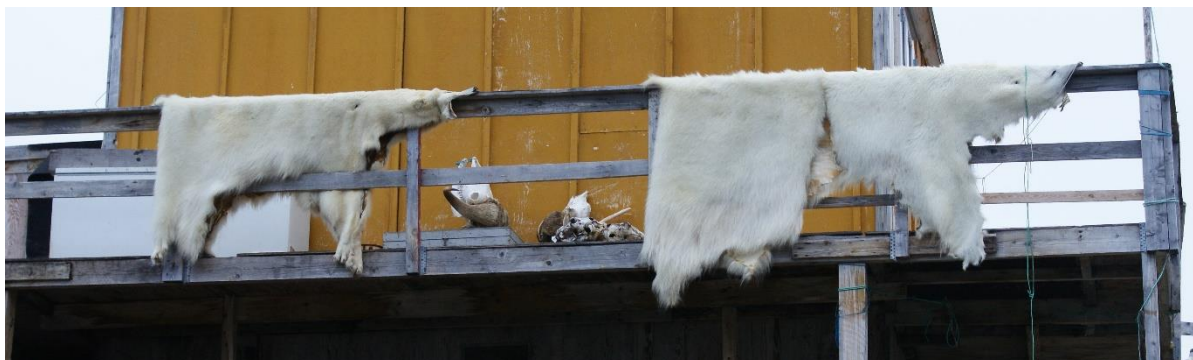


Photo: Alkaly/Wikimedia

Killed in their stronghold

Polar bear populations can grow at a maximum annual rate of 5%. In reality, an average rate of 3% is more representative (Liodden, 2019). For Canada, this would amount to 450 polar bears per year. An annual removal above this level, through hunting and other forms of human activities, is therefore unsustainable for most subpopulations and will inevitably lead to decline.

Between 1970 and 2016, native and trophy hunters killed an estimated 26,500 Canadian polar bears (Liodden, 2019) – more than today’s global population. The average annual offtake of 564 individuals over this period significantly exceeds the maximum sustainability threshold of 450 polar bears by more than a third. The average number of polar bears killed by hunters during the most recent period for which hunting data are available (2010 -2016) was 575 - 125 individuals more than 450, or the 3% of Canada’s overall population (Figure 2). In 2012, the number of bears killed by hunters reached 671, almost 4.5% of the total population. Polar bear management in Canada therefore fails to balance the

removal of polar bears through native and trophy hunting with population growth. It can therefore not be deemed biologically sustainable.

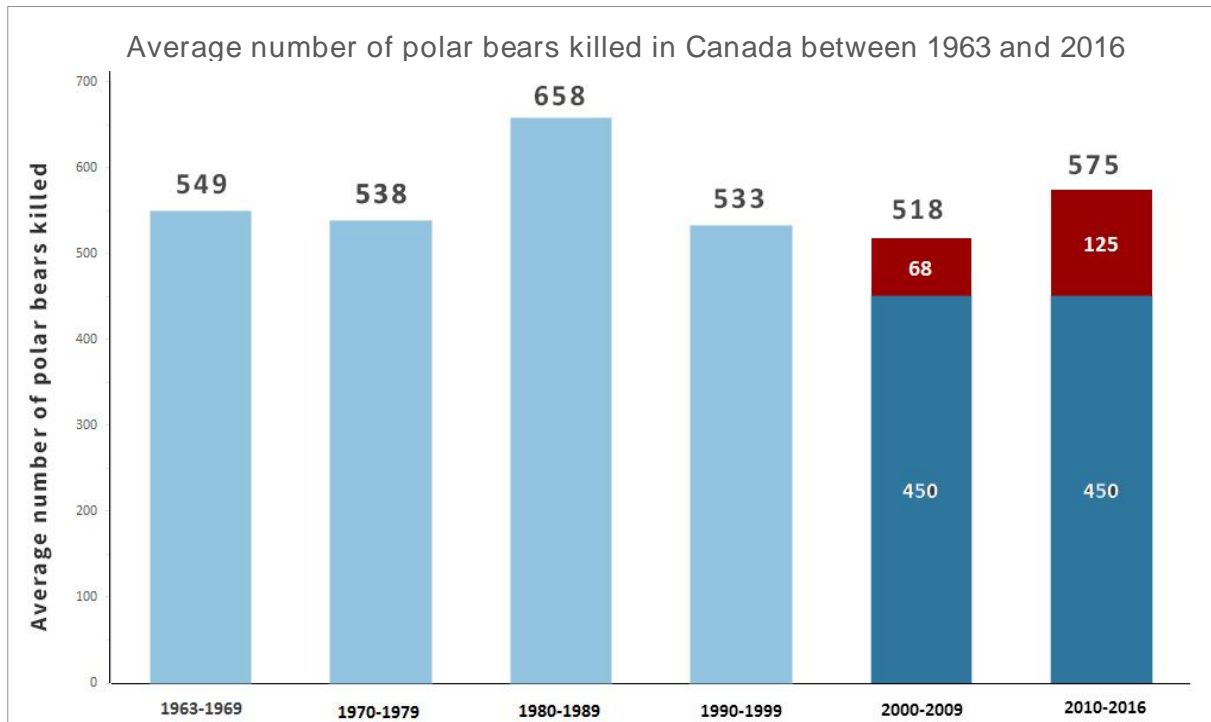


Figure 2. Average number of polar bears killed in Canada between 1963 and 2016. After Liodden 2019

The Canadian government has also redefined the meaning of sustainable offtake by introducing heavily sex-biased hunting of polar bears. Thus, the country has practiced female biased polar bear management, where two males are killed for every female, since the 1980s. The consistent reduction of the number of male bears in the population is a dangerous strategy, because an unnaturally low level of males reduces male-male competition.

Sexual selection is among the most powerful of all evolutionary forces. The concept was first introduced by Darwin to explain the mechanisms governing competition between males to access females. Sexual selection operates through intrasexual selection, which describes competition between members of the same sex (usually males) for access to mates, and intersexual selection, whereby members of one sex (usually females) choose members of the opposite sex according to certain traits that will allow them to maximize their lifetime reproductive success. In many species, sexual selection is thought to be the ultimate cause for sexual dimorphism (Charnov 1992; Clutton-Brock et al. 1977; Cox and LeBoeuf 1977; Fairbairn 1997; Hoogland 2003; Selander 1972). Large body size of males is often correlated with higher reproductive success because of intermale competition for access to females (e.g., Andersson 1994; Clutton-Brock et al. 1982; LeBoeuf & Reiter 1988; Ralls 1976). In polygamous or promiscuous species, sexual selection tends to result in selection pressure for larger males (Emlen and Oring 1977; Ralls 1977; Selander 1966).

Polar bear males are about twice the size of females. Large body size is advantageous in fights, which has resulted in one of the highest degrees of sexual dimorphism among terrestrial mammals (Ramsey & Sterling 1986). Male-male competition in polar bears is therefore likely to play an important role in ensuring that the best genes pass on to the next generation. This is particularly important because resilience to inevitable environmental challenges such as climate change needs to be maximized in polar bears.

The Canadian government claims that polar bear hunting is sustainable even in three declining subpopulations. The government also considers that it can ensure the sustainability of native and trophy polar bear hunting in five of its 13 polar subpopulations in the absence of reliable data about abundance and trends. The Norwegian Bay subpopulation, for example, numbers perhaps 200 individuals with unknown population trend (Taylor et al. 2008). It is part of an area scientists believe will provide the very last refuge for polar bears as climate change progresses. Yet, polar bears are hunted in this area despite the population's low abundance, low prey diversity and its pivotal role for the future survival of the species. Of the polar bears killed by trophy hunters in this vulnerable area between 2001–2016, 92% were males (Government of Nunavut 2017).

Canadian polar bear quotas for native and trophy hunters are set by provincial and territorial authorities, taking into account scientific population assessments, as well as “traditional knowledge information” and aboriginal subsistence. Because this is true even when these approaches support conflicting courses of action, it is easy to see how this approach can push scientifically derived hunting quotas beyond sustainable levels.

Unsustainable levels of hunting accelerated the decline in the Western Hudson Bay subpopulation, for example (Liodden 2019). In response to a low estimate for this declining population in 2007 (Regehr et al. 2007), the quota for Nunavut hunters in Western Hudson Bay was first reduced from 58 to 38 polar bears for the 2007–2008 season (Government of Nunavut 2017), before being cut to just eight bears the following year. The smaller quota was not popular with native hunters and just four years after the initial quota cut, the Nunavut government raised the hunting quota back to 21 bears (Government of Nunavut 2017). The IUCN Polar Bears Specialist Group (PBSG) had strongly opposed this quota increase, because it did not consider a quota of even eight bears to be sustainable (Vongraven 2011). It was feared that even without the removal of any bears, the Western Hudson Bay subpopulation was likely to decline. The government of Nunavut, however, ignored the PBSG's advice and further increased the hunting quota from 21 to 24 bears for the 2012–2013 season (Government of Nunavut 2018). Ultimately, 31 polar bears were killed, followed by a further 36 in 2014. This time, the IUCN PBSG expressed even stronger concerns about the new quota (Vongraven 2011), but once again its advice fell on deaf ears. Instead, the hunting quota was raised yet again, first to 28 kills in 2016 (Government of Nunavut 2018) and then 34 kills for the recent 2017–2018 hunting season (Government of Nunavut 2018).

Size Matters

The negative impact of hunting and trade on the survival of polar bears extends beyond the size of quotas. Both native and trophy hunters preferentially target the largest animals, usually males, in the best physical condition and with superior fur quality. Local hunters favour them to achieve higher skin prices, while trophy hunters prefer the biggest, most imposing bears with the best trophy characteristics and fur for their displays. In some areas in the Canadian Arctic, more than 90% of polar bears targeted by trophy hunters are large males. The consistent removal of the most successful males from a population, represents a significant negative selection pressure, which progressively weakens and undermines the ability of populations to adapt to and cope with receding sea ice and other environmental challenges.

Natural selection is the evolutionary process whereby organisms that are better adapted to their environment tend to survive and produce more offspring. The term ‘survival of the fittest’ describes the

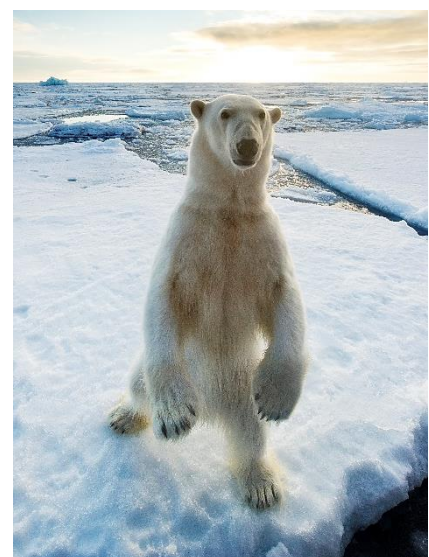


Photo: Ole J Liodden

continued existence of organisms, which are best adapted to their environment, and the extinction of others that are not. Amongst animals, the fittest individuals of a species are often the biggest and best-equipped to win mates or fend off attackers, survive, reproduce and pass along their traits to subsequent generations, while the traits of less well adapted animals gradually disappear. The ongoing selective removal of the biggest, strongest and healthiest animals from a population operates in reverse and so turns the process of natural selection on its head. Under this regime, hunters remove good genes every time they kill an animal. The disproportionate removal of large individuals promotes the survival and the traits of smaller and weaker “evolutionary losers”. Tragically, hunting polar bears to supply the international trade in skins and trophy hunting consistently eliminate individuals that have a better chance to survive in a warming Arctic because they can withstand longer periods without feeding. Both forms of hunting are therefore likely to progressively weaken the genetic resilience of polar bear populations that are subject to hunting. It is therefore crucial to recognize and understand the genetic changes and evolutionary responses of exploited populations to ensure management regimes are sustainable.

According to Allendorf and colleagues (2008), anthropogenic offtake has the potential to cause three kinds of genetic changes: alteration of population subdivision, loss of genetic variation, and selective genetic changes. The authors state that selective genetic changes within subpopulations as a result of exploitation are inevitable, because artificially increased mortality will result in selection for earlier maturation even if offtake is independent of phenotype. They and others therefore highlight that management plans should apply basic genetic principles in combination with molecular genetic monitoring to minimize harmful genetic change.

In bighorn sheep in Alberta, Canada, hunting pressure has led to smaller-horned sheep of lower genetic quality (Coltman et al. 2003). The authors showed that selective offtake based on heritable, physical traits, has important implications for managing wild populations. Rams chosen by hunters were of higher genetic ‘breeding value’ for weight and horn size than rams that were not hunted. Their study demonstrated that “in an evolutionary response to sport hunting” body weight and horn size of Canadian bighorn rams (*Ovis canadensis*) declined significantly. “Rams of high breeding value were also shot at an early age, and thus did not achieve high reproductive success. Declines in mean breeding values for weight and horn size therefore occurred in response to unrestricted trophy hunting, resulting in the production of smaller-horned, lighter rams, and fewer trophies”.

Other examples of loss of genetic variation in exploited populations include reduced microsatellite heterozygosity and allelic diversity in African elephants (*Loxodonta africana*) as a result of intense hunting in the early 1900s in Addo National Park, South Africa (Whitehouse & Harley 2001). A rise in the proportion of tuskless female elephants from 10.5% in 1969 to 38.2% in Zambia’s South Luangwa National Park provides another striking phenotypic expression linked to offtake through poaching for ivory (Jachmann et al. 1995). Hunting of Arctic foxes (*Alopex lagopus*) associated with the fur trade in Scandinavia reduced microsatellite alleles by around a quarter and seven mitochondrial DNA haplotypes to four (Nyström et al. 2006). Croft (1999) presented evidence that targeting larger individuals in groups of red kangaroos (*Macropus rufus*) by Australian hunters led to a decline in average size. Contemporary sea otter (*Enhydra lutris*) populations exhibit lower heterozygosities at microsatellite loci than samples predating a population bottleneck caused by extensive fur hunting in the 18th and 19th centuries. (Larson et al. 2002) For a review of other cases, including big horn sheep, Sika deer, Tule elk and red deer, see Allendorf et al. 2008.

As the most experienced and effective hunters among their species (Ovsyanikov pers. comm.), large adult males play a crucial role in the survival of polar bear populations. They are able to kill larger prey and remains from their kills provide food for less experienced and smaller bears, as well as for other species that scavenge on the sea ice. Their larger fat reserves provide a vital advantage when forced to survive prolonged ice-free periods, which are set to challenge the existence of polar bears as a whole.

The selective removal of large, strong, healthy and resilient males and female polar bears, over a sustained period of time (more than 30 years) is likely to eliminate important genetic material from the species' gene pool. In a reversal of natural selection, smaller and weaker bears survive and breed, generating smaller and weaker offspring.



Photo: Ole J Liodden

Could there be too many polar bears?

Climate change is causing significantly earlier sea ice melts and later freezes. As a result, polar bears in Western Hudson Bay – the best studied polar bear population on earth - are forced to spend longer periods on land. Here, polar bears fast for at least four months until the sea ice refreezes and the bears can hunt again. Pregnant females have to manage without food for eight months. During this time, they give birth and nurse their cubs until they leave their maternity dens and return to the sea ice to hunt seals. Polar bear mothers are pushed to their energetic limit during this time. Body condition, survival and birth rates have all been linked to earlier ice-break ups. Since 2011, there have been few sightings of mothers with cubs. The polar bears of Western Hudson Bay are struggling to survive in a world that has become progressively unsupportive to their needs. Yet, hunting to supply the international skin trade and trophies continues with quotas that are not supported by science (see above).

As malnourished bears are forced to spend increasingly long periods of time on land due lack of sea ice, more are venturing into settlements to search for food. The government of Nunavut has asserted that there are too many polar bears in some areas. Because of their numbers, these bears are said to jeopardizing both public safety and the environment. To address this perceived problem, it was suggested to reduce the size of certain subpopulations by allowing native hunters to shoot more females. These claims are based on observations around certain coastal settlements. The presence of these bears “was interpreted as evidence that the populations were increasing, which led to increased allowable harvest levels, despite scientific evidence that the populations were declining in two areas and a lack of current population data for a third population”, says Prof. Ian Sterling (Sterling & Derocher 2007). Prof. Sterling has studied polar bears throughout the Canadian Arctic for over 37 years. He is a

Research Scientist Emeritus for Environment and Climate Change Canada and Adjunct Professor of the Department of Biological Sciences at the University of Alberta. “Polar bears have home ranges that often exceed 200,000 km²”, he explains, “and roam far beyond the purvey of hunters based on or near the coast; therefore, it is simply not possible to develop a population perspective from anecdotal observations of polar bears.” Killing a greater number of polar bears under these circumstances is not a viable option to ensure public safety, which can be dealt with in other ways (Liodden 2019). Nor is it appropriate to refer to such measures in terms of sustainable population management.

The international trade in polar bear skins

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has collated information on the international trade in polar bear products, which dates back to 1976. The convention makes this information available in the only publicly accessible online database that offers detailed statistics about the international trade in polar bears and other species (CITES 2018). Regrettably however, the information available through CITES does not provide conclusive figures about the number of polar bears in international trade. This is because several body parts from the same bear can be traded separately (Shadbolt et. al. 2012). For this reason, this analysis is solely based on trade in full skins. This includes hunting trophies, because they usually take the form of rugs, which either include the animal’s skin and skull or fully mounted bears.

Greenland banned the export of polar bear skins in 2008 over concerns about its sustainability. Canada is now the only polar bear range state to legally export polar bear skins. In other words, all polar bear skins that are traded legally today originate from Canada. Hunting to supply the international skin trade makes up about 83% off the polar bear offtake in Canada. The remaining 10% comes from problem bear kills, 7% from trophy hunting and 1% from illegal hunting (Government of Nunavut 2018).

CITES’ data reveal that from 2006–2015 a total of 3,262 Canadian polar bear skins were exported (CITES 2018). Since 2005, Canada has exported between 185 and 488 skins a year (Liodden 2019).

Native hunters may keep, trade or sell skins, but most prefer to sell it. Hunters can sell polar bears skins through the provincial or territorial government, which then ships them to an auction house. The Government of Nunavut measures and grades the



Photos Ole J Liodden

Hunting to supply the international skin trade makes up about roughly 90% off the polar bear offtake in Canada. The remaining 10% comes from trophy hunting.

skins and pays 50% of the estimated value to the indigenous hunter in advance (Cooper 2015). In the Northwest Territories (NWT), the government-operated Genuine Mackenzie Valley Fur Program (GMVF) provides a guaranteed advance payment scheme for polar bear skins. In 2018 the company offered CAD1,750 (USD1,350) and a "Prime Fur Bonus" of CAD450 (USD350) (Government of NWT 2018). Both programmes provide native hunters with a ready source of guaranteed cash for their skins, with large and superior quality skins achieving the highest prices. By creating a strong financial incentive, they also commercialize what used to be small scale subsistence hunting for food, dog food and clothing. Here it is important to remember that besides principles of conservation, aboriginal subsistence is a determining factor in setting polar bears quotas in Canada. As we have seen earlier, commercial or socioeconomic interests, rather than scientific considerations, can quickly become the dominant force in setting quotas and push indigenous polar bear hunts beyond sustainability.

Statistics Canada reports that between 2006 and 2016, about one fifth of Canada's indigenous population lived in crowded housing or in housing in urgent need of repair. Some 20%, aged 15 and over, had experienced food insecurity during the course of the past 12 months. Among the Inuit living in Inuit Nunangat, the number of adults experiencing food insecurity during this period was 52%. According to the same source, the Canada's Inuit population grew by more than 29% in the ten years between 2006 to 2016. From a social justice point of view, Canada must find a way to uplift the socioeconomic conditions of its growing indigenous population. However, the responsibility for remedying the situation cannot be placed with polar bears without inviting a tragic outcome for Canada's indigenous communities and its bears.

Between 2006 and 2013, the average auction price for polar bear skins in Canada rose from CAD1,311 (USD1,150) to its peak value of around CAD7,178 (USD6,960) (Figure 5). Polar bears auction prices also peaked in the same year, reaching CAD21,115 (USD20,480). This steep upturn in price was primarily due to a rapid rise in demand for polar bear skins in China (CITES Trade Database). Polar bear skin exports to China rose by 1070% from 28 in 2006 to 300 in 2013. By 2011– 2015, China was importing 71% of all legally exported Canadian polar bears skins. This sharp rise in polar bear skin imports to China is reminiscent of patterns observed in the products of other threatened species such as rhino horn or ivory.

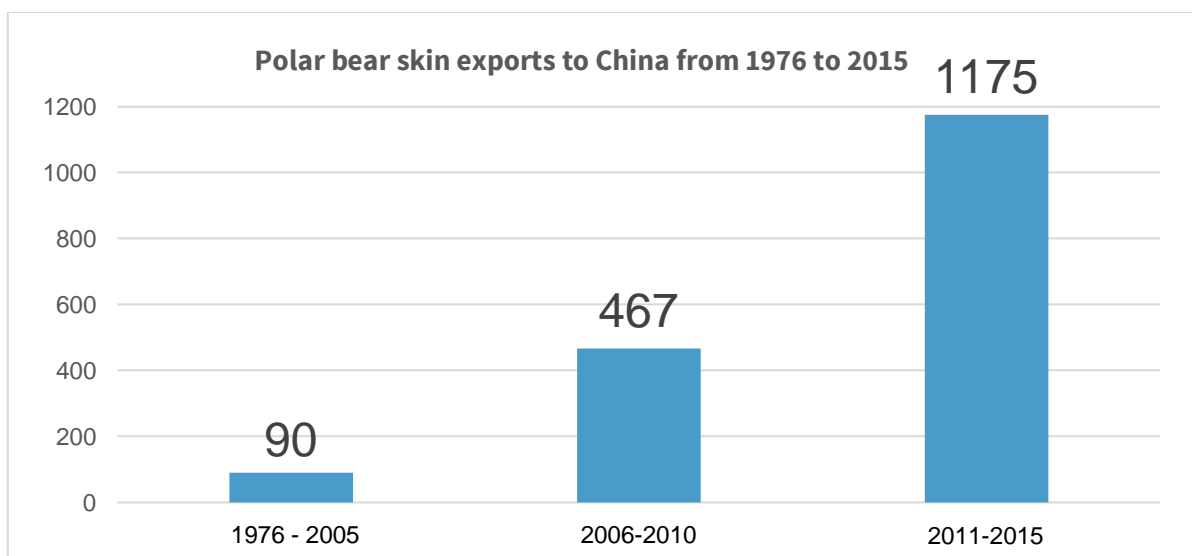


Figure 3. Polar bear exports from Canada to China for 1976-2005, 2006-2010 and 201-2015.

Overall, Japan, Denmark, China, Norway and the US were the five largest importers of polar bear skins between 1976–2015. Collectively, these countries were the destination for 10,762 polar bear skins during this period. China began to emerge as the leading polar bear skin importer, shortly after Japan

stopped the import of skins around 2004. (Figure 4). After China, the top polar bear skin importers for the years between 2011–15 were Norway (5.8%), Belgium (3.9%), France (3.3%), Russia (3.0%), Germany (2.8%) and Switzerland (1.4%). Each of these countries continues to participate in the international trade in polar bear skins to this day.

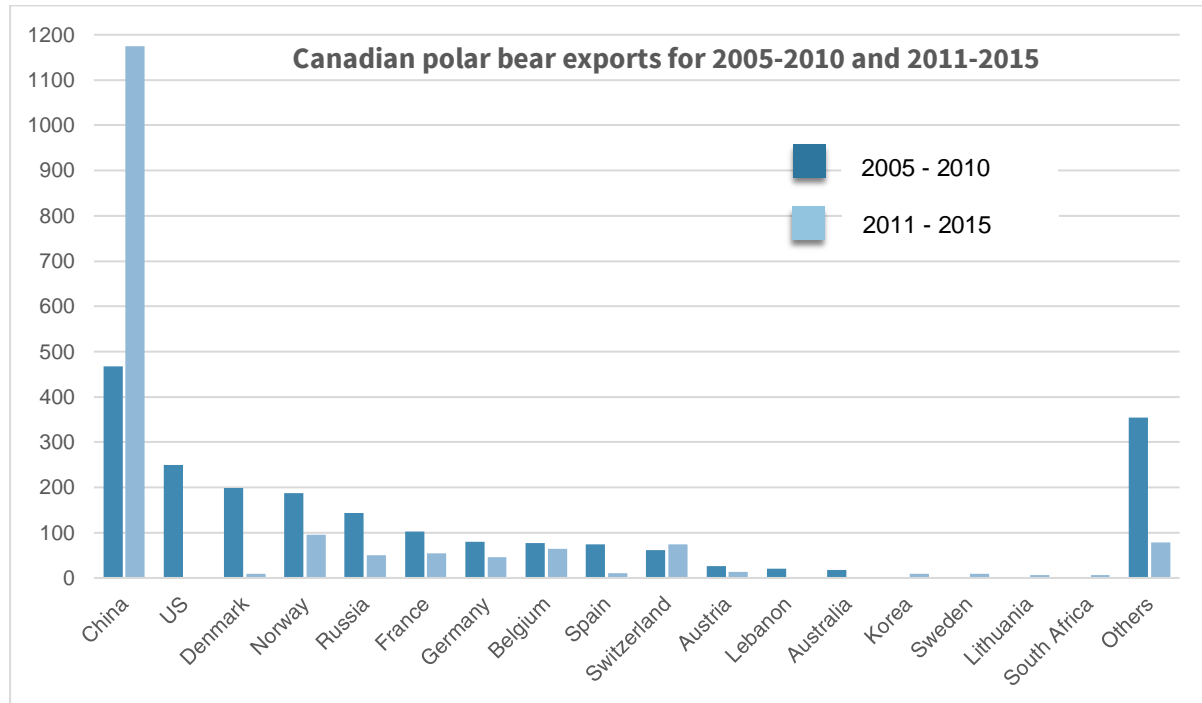


Figure 4: Polar bear export data by country for the two five-year periods between 2006-2010 and 2010-2015.

As mentioned earlier, the Genuine Mackenzie Valley Fur (GMVF) programme in the Northwest Territories provides indigenous hunters with a guaranteed price for all skins and an additional bonus for larger or premium quality skins. In the 2005/06 season, the GMVF Program’s guaranteed payment for polar bear skins was CAD250 (USD220), plus an additional CAD50 (USD44) for prime skins. By the 2017/18 hunting season, the programme’s advanced-price offer had reached CAD1,750 (USD1,330), plus an extra CAD450 (USD342) for premium skins. Thus, the GMVF Program’s guaranteed payment for prime skins increased by a staggering 733%, from CAD300 (USD264) in 2006 to CAD2,200 (USD1,672) in 2018. Attracted by the rise in skin prices, a growing number of hunters began to become involved in the international trade in polar bear skins. Like trophy hunters, native hunters preferentially target large animals. An incentive such as this no doubt continues to motivate them to kill biggest, strongest and healthiest polar bears with the best quality fur they can find.

European and Asian buyers pay considerably higher prices for polar bear skins than the average auction price in Canada. For example, a medium-quality polar bear skin with an auction price of around CAD6,000 (USD4,500) retails for USD20,000 in Norway. Native hunters may receive around CAD2,500 (USD2,000), a mere 10% of the price paid by consumers for a skin of this type. Today, polar bear skins have become desirable and exclusive luxury items in China. Premium quality skins retail for up to USD90,000, while fully-mounted polar bears can achieve USD100,000 (O’Connor 2013) – roughly the same price as two kilograms of gold or one kilogram of cocaine. With prices for polar bear products this high, organized poaching and skin trafficking seems only a small step away, if is not already occurring.

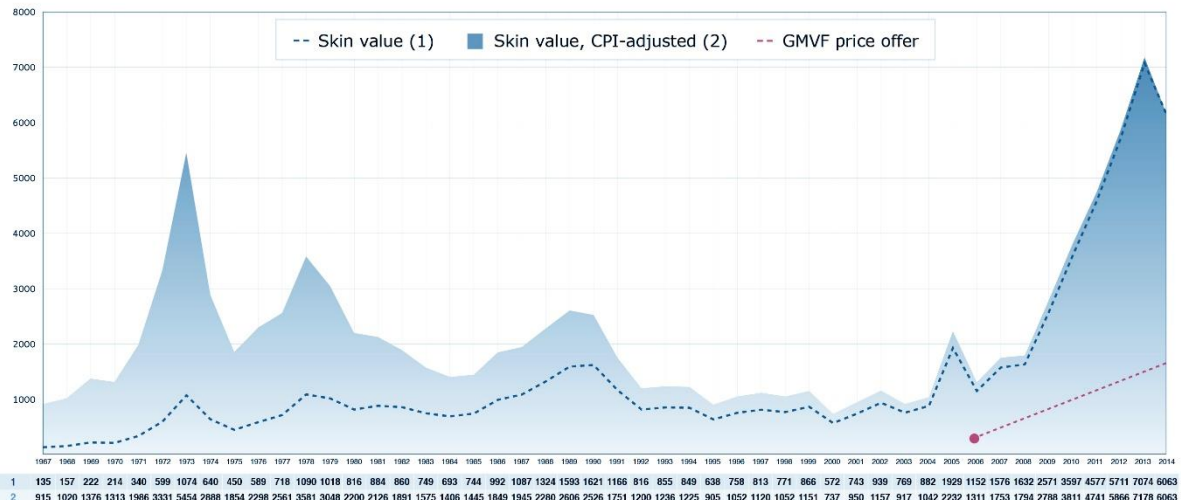


Figure 5. Average value of polar bear skins from 1967–2014 in Canadian dollars. The red dashed line on the right shows the guaranteed price offers by the Genuine Mackenzie Valley Fur programme (GMVF). From Liodden 2019

Regulating the international trade in polar bear skins

The Canadian tag system is the backbone of the country's efforts to control international trade in polar bear skins. In theory, fur tags should allow reliable tracking of skins from hunter to consumer by tracing each skin back to its point of origin. Polar bears tags are a legal requirement for all skin exports from Canada and form part of CITES export and import permits. Skins without their original tag might have had their tag transferred to skin from bears that were killed illegally outside of quotas or in areas which prohibit the export of polar bear skins.

Provincial and territorial governments set allowable quotas and issue the corresponding number of tags. Tags are allocated among local hunters in each settlement, and each tag gives the holder the right to kill one polar bear. In Nunavut and the Northwest Territories some of the tags can be reallocated to non-native trophy hunters. According to the relevant Wildlife Act (Government of Nunavut, 2015), tags must be attached to the hide or pelt and must be attached in such a way that it cannot be reused. In other words, it is illegal to export a polar bear skin without its associated tag.

However, some consumer countries, including Norway, have never required tags to be attached to imported polar bear skins. Thus, even CITES documents cannot guarantee that a skin was legally killed or acquired. For example, skins without their original tag might have been replaced with others from an illegal kill.

"Tag switching" is used to launder illegally acquired skins to introduce them into the legal market. Because specimens are labelled solely according to their country of origin (i.e., Canada), importing countries are unable to determine the source population of imported polar bear skins or parts. Grey market skins from unregulated hunts in Quebec, and skins from populations weakened or declining as a result of climate change, can therefore easily enter international trade. Incidences of polar bear skins trafficking have already been reported in the Canadian press (e.g., The Canadian Press 2017).

If the growing international trade in polar bear skins follows patterns observed in other high value wildlife products, it is also likely to attract the same criminal entities that are already involved in illegal trafficking.

Canada is aware of the shortcomings of the tag system, including the potential for tag switching, and has initiated a pilot project, which uses microchips to trace polar bear skins more reliably. Microchips

can be scanned electronically to identify a skin's point of origin. They are also not easy to find or replace because of their size. In theory, this approach promises better control. However, the financial investment required to introduce this technology for all points of entry will eliminate it for many consumer countries. Moreover, trade controls are only as strong as the weakest link in the chain. Even with the microchip technology in place, its consistent and reliable application across polar bear consumer nations remains very much in doubt.

Without reliable mechanism to lower demand or ban the trade in polar bear skins and trophies, more native hunters are likely to become attracted to killing more polar bears; legally or illegally. For Canada to actively encourage an already vigorous demand in China is playing with fire and risks opening a door, which, we know from experience, will be extremely difficult to close. It is also an open invitation for international organized wildlife criminals to enter the polar bear skin market. We only have a narrow window of opportunity act before Russia, Canada and other range states will be confronted with an "Arctic rhino" situation. Listing polar bears on CITES Appendix I and thereby putting an end to legal trade in polar bear parts and derivatives, would significantly hamper illegal activities. It would also signify a genuine commitment towards saving polar bears, which have survived in one of our earth's harshest environments for millennia.

What can be done?

The most important conservation action we can take immediately, before climate change severely shortens the odds of survival for polar bears, is to ban trophy hunting and the international trade in skins.

Polar bears are one of the least suitable species to be subjected to any form of hunting. They are naturally rare, have low reproductive potential, high cub mortality and rely heavily on adult survival. Polar bears have evolved to survive in an unforgiving, marginal environment and are highly vulnerable to habitat loss and destruction as a result of climate change and pollution.

The fact that neither the Canadian federal government, importing countries, nor CITES have been able to ensure that polar bear skins in international trade originate from areas where native and trophy hunting is guaranteed to be sustainable, inspires little confidence. Neither does the fact that many hunting quotas are set without reliable population estimates, nor that evidence about declining populations has been ignored in favour of economic considerations. Instead, the heavily sex-biased killing regime practiced in Canada, has led to a dramatic drop in the number of male polar bears, while provincial and territorial governments have continued to raise hunting quotas for their rapidly growing populations. If Canada will not or cannot stop polar bear exports originating from undeniably unsustainable hunts, the most reasonable option would be for importing countries to ban the import of polar bear products unilaterally. However, this is improbable in the short or medium term for some of the most important consumer states. Therefore, the only reasonable way to address this issue is for the Parties to CITES to put an end to international trade in all polar bear parts and derivatives by listing the species on Appendix I.

An international trade ban would have economic implications for some native settlements in Canada. It is therefore important to identify sustainable alternative income streams for these communities. Small-scale ecotourism has huge potential in this regard and demonstrates that animals are much more valuable alive than dead.

The 266 inhabitants of the small U.S. settlement of Kaktovik in north-eastern Alaska, offer boat-based polar bear-watching that supports both their community and the local wildlife. During the autumn season, four boat operators generate approximately one million U.S. dollars. In addition, two small

hotels turn over around USD 700,000. Despite being modest in scope, polar bear tourism in Kaktovik raised approximately twice as much income in 2015 as the revenue from all Canadian polar bear trophy hunts combined in the same year. And it did so in a single two-month season. Thus, even in hard-nosed economic terms, polar bears are much more valuable alive than dead. There is no reason why Canadian native settlements could not develop small-scale ecotourism ventures such as these as a sustainable and far more profitable livelihood.

Global warming is clearly not the only threat to polar bears. Trophy hunting and hunting to supply the international trade in skins both target the largest, strongest and healthiest individuals bears. If these charismatic symbols of the Arctic are to survive and adapt to a warming climate, this cannot continue. A ban on international trade in polar bear products would be the fastest, easiest way to achieve this important conservation goal.

With their world melting away beneath their feet, hunted down for cash or prestige to satisfy a rising market of wealthy hunters or buyers in Asia, these tough and wonderous icons of the Arctic have never been more imperilled than they are now. Polar bears need all the help they can get to make it a world that is changing irrevocably because of our collective actions. It's time to turn down the heat for polar bears and offer them the best possible chance of survival.



Ole J Liodden

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