THE ECONOMICS OF POLAR BEAR TROPHY HUNTING IN CANADA

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Executive Summary

THIS PAPER EXAMINES THE HISTORY, prevalence, and economic importance of polar bear trophy hunting in Nunavut and the Inuvialuit Region of the Northwest Territories. It also examines the impact US law, specifically the Marine Mammal Protection Act, has had on the number of polar bears killed by trophy hunters in Canada each year. The US regulatory environment with regard to the importation of polar bear trophies has not only had an impact on the number of polar bears killed by trophy hunters but has also impacted which polar bear populations have been most heavily hit by trophy hunters.

Polar bear trophy hunting is less deeply rooted in Canada than many people realize. It took active governmental effort in the early 1980s for trophy hunting to establish a toehold in Nunavut and the Northwest Territories. Many Inuit communities were slow to embrace trophy hunting with some communities resisting entirely. A far greater share of communities have either never hosted a polar bear trophy hunt or have hosted them sporadically than have hosted them on an annual basis.

The considerable body of data from Nunavut and the Northwest Territories examined in the paper supports the conclusion that neither polar bear trophy hunting nor the economic benefits of such hunts are widespread in Nunavut and the Northwest Territories. Polar bear trophy hunting may well be of economic importance to a handful of people in several Inuit communities, but there are a significant number of Inuit communities and vast numbers of individuals who have no connections to polar bear trophy hunting and reap no economic gains from it. The economic benefits of polar bear trophy hunting were, even at their peak, far too limited and far too heavily concentrated in too few hands to amount to anything approximating a solution to the broader socio-economic troubles faced by Inuk people seeking to integrate subsistence food sourcing into their lives.

Introduction

Many studies examining the importance and impact of polar bear trophy hunting[1] in Arctic Canada[2] have suffered from an insufficient amount of detailed, historic data. Others have suffered from an unbending commitment to the narrative they wish the data to support. Some suffer from both. This is hardly a surprise given the politics surrounding trophy hunting, but it is ultimately a disservice to all parties concerned.

A large number of opinions (both in support and against polar bear trophy hunting) are in circulation, some of which are disconcertingly disconnected from fact. This paper seeks—where sufficient data exist—to draw attention to myth-challenging points about the history and current reality of polar bear trophy hunting in Canada's north.

Polar Bears and the Inuit

As the largest predator in the Arctic, the polar bear has been much admired and much feared by the Inuit for thousands of years. As has been ably and eloquently discussed elsewhere, the polar bear—*nanuq*—has great socio-cultural importance for the humans who share the Arctic with them, factoring prominently in Inuit lore, Inuit mythology, and Inuit cosmology. Polar bears are seen to share many features and characteristics with humans with clear areas of acknowledged and respected superiority.[3]

For several millennia, polar bears and humans functioned on more or less equal footing in the Arctic. Killing a polar bear was a task not easily accomplished by even a group of people, let alone by a single hunter. Not surprisingly given the difficulty of killing them, polar bears did not factor into the diet of pre-modern Inuit in any significant fashion. Archaeological studies of Palaeoeskimo and Neo-Eskimo sites show that polar bears accounted for less than one-tenth of one percent of the diet of pre-modern Inuit.[4]

For several millennia, polar bears and humans functioned on more or less equal footing in the Arctic.

This relationship of equal footing shared by humans and polar bears in the Arctic began to shift with the arrival of firearms in the Arctic in the late nineteenth century. For the first time, a single Inuk could feel confident that an unexpected encounter with a polar bear would be unlikely to result in the loss of human life. (Whether the polar bear would live past the encounter hinged on marksmanship of the hunter.) By the 1940s, guns were in wide-spread use by the Inuit of Arctic Canada. Though polar bear hides were sold sporadically by the Inuit to Western traders, other species, such as the Arctic fox, were in far greater demand from the Inuit of the Northwest Territories until the last half of the twentieth century.[5] By the 1960s, however, demand for polar bear skins on the world market was high enough that Canadian officials found themselves alarmed by the rapid increase in the number of polar bears killed each year. In 1966/67, for example, 726 polar bears were reported as having been killed in the Northwest Territories.[6] Given the significant record keeping deficiencies that existed in the unregulated polar bear hunting of the time, it is widely believed that the actual number of bears killed each year in the 1960s was considerably higher than the official figures.[7]

The Birth of North American Polar Bear Trophy Hunting

When looked at through the prism of the length of human co-habitation of the Arctic with polar bears, the sale of polar bear hides in large numbers is an extremely recent phenomenon stretching back to no further than the 1950s. Trophy hunting in Canada is an even more recent phenomenon.

Trophy hunters first set their sights on polar bears in significant numbers in Alaska in the 1950s. With planes, helicopters and snowmobiles, polar bear populations in Alaska were accessible for the first time to trophy hunters. Enough polar bears were killed by trophy hunters in Alaska in the 1950s and 1960s to cause significant damage to polar bear populations and to spark global concern about the need to enact policies to ensure the survival of polar bears.[8] This concern culminated in the 1973 International Agreement on the Conservation of Polar Bears (1973 Agreement) signed by all five of the "polar bear nations"—the United States, Canada, the then-Soviet Union (now the Russian Federation), Denmark (for Greenland) and Norway.

Ironically, while the excesses of wanton trophy hunting in Alaska served to heighten public and governmental concern about polar bears and resulted in the end of trophy hunting in the United States and was one of the major factors in the passage of the 1972 Marine Mammal Protection Act (MMPA) in the United States, it had no such impact in Canada. In fact, in direct defiance of the prevailing international sentiment, from the outset, Canada has insisted in interpreting its obligations under the 1973 Agreement in such a way as to allow for non-Inuit hunters to participate in trophy hunts in Canada. Such hunts are arguably not permitted under the terms of the 1973 Agreement. (Two articles of the Agreement seem to limit hunting rights only to local people using traditional means in traditional areas, which would thereby preclude trophy hunting by outsiders.) Yet Canada is the only country that allows for the international commercial sale of hides of polar bears killed by indigenous hunters, and is the only country that allows polar bear trophy hunting. Canada attempts to reconcile its singular interpretation of the Agreement by insisting that non-Inuit trophy hunts be led by Inuit guides and use traditional transportation (not airplanes or snowmobiles).

In contrast to the 300–400 polar bears killed by trophy hunters annually in Alaska in the mid-1960s,[9] at most a handful of polar bears were killed by trophy hunters in Canada during this period. According to the best information available, this appears to not only have been the case in the mid-1960s but also the case at the time of the 1973 signing of the International Agreement on the Conservation of Polar Bears.[10]

Why, given the extremely limited extent of polar bear trophy hunting in Canada in 1973, did Canada insist on making and defending an interpretation of the 1973 Agreement that allowed for trophy hunting?

The answer seems to be that the negotiators were interested in defending not an existing, but rather a potential, income stream for Inuit communities. The hundreds of polar bears killed each year by trophy hunters in Alaska in the years prior to the MMPA were a clear indication that a certain amount of demand existed in the marketplace for polar bear trophy hunting. As the other four signatories to the 1973 Agreement were all prohibiting polar bear trophy hunting, one can imagine that some Canadian officials saw that these prohibitions in other countries could potentially convert into a business opportunity for the Inuit of Canada.

Though Canada claimed the right to conduct Inuit-led trophy hunts from 1973 onward, this right was rarely exercised by the Inuit through the 1970s. Only a handful of trophy hunts are on record as having been conducted in any given year in the Northwest Territories prior to the early 1980s.[11]

Canada is the only country that allows for the international commercial sale of hides of polar bears killed by indigenous hunters, and is the only country that allows polar bear trophy hunting.

In the 1980s, in their on-going struggle to help develop means for Inuit to earn much needed cash, the territorial authorities of the Northwest Territories (which included all of present-day Nunavut until 1999) identified tourism—inclusive of polar bear trophy hunting—as a possible means by which additional non-wage income could be created in Inuit communities. The Department of Economic Development and Tourism established several programs to train and certify Inuit as guides as well as a program aimed to help develop community-based outfitters. As a sign of the level of seriousness of these efforts, these programs were included in the curriculum of Arctic College. The government made contacts with southern big

game outfitters and provided (along with Inuit business organizations) start-up funding for local trophy-hunt entrepreneurs.[12]

In the 1960s and 1970s, snow mobiles had replaced dogs as the primary means of transportation on winter hunting expeditions in the Northwest Territories.[13] As part of the extensive efforts by the territorial government to develop Inuit led trophy hunting expeditions, dog sled teams had to be re-introduced into many Inuit communities. In order to comply with the Canadian regulation that traditional transportation be used to escort trophy hunters on their Inuit-led polar bear hunts, young hunters in the Northwest Territories were taught an age-old skill that was new to them—working with dog sled teams. Though used by Inuit guides when taking trophy hunters on polar bear hunts, snow mobiles remain the preferred means of transportation used by Inuit hunters when they themselves are hunting for polar bears. And while dog sleds are used to transport trophy hunters on trophy hunts, snow mobiles are often used by the guides and their assistants to set up camp in advance of the trophy hunters and to bring supplies back and forth during trophy hunts.[14]

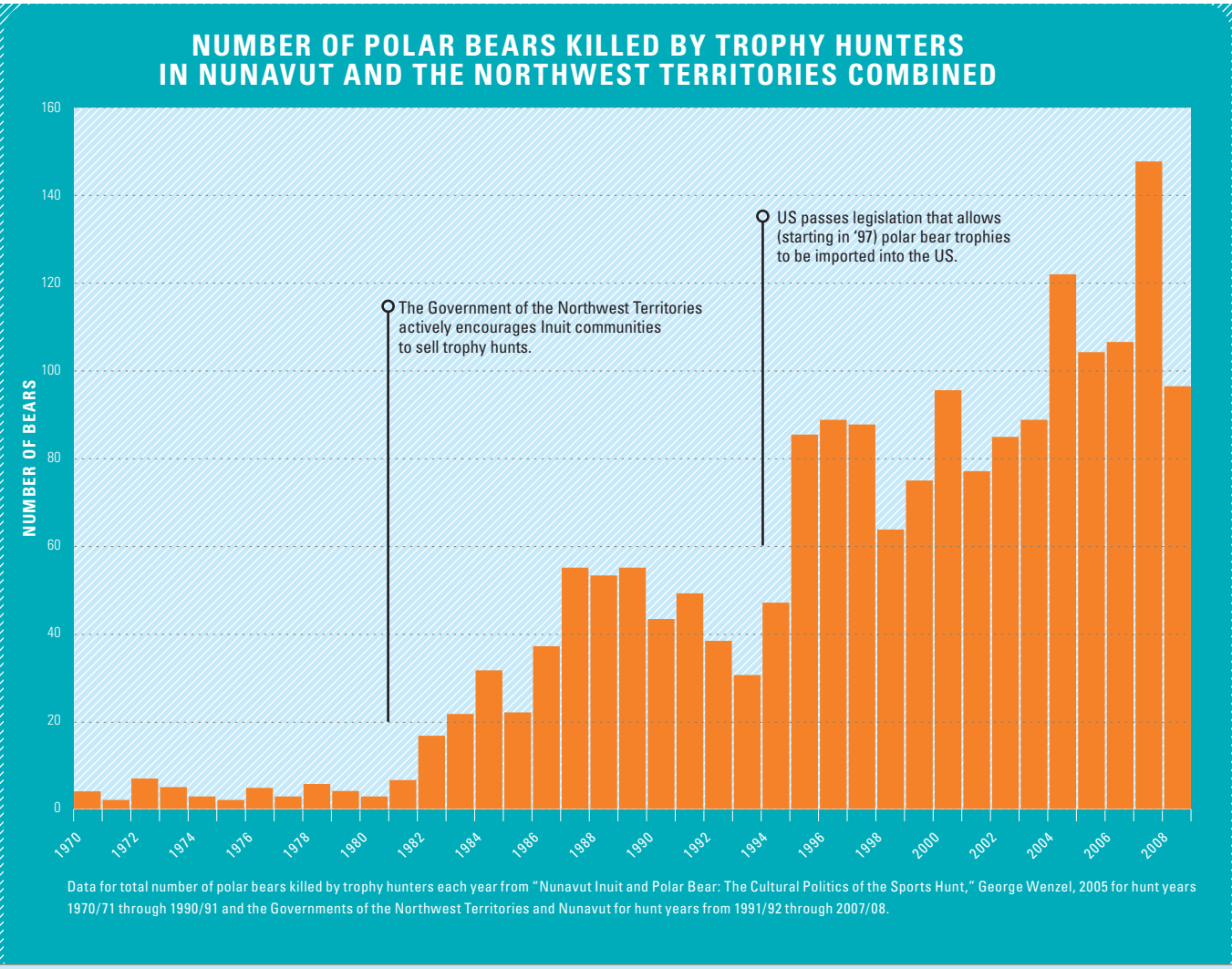
As a look at trophy hunt trade figures shows, there was almost no polar bear trophy hunting (a handful of bears each year) in the Northwest Territories prior to the extensive efforts by the territorial government in the 1980s to encourage the Inuit to set up trophy hunt businesses and/or work as trophy hunt guides for trophy hunters (Figure 1). Even with prodding from the government, Canada's Inuit communities were slow to embrace trophy hunting. There is documentation of multi-year debates within communities about whether to offer trophy hunts, with objections focused on the disrespect trophy hunting shows to polar bears.[15]

How Widespread Is Trophy Hunting?

Not only were Inuit communities slow to embrace trophy hunting when the government first encouraged them to sell trophy tags in the 1980s, but in even the most robust years of polar bear trophy hunting in Canada,[16] a fair number of communities opted against holding trophy hunts or held them only sporadically.

In the most recent five year period (2003/04 through the 2007/08 hunt years) for which data are available from both the Northwest

figure 1



Data for total number of polar bears killed by trophy hunters each year from "Nunavut Inuit and Polar Bear: The Cultural Politics of the Sports Hunt," George Wenzel, 2005 for hunt years 1970/71 through 1990/91 and the Governments of the Northwest Territories and Nunavut for hunt years from 1991/92 through 2007/08.

Territories and Nunavut, 17% of communities with the right to conduct trophy hunts[17] opted against holding a single hunt.[18] They sold zero trophy tags in each of the five years despite high prices and waiting lists of interested hunters.

As an indicator of the sporadic nature of engagement in offering trophy hunts shown by communities in Arctic Canada, one can look at the number of communities each year that offer trophy hunts. If all communities that host trophy hunts host them every year, then the share of communities not offering trophy hunts in any given year would always be 17%. Instead, in any given year across this five year period an average of 38% of communities with the right to conduct trophy hunts opted against doing so.[19]

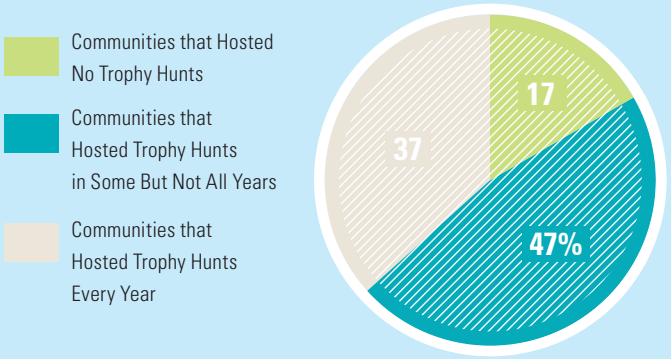
Only 37% of communities held a trophy hunt in each of the five years. In addition to the 17% of communities that held no trophy hunts in this five year period, an additional 47% of communities opted against holding a trophy hunt in one or more years.[20] Correcting for rounding errors, the sum of these two groups — communities that hosted no trophy hunts and communities that hosted them only sporadically — comes to 63% of all eligible communities (Figure 2).

Trophy hunt advocates often seek to give the impression that polar bear trophy hunting is a key source of income to Inuit Canada. Were this the case, one would expect to see the vast majority — if not all — Inuit communities in Nunavut and the Inuvialuit Region of the Northwest Territories hosting trophy hunts more or less every year. As noted above, the reality is quite different. A far greater share of communities have either never hosted a polar bear trophy hunt or have hosted them sporadically than have hosted them on an annual basis. Polar bear trophy hunting may well be of genuine economic importance to a handful of people in a number of Inuit communities (see below), but it is clear that there are a significant number of Inuit communities in Nunavut and the Northwest Territories that have little to no engagement in polar bear trophy hunting.

Little more than ⅓ of Inuit communities actually host polar bear trophy hunts annually.

figure 2

FIVE YEAR STUDY OF THE SHARE OF INUIT COMMUNITIES THAT HOST POLAR BEAR TROPHY HUNTS



Please note that despite the fact the 17% + 47% = 64% due to rounding, the figure noted above – 63% – is the accurate share of communities that either offered no trophy hunts or offered them only sporadically across the five year period in question. Data from the Governments of Nunavut and the Northwest Territories for hunt years 2003/04 through 2007/08. Although there are 31 communities in Canada with the right to hunt for polar bears, there are only 30 communities with the right to host trophy hunts. Iqaluit, the capital of Nunavut, has forfeited this right. Thus the denominator used for these calculations is 30 not 31.

Inuit Reluctance to Embrace Trophy Hunting

What explains these cases of resistance and hesitancy to embrace trophy hunting?

There are several factors in play, some of which can be easily understood without insight into Inuit traditional beliefs and others that are harder to understand without cultural context. It is important to understand traditional Inuit views regarding hunting and the relationship between humans and polar bears to understand the source of much of the debate that has occurred in Inuit communities about trophy hunting. Traditionally, the Inuit view hunting as a necessary means of maintaining relationships with animals. Out of respect for that relationship, there were prohibitions against taking more polar bears than were needed. Polar bears were seen as making choices to engage — or not engage — hunters based on the level of respect humans show to them through their thoughts, words and actions. Thus, the number of bears one killed was seen, in large part, as having been determined by whether enough respect was conveyed to the bears. Killing bears was not seen as disrespectful; rather, it was a necessary part of the relationship between humans and bears. Bears, when satisfied with humans, made themselves available to be killed.[21]

With these views as the conceptual foundation, it is not surprising that some Inuit take issue with trophy hunting. Treating polar bears

as a marketable good is not perceived as respectful, and there is fear that this lack of respect will provoke a negative response from the bears. Negative responses include the possibility of making themselves scarcer to hunters and/or approaching humans in a threatening and menacing manner.[22] In her recent paper on trophy hunting in the *Journal of Ecotourism,* Martha Dowsley provides the following quote from her interviews with Inuit about trophy hunting that echoes these fears:

'In the old days you were told to only kill what we needed. I'm so against how it is now. We were told not to play with animals, now there's sport hunting and fishing derbies' (M.A., Quikiqtarjuaq Elder, informal interview, 2004).[23]

As noted in a 2005 paper by well-known Inuit studies scholar George Wenzel, intense competition for clients by local polar bear trophy hunt outfitters in Clyde River, Nunavut has "increasingly come to be seen by community members as potentially offensive to bears." As a result, the Clyde River Hunters and Trappers Organization decided to reduce its trophy hunt allocation.[24]

Other communities opt to either not allow trophy hunts or to allow them only in small numbers. Their reasons include concern about the unequal distribution of income resulting from trophy hunting (with a handful of trophy guides and assistants benefiting greatly and many others seeing no cash benefit) and the friction caused by squabbles over trophy tag allocation (such friction is something of an anathema in traditional Inuit culture).[25] In some communities there was an absence of people who were interested in guiding trophy hunts *and* simultaneously possessed the interpersonal skills to be successful guides to trophy hunters. Other communities are not advantageously located in terms of ease of access by foreign trophy hunters and/or in terms of ease of access to areas in which polar bears can be reliably found. This obviously decreases the motivation for a community to offer tags to trophy hunters. Hard to reach communities without a "proven track record" of high success in terms of trophy hunters returning with large polar bears are less attractive candidates for trophy hunters than communities with well-established, well-proven trophy hunt records. Thus, marginal communities are likely to command a lower price per hunt than the major trophy hunting communities. This further lowers their incentive to give the business a try.

The Growth of Trophy Hunting

While the previous two sections dealt with communities and individuals within communities who are resistant—or at best conflicted—about trophy hunting, there is no question that polar bear trophy hunting in Canada has grown over the past several decades. It may have gotten off to a slow start and it may not be embraced by all Inuit communities in Nunavut and the Northwest Territories, but a cursory glance at the number of polar bears killed each year by trophy hunters makes clear that there has been significant growth in polar bear trophy hunting in recent years. This growth can be seen both in absolute terms and in comparative terms.

In absolute terms, the growth seen is remarkable:

1970–1981 = average of 4 bears a year killed by trophy hunters.[26]

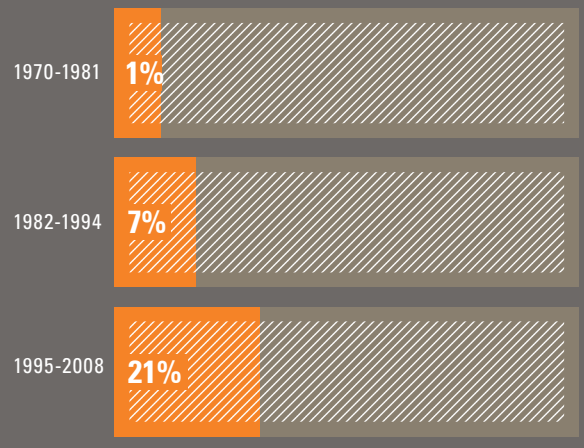
1982–1994 = average of 39 bears a year killed by trophy hunters.[27]

1995–2008 = average of 96 bears a year killed by trophy hunters.[28]

In terms of polar bears killed by trophy hunters as a share of all polar bears killed in Nunavut and the Northwest Territories, the growth is also quite impressive (Figure 3).

figure 3

POLAR BEARS KILLED BY TROPHY HUNTERS AS A SHARE OF ALL POLAR BEARS KILLED IN NUNAVUT AND THE NORTHWEST TERRITORIES COMBINED



Data for total number of polar bears killed each year from Canadian submissions to the IUCN for hunt years1970/71 through 1997/98 and the Governments of the Northwest Territories and Nunavut for hunt years 1998/99 through 2007/08. Trophy kill data from "Nunavut Inuit and Polar Bear: The Cultural Politics of the Sports Hunt," George Wenzel, 2005 for hunt years 1970/71 through 1990/91 and the Governments of the Northwest Territories and Nunavut for hunt years from 1991/92 through 2007/08.

As noted earlier in the paper, there was next to no polar bear trophy hunting in Canada prior to the 1980s. The figures above back up this assertion, with a mere 4 polar bears a year on average being killed each year in Canada by trophy hunters between 1970 and 1981. The growth seen in the 1980s can largely be attributed to the active effort of the Government of the Northwest Territories to encourage the development of the polar bear trophy hunt industry. Figure 1 clearly shows that there was a slow but fairly steady growth in trophy hunting in the Northwest Territories through the 1980s. Thus it is important to keep in mind that the 39 polar bears killed each year during the period 1982 through 1994 represent an average figure. In the earlier portion of this period, the number of polar bears killed each year was less than in the latter part of the period.

As big a jump as it is between the number of polar bears killed by trophy hunters in the 1970-1981 period and that in the 1982-1994 period, it is dwarfed by the change between the 1982-94 period and the 1995-2008 period. Again, a change in government policy is at the root of the drastic shift in the scale of polar bear trophy hunting in Arctic Canada. However, the government in question in this case was not based in Yellowknife, or even Ottawa. The change was made in Washington.

Impact of the Marine Mammal Protection Act

In 1994, the MMPA was amended to allow the importation of polar bear trophies. Prior to the amendments, there was a strict prohibition on the importation of polar bear trophies (indeed, on importation of any marine mammal or marine mammal product, unless it was for scientific purposes, enhancement of the species, or for public display). This meant that US trophy hunters who took the time and spent the money involved in going on a polar bear trophy hunt in Canada did not have any legal right to bring any part of the polar bears they killed home to the United States as a personal trophy. After extensive lobbying by hunter groups, amendments were made to the MMPA allowing for the importation of polar bear trophies from approved polar bear populations. Though the amendments were passed in 1994, they were not implemented until 1997. From the date of the implementing rule forward, trophies from approved populations were allowed into the United States. This situation remained unchanged until the US Fish and Wildlife Service (USFWS) prohibited the importation of all polar bear trophies in response to polar bears being listed as threatened under the US Endangered Species Act (ESA) in 2008.

Amendments of the MMPA resulted in a drastic increase in polar bear trophy hunting in Arctic Canada in the 1990s.

For purposes of assessing whether amendments to the US MMPA and the recent ESA listing have had an impact on polar bear hunt patterns in Canada, the following four time periods (each of which begins with and ends with an MMPA milestone) will be used:

Period I: Hunt Years 1972/73–1993/94

MMPA in Full Force, No Polar Bear Trophy Imports Allowed.

Period II: Hunt Years 1994/95–1996/97

MMPA has been Amended but Not Yet Implemented.

Period III: Hunt Years 1997/98–2007/08

Polar Bear Trophies from Approved Populations can be Imported. Not all Canadian polar bear populations are approved. List of approved populations can and does change based on USFWS assessment of polar bear management regimes.

Period IV: Hunt Year 2008/09 Onward

Importation of Polar Bear Trophies Once Again Prohibited.

For the analysis of the impact of the MMPA and the ESA on country of origin of polar bear trophy hunters, data are available for the 25 hunting communities in present-day Nunavut. If and when hunter origin data from the Northwest Territories are made available, this information will be added to this analysis. There are two other points worth bearing in mind in looking at the following analysis of the country of origin of hunters who killed polar bears from MMPA approved polar bear populations compared to the country of origin of hunters who killed polar bears from MMPA non-approved polar bear populations. First, country of origin information does not exist for all trophy hunters. Except where otherwise noted, the universe under examination here is limited to trophy hunters whose country of origin is known. Second, there are three polar bear populations whose MMPA status changed early on during the 11-year period

during which the importation of polar bear trophies was allowed into the United States. For the purposes of this analysis, for Period I, each of these populations will be counted as belonging to the MMPA category in which it was classified for the majority of that 11-year period. During Period II (the interim years) and Period III (which covers the 11 years during which the importation of polar bear trophies was allowed into the United States), each population has been classified to reflect its proposed (Period II) and actual MMPA (Period III) status each year. Thus, each of these three populations is counted as MMPA approved in some years and MMPA non-approved in other years in Periods II and III — the switch occurs at the point when historically the population was re-designated under the MMPA.[29]

Period I

Through the first half of Period I (hunt years 1972/73 through 1993/94) there was very little trophy hunting of polar bears by anyone in Canada. As the 1980s wore on, there was an increasing number of trophy hunts. In the period from 1978/79 through 1993/94, on average 7 American trophy hunters killed polar bears in Canada each year.

Of trophy hunters whose country of origin was known, 37% came from the United States and 63% came from other countries.

Without the opportunity to bring trophies home,[30] Americans accounted for less than 2 out of every 5 trophy hunters in these years. Given that it would be years before Canadian polar bear populations were divided into ones approved for US imports and ones NOT approved for US import (all polar bear populations were de facto non-approved during these years), this was not a criterion in selecting populations from which to hunt. Instead, selection of which communities to use as a base was made on other criteria — ease of access, word of mouth, etc.

Not surprisingly, then, in this period roughly half (45%) of the polar bears killed by US hunters came from polar bear populations that would later NOT be approved for importation into the United States while roughly half (55%) came from populations that would later be approved for importation.

Prior to the amendment of the MMPA, over 60% of trophy hunters were non-American.

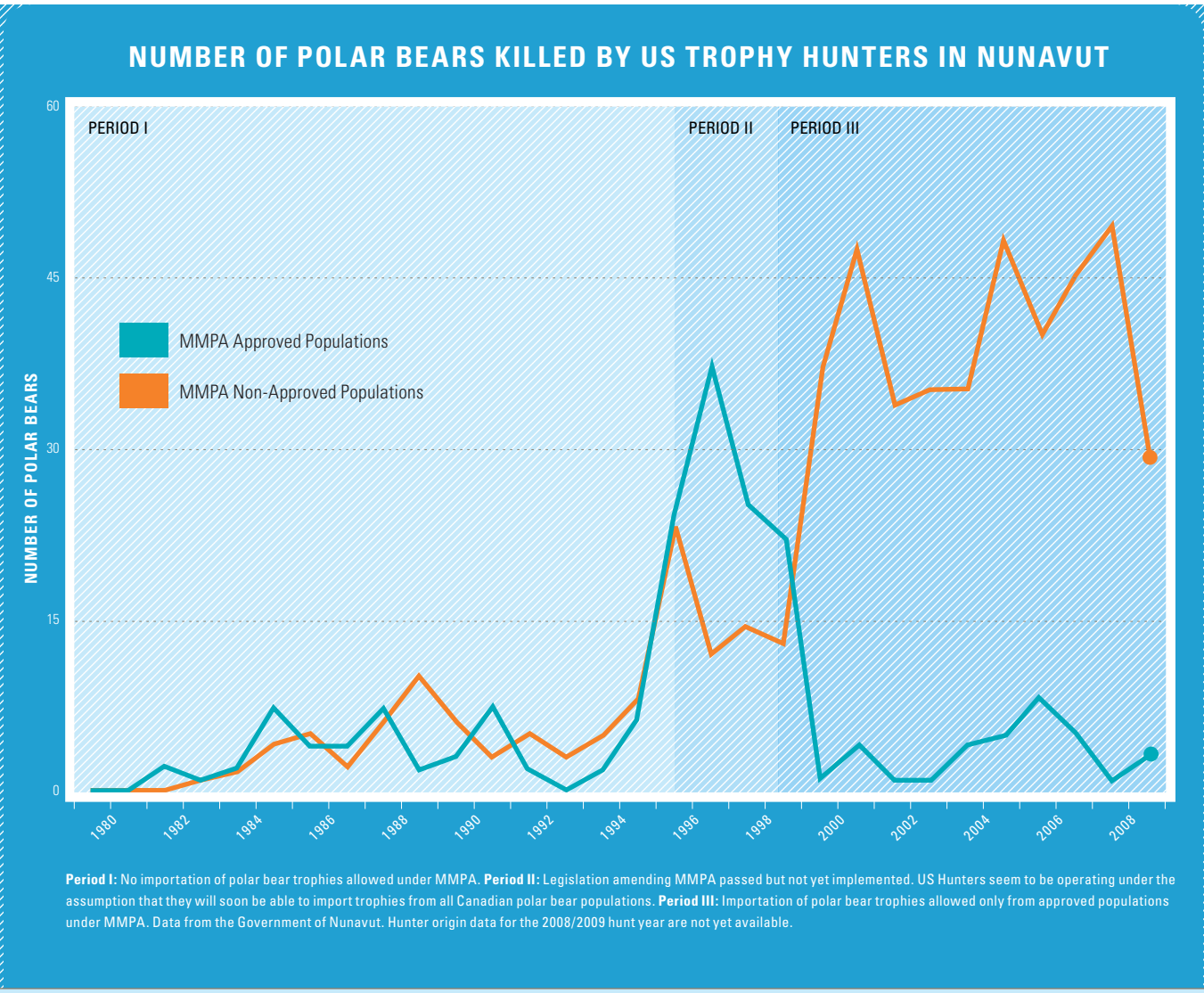
Absent the strong motivational criterion provided by the amendments to the MMPA in the mid-1990s resulting in some—but not other—populations being approved for importation into the United States, and given that which populations would be approved and which would not was a decision even the USFWS could not yet know, the small difference that existed in this period in favor of MMPA populations was almost certainly a matter of chance and had nothing to do with the as yet unamended MMPA.

Period II

Period II—lasting as it does for only three years (the 1994/95 through 1996/96 hunt years)—may seem at first brush too short to designate as a stand alone period. However, as is abundantly clear when one looks at Figure 4, these three years fell into a unique limbo period with regard to the MMPA that motivated US hunters to behave differently than they did in either the period preceding these years or the period following (Figure 4).

Between 1994 and the implementation of the MMPA changes in 1997, US hunters knew that polar bear trophies from Canada would be allowed into the United States, but they did not know how or when the changes would enter into force. The amendments made clear that imports would only be allowed from approved populations, and in July 1995 a proposed rule was published to allow polar bear trophies to be taken in six approved populations in the Northwest Territories (inclusive of present-day Nunavut).[31] Despite this strong indication that not all polar bear populations were likely to be approved, there was a marked uptick in the number of Americans who went trophy hunting in Canada during these "limbo" years, and they did not confine themselves to hunting from the polar bear populations that were listed in the July 1995 proposed rule. Many appear to have done this because they were confident that the polar bears they killed would be allowed into the United States once the MMPA amendments were implemented.[32] Judging from which populations they hunted, it seems fairly clear that the general operating assumption on the part of US hunters was that polar bear trophies

figure 4



Period I: No importation of polar bear trophies allowed under MMPA. **Period II:** Legislation amending MMPA passed but not yet implemented. US Hunters seem to be operating under the assumption that they will soon be able to import trophies from all Canadian polar bear populations. **Period III:** Importation of polar bear trophies allowed only from approved populations under MMPA. Data from the Government of Nunavut. Hunter origin data for the 2008/2009 hunt year are not yet available.

from all Canadian polar bear populations would be allowed into the United States. Whether this operating assumption was based on lack of information, misinformation or hubris is unknown.

What is known is that in the period from 1994/95 through 1996/97, on average 45 American trophy hunters killed polar bears in Canada each year. This was more than a six-fold increase over the previous period.

Not only were there more American hunters across the board, but there were more polar bears killed by US hunters, regardless of whether the bears were from populations later approved under the MMPA or not.

The 1994/95 hunt year predates both the proposed rule and the final rule by the USFWS to determine which Canadian polar bear populations would be approved for importation, so this could not have served as an important influence on the decision of which polar bear populations Americans hunted that year. One would think that the proposed rule—issued in July 1995—might have had some impact on hunter decisions in favor of hunting polar bears from populations which looked more likely to end up being MMPA approved populations. The data do not lend support to this being a widely held point of view. Instead, across the three years of Period II, 64% of polar bears killed by US hunters came from populations that were not included among the MMPA approved populations in either the 1995 proposed rule or in the 1997 final rule.

Unlike in Period I where there were 3 non-American hunters for every 2 American hunters, in Period II, the scales shifted strongly in favor of American hunters. In these years, Americans were far and away the most predominant group of polar bear trophy hunters, accounting for 76% of all trophy hunters in Nunavut. Americans killed 84% of trophy hunted polar bears from populations included in the proposed and final MMPA rules, and 72% of all polar bears from the rest of the Nunavut populations.

Following the amendment of the MMPA, Americans accounted for nearly 60% of trophy hunters.

Period III

Period III covers the eleven years (1997/98 though 2007/08) during which US polar bear trophies were allowed into the United States. Bears killed in non-approved populations during Period II were allowed into the United States after 1997,[33] but from February 2007 forward only bears from MMPA approved populations killed in Period II were allowed into the United States. Two polar bear populations—Norwegian Bay and Lancaster Sound—which were not listed as approved populations in the original 1997 USFWS decision were granted this status on January 1, 1999. A year and half later, one polar bear population—the M'Clintock Channel population—that had originally been approved by the USFWS was removed from the approved list based on concerns about the population estimate and the sustainability of the population's hunt quotas.

In Period III, on average 42 American trophy hunters killed polar bears in Canada each year. This was down, just slightly, from the average of 45 during the first three years after the MMPA was amended.

The huge change in this period was not in overall numbers of US hunters but rather with their sudden and highly focused shift away from MMPA non-approved populations to almost exclusive hunting of MMPA approved populations. This is hardly surprising given that killing a bear from an MMPA approved population had such a significant advantage to the hunter over killing a bear from a non-approved population—the former allowed hunters to have

a mounted polar bear or a polar bear rug in one's home for years after the hunt, while the latter did not.

MMPA approved populations accounted for:

55% of the polar bears killed by Americans in Period I;

36% of the polar bears killed by Americans in Period II;

88% of the polar bears killed by Americans in Period III.

Among MMPA approved populations, US hunters accounted for:

37% of the polar bears killed in Period I;

84% of the polar bears killed in Period II;

97% of the polar bears killed in Period III.

In contrast, among MMPA non-approved populations, US hunters accounted for:

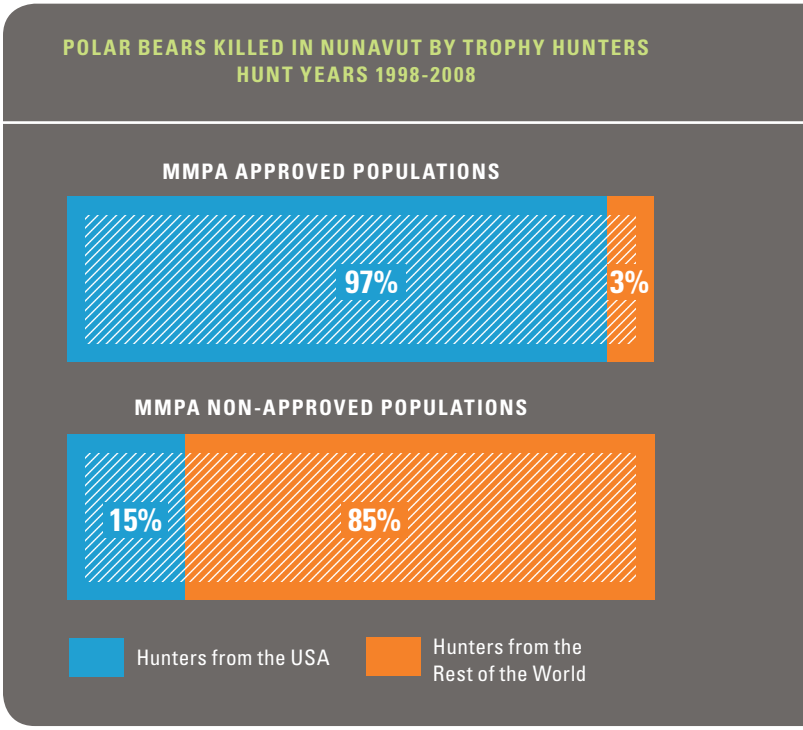
37% of the polar bears killed in Period I;

72% of the polar bears killed in Period II;

15% of the polar bears killed in Period III.

It was not just US hunters who rapidly changed their hunting pattern. While Americans shifted away from MMPA non-approved populations in droves, efforts were undertaken by Nunavut and by companies that sell polar bear trophy hunts to see that the spaces the Americans had filled in previous years in these non-approved populations were filled by non-Americans. There was a slight shift away from MMPA-approved populations on the part of non-American trophy hunters with the net result that only 3% of trophy-hunted bears from MMPA approved populations were killed by non-Americans in Period III. As noted earlier, 45 American hunters on average killed polar bears each year in Period II (hunt years 1994/95 — 1996/97). Of them, on average, 29 killed polar bears from non-approved populations.

figure 5



Data from the Government of Nunavut. This chart looks at the period 1997/98 though 2007/08 as these are the peak years during which US hunters were aware that only trophies of polar bears from "MMPA Approved" populations could be imported into the US.

The communities that hosted these hunts had grown accustomed to a certain volume of business. When the 1997 USFWS implementation decision was made, it had the potential to negatively impact trophy hunt outfitters and guides in communities whose only polar bear access was to non-approved populations.

From an average of 29 Americans killing polar bears from non-approved populations in Period II, the average plummeted to 5 a year

in Period III. Thanks to a huge increase in the number of non-American trophy hunters hunting polar bears in MMPA non-approved populations in Period III, the communities that had previously led Americans on these trophy hunts saw their volume of business—albeit with a new client-base—surpass the levels seen in Period II. As the data in Table 1 illustrate, one can clearly see this trend if one looks at the average number of bears from MMPA non-approved populations killed by American and non-American trophy hunters in each period.

Number of Polar Bears Killed by Trophy Hunters in Nunavut

Table 1

	AMERICANS	NON-AMERICANS	TOTAL NO. OF HUNTERS OF KNOWN ORIGIN
PERIOD I	3	5	8
PERIOD II	29	11	40
PERIOD III	5	28	33

In terms of country of origin for trophy hunters the United States dominated the field in Period III, accounting for 59% of all polar bears killed by trophy hunters of known origin in Nunavut and the NWT (this combines MMPA approved and non-approved) populations. Canada was in distant second place, with Canadian trophy hunters responsible for having killed 7% of all polar bears killed by trophy hunters of known origin. Spain accounted for 6%, Mexico for 5%, France for 4%, and Italy, Norway and Germany each accounted for 2%. During this period, 22% of trophy hunters of known origin came from European Union (EU) nations.[34]

Looking at the data, one sees several important trends in Period III. First, the MMPA amendment resulted in a significant increase in the number of polar bears killed from MMPA approved populations by trophy hunters. Second, rather than accepting the shift of American hunters away from MMPA non-approved populations, outfitters sought and found a new client base to fill the gap left by the vacating American hunters. This resulted in a significant net increase in the number of bears killed by trophy hunters. This increase in trophy hunters from other countries (chiefly Europe) did not happen organically. European trophy hunting of polar bears in Canada in Period III focused heavily on the Baffin Bay polar bear population, a population about which there has been growing concern among scientists.

Period IV

Only one hunt year (2008/09) has occurred since the polar bear was listed as threatened under the ESA thereby triggering a provision of the MMPA that prohibits the import of all ESA-listed species except for species enhancement and research purposes. As more time passes, it may well be easy to see clear and lasting changes in polar bear trophy hunt patterns that appear to have their genesis at the point the United States prohibited the importation of polar bear trophies in 2008. For now, we have community level trophy hunt data from Nunavut for the 2008/09 hunt year. Data on the country of origin of trophy hunters in Nunavut for the 2008/09 hunt year are not yet available nor are any hunt data from the Northwest Territories for the 2008/2009 hunt year. Despite the data limitation, there are indications that the US decision may well have had a strong and immediate impact.

In Period III, the average number of polar bears killed by all trophy hunters in Nunavut was 75. The average for the last five years of this period was 92 polar bears a year. In contrast, the number of polar bears killed by all trophy hunters in Nunavut fell to 50 polar bears in the 2008/09 hunt year (Figure 6).

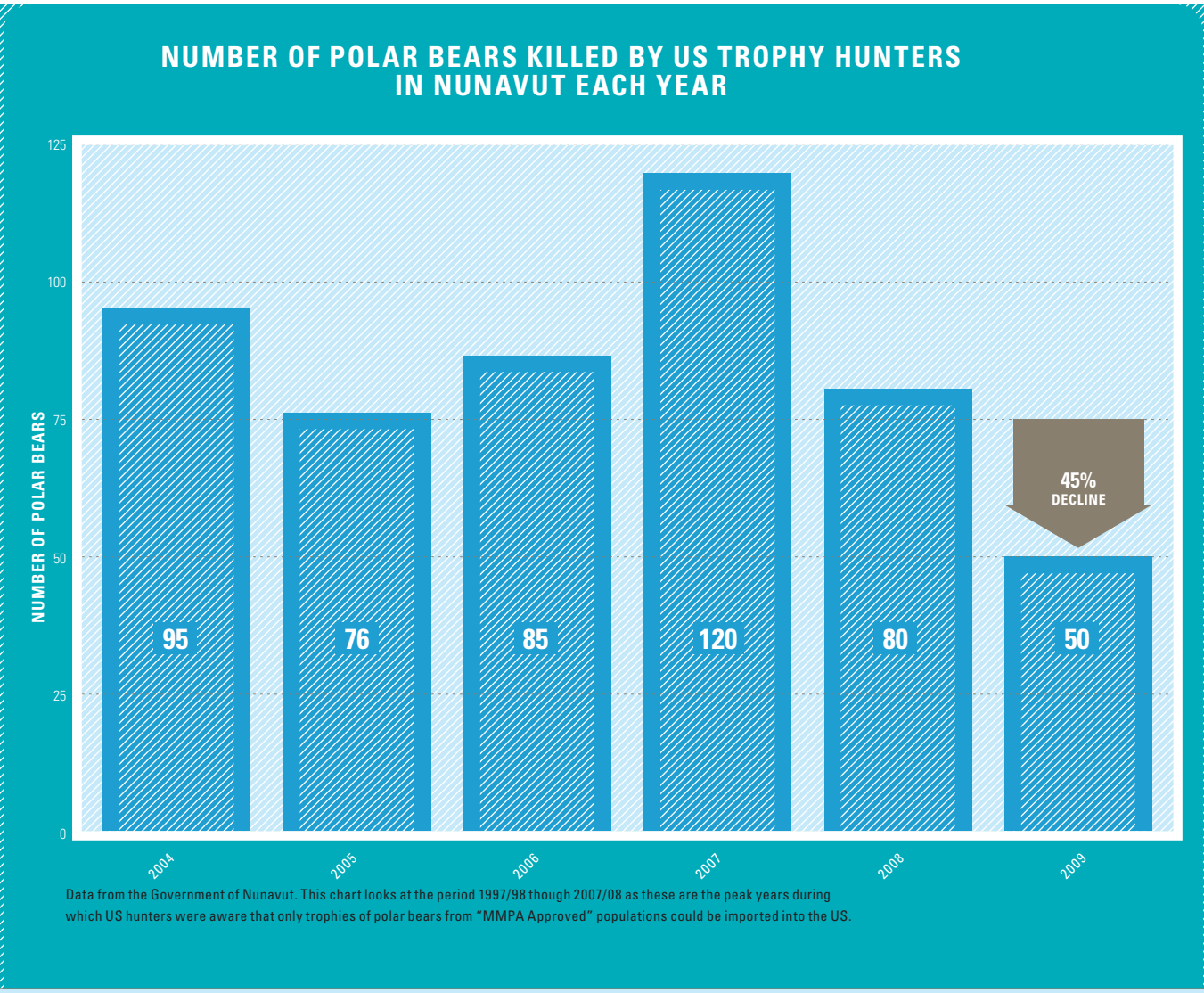
The number of polar bears killed by trophy hunters in Nunavut in the 2008-09 hunt year was 33.3% lower than the average number of polar bears killed by trophy hunters in Nunavut in Period III, and 45% lower than the average number of polar bears killed by trophy hunters in Nunavut in the five years immediately prior to the 2008/09 hunt year.

Not only was there a sharp drop in the number of polar bears killed by trophy hunters in Nunavut in the 2008/09 hunt year, but there was a marked shift away from MMPA approved populations toward MMPA non-approved populations. Only 16% of polar bears killed by all trophy hunters in Nunavut in the 2008/09 hunt year came from MMPA approved populations. In Period III, 55% polar bears killed by all trophy hunters in Nunavut came from MMPA approved populations.

The huge drop off in the share of polar bears from MMPA approved populations killed by trophy hunters and the drop in the total number of polar bears killed by trophy hunters are both consistent with the conclusion that the 2008 ESA decision and the resultant prohibition on the importation of polar bear trophies into the United States have resulted in a decline in the number of American hunters participating in polar bear trophy hunts in Canada.

In addition to the 2008 ESA decision in the United States, there was another major international decision in 2008 that will likely result in a decrease in the number of trophy hunters who hunt for polar bears in Canada in the coming years. Late in 2008, the European Union — out of concern about overhunting of polar bears — passed a ban prohibiting the importation of polar bear trophies (killed by

figure 6



Data from the Government of Nunavut. This chart looks at the period 1997/98 though 2007/08 as these are the peak years during which US hunters were aware that only trophies of polar bears from "MMPA Approved" populations could be imported into the US.

trophy hunters) and of polar bear skins (from bears killed by Inuit hunters) from the Baffin Bay and Kane Basin polar bear populations.[35] The Baffin Bay polar bear population has historically been the population from which the vast majority of polar bears killed by EU hunters were taken. This was true even before the 1997 implementation of the 1994 MMPA amendments declared Baffin Bay a non-approved population and this preference for Baffin Bay bears by EU hunters became even more marked in the years since. When the 2008/09 hunter origin data becomes available from the Government of Nunavut, it will be interesting to see whether there was a discernable drop off in the number of EU hunters who participated in polar bear trophy hunts in Baffin Bay communities. Given that the decision was made quite late in 2008, it is possible that the impact of this decision will not be seen until the 2009/10 hunt year.

The Economics of Polar Bear Trophy Hunting

There is a range of figures in circulation that attempt to quantify the economic value of polar bear trophy hunting in Canada. The chief reason that there is such a profusion of different figures is that that nobody knows how much polar bear trophy money stays in Nunavut and NWT communities each year.

Various studies have been done attempting to quantify polar bear trophy income in specific communities, but no comprehensive analysis has been undertaken. The number of hunts hosted varies from year to year, the price paid for hunts varies not only from year to year but from community to community (and sometimes hunter to hunter) in any given year, and the share of the total price paid by trophy hunters that lands in the hands of people in the host communities also varies by year and from community to community. None of this makes it easy to estimate the revenue generated for Inuit communities from polar bear trophy hunting.

In the fight against efforts by the United States and the European Union to enact legislation that would place limitations on the importation of polar bear trophies, there has been an unfortunate tendency on the part of some Canadian and territorial officials, as well as trophy hunting advocates, to fill the information void with unrealistically high estimates of the amount of income polar bear trophy hunting generates for Inuit communities in Nunavut and the Northwest Territories.

Some of the highest figures purporting to demonstrate the economic benefit of polar bear trophy hunting to Inuit communities are flawed in that they are based on estimates of the total amount trophy hunters pay for their hunts, not the amount that actually lands in the hands of members of the host communities. In 2001, under commission for the Government of Nunavut, George Wenzel undertook a study of economics of polar bear trophy hunting in Nunavut. His study found that only about half of the money paid by trophy hunters ends up in Inuit communities. The Government of Nunavut opted against publishing this study, but mention of it is often made.[36] In his most recent book, Wenzel indicates that it is still the case that barely half of the money paid by polar bear trophy hunters arrives in the communities of Nunavut.[37]

As it is widely cited and appears to have greater basis in fact than any of the other estimates in the public domain, this paper uses Wenzel's estimate that a little under $1.5 million CAD finds its way into the hands of people who live in polar bear hunting communities in Nunavut.[38] For simplicity's sake, this figure has been rounded up to $1.5 million CAD. Without any detail on how the figure was derived,[39] no assessment can be made about the validity of this figure, and its use in this paper should not be seen as an endorsement of it.

The Inuvialuit Region of the Northwest Territories has been studied less. As there are only six polar bear hunting communities in the Northwest Territories, only four of which host polar bear trophy hunts, it is not surprising that the question has received less study. For the purposes of this paper, the figure that will be used as the estimated revenue generated for the Inuvialuit communities of the Northwest Territories by hosting polar bear trophy hunts is $700,000 CAD a year. This figure comes from the Government of the Northwest Territories,[40] and like the Nunavut figure, this figure comes with no explanation of its derivation and is simply being taken at face value.

Taken together, the estimated revenue garnered by Inuit communities of Nunavut and the Northwest Territories as a result of polar bear trophy hunting, for the purpose of the sections that follow, is $2.2 million CAD ($1.5 million CAD for Nunavut and $0.7 million CAD for the Northwest Territories).

It is important to bear in mind that this $2.2 million CAD figure is an estimate of the revenue that polar bear trophy hunting brings into Nunavut and the Northwest Territories. From this figure one would need to subtract all costs associated with running/leading trophy hunts (advertising, food, supplies, equipment maintenance, etc.) to arrive at the amount of net financial gain these hunts actually bring to the Inuit. Costs most be recouped before any money is earned. As reliable data on the costs associated with running/leading trophy hunts are not available, the analysis in this paper will focus on the $2.2 million CAD gross revenue figure. In doing this, one must not lose sight of the fact that this is a significant over-estimation of financial benefit.

The estimated value of the polar bear trophy hunt is equal to one-tenth of one percent of Nunavut's GDP.

Trophy Hunting as Part of the Larger Economic Picture in Arctic Canada

The reality of life in the far north of Canada is that there are a number of serious restrictions inherent in the location and climate that impinge on the viability of certain forms of economic activity. The Government of Nunavut[41] and the people of Nunavut are working had to carve out viable economic opportunities to generate more revenue. Despite these efforts, government funding remains vital to the economy of Nunavut. In 2005, 90% of the budget of the Nunavut government came from the Canadian federal government.[42] Against this backdrop, there is a temptation on the part of some polar bear trophy hunting advocates to overstate the economic importance of polar bear trophy hunting at a macro economic level. A quick look at Nunavut's accounts undercut any such attempts. Nunavut has a large economy in which trophy hunting of polar bears plays only a very small part.

Trophy hunting contributes only a small fraction of one percent to the overall economy (gross domestic product or GDP) of Nunavut. The GDP of Nunavut is roughly $1.5 billion CAD a year. [43]

The estimated value of the polar bear trophy hunt in Nunavut, as noted above, is $1.5 million CAD a year. Thus, the estimated value of the polar bear trophy hunt is equal to one-tenth of one percent (0.1%) of the GDP of Nunavut.

Economic Contribution at the Community Level

While its importance to the economy of Nunavut as a whole is extremely limited, a case has been made that the income generated by polar bear trophy hunting is significant to the communities that host polar bear trophy hunts. By looking at estimates of trophy hunt gross revenue (calculated by prorating each community's share of total polar bear trophy hunt revenue) and comparing these figures to community income data from Census Canada for the indigenous population of each of Canada's polar bear hunting communities,[44] one is able to come up with a back-of-the-envelope means of assessing how important trophy hunt revenue is to the communities in question. (As the polar bear trophy hunt figures used in these calculations are revenue figures rather than income figures, they overstate the value of trophy hunting. To arrive at income figures one would need to subtract the cost of running/leading trophy hunts from the revenue figures. As noted above, reliable cost data are not available.)

What follows is a reasonably good estimate based on the information at hand. Aggregated across the communities, the figures are as accurate as the revenue figures from Wenzel and the Northwest Territories on which they are based, but in this case, the goal is de-aggregation. Without better data, there is no way to know how close the estimates are to reality for each community. For the present purposes, this lack of accuracy is of less concern than it might be in a great many other situations. This is because the goal here is to assess the general order of magnitude. Is revenue generated by polar bear trophy hunts closer to accounting for 5% or 50% of community income? Do only a few communities bring in the lion's share of the revenue, or is the distribution more widespread? Imperfect though they are, the data and rough calculations that follow are more than strong enough to make this sort of assessment.

We have reasonably good data for 28 of the 31 polar bear hunting communities in Nunavut and the Northwest Territories. As the data in the following table show, in 26 of these 28 communities —93%— trophy hunting revenue accounts for 2% or less of the average income of Inuit residents of the communities. In all 28 of these communities, trophy hunting revenue accounts for 5% or less of the average income of Inuit residents of the communities when one uses realistic estimates of trophy hunting income.

Ball Park Estimation of Polar Bear Trophy Hunt Revenue as a Share of Inuit Community Income in Nunavut and the Northwest Territories

Table 2

	2006 CENSUS ESTIMATED ABORIGINAL COMMUNITY INCOME [A]	HUNT YEARS: 2000-2008 AVERAGE ANNUAL NO. OF TROPHY TAGS SOLD [B]	HUNT YEARS: 2000-2008 ESTIMATED ANNUAL COMMUNITY TROPHY TAG REVENUE [C]	ROUGH ESTIMATE OF TROPHY HUNT REVENUE AS A SHARE OF TOTAL COMMUNITY INCOME [D]
NUNAVUT				
ARCTIC BAY	$ 6,908,333	8	$ 120,157	2%
ARVIAT	$ 20,393,377	6	$ 87,387	0%
BAKER LAKE	$ 18,480,378	0	$ 1,821	0%
CAMBRIDGE BAY	$ 22,646,938	2	$ 27,308	0%
CAPE DORSET	$ 12,167,053	1	$ 18,206	0%
CHESTERFIELD INLET ^	$ 4,646,787	0	-	0%
CLYDE RIVER *	$ 8,705,571	8	$ 143,520	2%
CORAL HARBOUR	$ 7,895,838	12	$ 169,312	2%
GJOA HAVEN	$ 12,981,056	0	$ 5,462	0%
GRISE FIORD +	n/a	10	$ 145,645	n/a
HALL BEACH	$ 6,925,893	1	$ 10,923	0%
IGLOOLIK	$ 15,826,438	3	$ 40,052	0%
IQALUIT (CAPITAL) ^	$ 76,040,667	0	-	0%
KIMMIRUT	$ 4,275,962	2	$ 21,847	1%
KUGAARUK	$ 7,190,757	1	$ 14,565	0%
KUGLUKTUK	$ 18,111,585	2	$ 29,129	0%
PANGNIRTUNG	$ 17,335,443	2	$ 25,488	0%
POND INLET	$ 16,672,667	7	$ 96,490	1%
QIKIQTARJUAQ *	$ 6,280,800	8	$ 140,600	2%
RANKIN INLET	$ 32,383,909	0	$ 3,641	0%
REPULSE BAY ^	$ 5,815,456	0	-	0%
RESOLUTE * +	n/a	18	$ 361,000	n/a
SANIKILUAQ ^	$ 7,324,464	0	-	0%
TALOYOAK *	$ 8,360,217	1	$ 15,600	0%
WHALE COVE	$ 3,783,582	2	$ 21,847	1%
NORTHWEST TERRITORIES:				
AKLAVIK ^	$ 5,138,143	0	-	0%
HOLMAN (ULUKHAKTOK)	$ 4,567,121	11	$ 197,315	4%
INUVIK ^	$ 25,021,151	0	-	0%
PAULATUK	$ 3,244,355	8	$ 155,034	5%
SACHS HARBOUR +	n/a	8	$ 145,638	n/a
TUKTOYAKTUK	$ 8,183,781	11	$ 202,013	2%

All figures in Canadian dollars.

^ communities that hosted no polar bear trophy hunts during the 9-year period 1999-00 through 2007-08.

* communities for which Wenzel has calculated estimated community revenue per hunt. His estimates are used as the community revenue per tag for these communities. The 9-year average annual number of tags sold was multiplied by his estimated revenue per tag to arrive at the average annual community revenue figure for these four communities.

+ communities for which Census Canada provides no indigenous income data.

[A] Data from Statistics Canada, 2007. 2006 Community Profiles. 2006 Census. The figure was calculated for each community by multiplying the number of "aboriginal people with earnings" by the average earnings per "aboriginal person with earnings" and then multiplying that figure by 1 divided by the average share of aboriginal income that comes from earnings.

[B] Data from the Governments of Nunavut and the Northwest Territories. This table looks at data for the 9-year period from the 1999/2000 hunt year through the 2007/08 hunt year. Data on the average number of trophy tags sold in Nunavut were not available for the 1997/98 and 1998/99 hunt years. Had they been, the calculations in this table would have looked at the 11-year average from 1997/98 though 2007/08 so as to capture the entire period during which polar bear trophies were allowed into the United States.

[C] This calculation is based on the Wenzel estimate that communities in Nunavut together bring in $1.5 million CAD worth of polar bear trophy hunt revenue each year and that the Inuvialuit communities in the Northwest Territories bring in $700,000 CAD. In the case of the Northwest Territories, this $700,000 CAD was divided by the average number of trophy tags sold by each community each year to arrive at a NWT average revenue value per trophy tag. This figure was then multiplied by the average number of trophy tags sold each year in each community to arrive at the average annual community trophy tag revenue figure. The same process was followed for the 25 communities in Nunavut with the exception that community specific estimates of revenue were used for four communities (those marked with an * in the table) based on calculations undertaken by Wenzel. The estimated total revenue for these four communities was then subtracted from the Nunavut total of $1.5 million and the remaining sum was divided by the total number of trophy tags sold by the 21 remaining communities to arrive at a Nunavut average revenue value per trophy tag. This figure was then multiplied by the average number of trophy tags sold each year in each community to arrive at the average annual community trophy tag revenue figure.

[D] To arrive at these figures, the average annual community trophy tag revenue figure for each community was divided by the estimated average annual aboriginal community income figure for each community.

Grise Fiord, Resolute, and Sachs Harbour are each so small that Census Canada does not provide any economic data about aboriginal populations in these communities. This leaves us on much shakier ground in estimating the relative importance of polar bear trophy hunt revenue to community income in these three communities. Given this important caveat, using our best estimates for the three communities, we conclude that polar bear trophy hunting revenue may account for 10%, 10% and 13% of the average income of Inuit residents of these communities. While speculative, these figures have been included in the interest of full disclosure. As a fair number of trophy hunts are hosted by these communities, failure to include income estimates for them might be taken as a sign of bad faith. Rather than risk this, the decision has been made to err on the side of over-estimating the importance of trophy hunt revenue to these communities and to share these highly provisional figures.

These three small communities host a disproportionally large share of polar bear trophy hunts. Thus, one would expect that the back-of-the-envelope calculations undertaken here would indicate that polar bear trophy hunt revenue represents a larger share of community income for them than it does for other communities in Nunavut and the Northwest Territories.

Though they account for less than 2% of the population of Nunavut and the Inuvialuit Region of the Northwest Territories, roughly a quarter of all polar bears killed by trophy hunters in Canada each year come from these three communities. This share has been dropping in recent years, from 48% in 1992/93 to 24% in 2007/08. This has come about not so much as a result of a decrease in the number of trophy hunts hosted in these communities as by an increase in the number hosted in other communities. Thus, one has reason to believe—all else being equal—that leading up to the 2008/09 season, polar bear trophy hunting in these three communities emained about as important as it has over the past decade.

If one were to include the three communities (Grise Fiord, Resolute, and Sachs Harbour) for which no community income data are available, and if one assumes (likely accurately, based on the number of polar bear trophy hunts hosted in these communities) that polar bear trophy hunt revenue in these communities accounts for well over 2% of community income, then the percentage of communities for which trophy hunting revenue accounts for 2% or less of the average income of Inuit residents of the communities drops to 84% (26 of 31), still a large proportion.

Polar Bear Trophy Hunting Engagement Levels by Communities in Nunavut

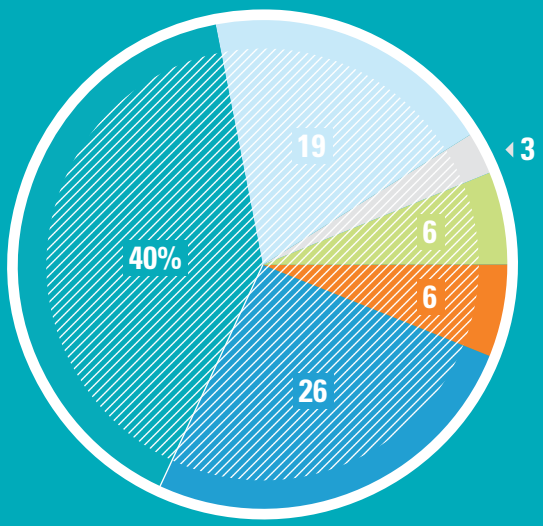
Table 3

COMMUNITY STATUS	NO. OF COMMUNITIES
HOSTED NO TROPHY HUNTS	6
TROPHY HUNT REVENUE ROUNDS TO 0% OF COMMUNITY INCOME	12
TROPHY HUNT REVENUE ROUNDS TO 1 OR 2% OF COMMUNITY INCOME	8
TROPHY HUNT REVENUE ROUNDS TO 3-5% OF COMMUNITY INCOME	2
TROPHY HUNT REVENUE ROUNDS TO 6-10% OF COMMUNITY INCOME *	2
TROPHY HUNT REVENUE ROUND TO 11-15% OF COMMUNITY INCOME *	1

Data from Census Canada, the Government of Nunavut and the Northwest Territories, and from George Wenzel. * The calculations behind the estimates for these three communities are highly speculative.

figure 7

POLAR BEAR TROPHY INCOME AS A SHARE OF TOTAL ABORIGINAL COMMUNITY INCOME — NUNAVUT AND THE INUVAILUIT REGION OF THE NWT, 2001-2008



- Trophy Hunt Income Rounds to 0% of Community Incomes
- Trophy Hunt Income Rounds to 1 to 2% of Community Incomes
- Trophy Hunt Income Rounds to 3 to 5% of Community Incomes
- Trophy Hunt Income Rounds to 6 to 10% of Community Incomes
- Trophy Hunt Income Rounds to 11 to 15% of Community Incomes
- Hosted No Trophy Hunts

Income and population data from Census Canada. Data on the annual number of tags allocated to trophy hunters in each community from the Governments of Nunavut and the Northwest Territories. Trophy hunt value estimations from Sometimes Hunting Can Seem Like a Business: Polar Bear Sport Hunting in Nunavut, George Wenzel, 2008 and from the Government of the NWT. The above figures are estimations. The eight years included in the calculations for this chart are 2000/01 through 2007/08. If tag allocation data from Nunavut becomes available back to the 1997/98 hunt year, these calculations can be re-done for the 11 year period (peak trophy hunt years) used elsewhere in the attached paper.

It is difficult to emphasize strongly enough that the above figures, while small enough on their face, are still a significant over-estimation of the economic benefit of polar bear trophy hunting to Inuit communities. These figures assume that there are no costs associated with running/leading trophy hunts—that every dollar of revenue is pure profit. This is clearly not the case. There are a great many costs involved in running/leading trophy hunts, which were they factored in would reduce the estimation of polar bear trophy hunt income for these communities.

Even take at face value, the above rough community income analysis supports the assertion that polar bear trophy hunting is not a mainstay of community income in Nunavut and the Inuvialuit Region of the Northwest Territories. This point, like that having to do with polar bear trophy hunting's share of Nunavut's GDP, has been given attention in this paper in hopes of correcting misapprehensions that may exist with regard to the economic importance of polar bear trophy hunting to the populations of Nunavut and the Northwest Territories.

Conclusion

The considerable body of data from Nunavut and the Northwest Territories that has been examined in this paper supports the conclusion that neither polar bear trophy hunting nor the economic benefits of such hunts are particularly widespread in Nunavut and the Northwest Territories. Pending better data, the jury is still out as to whether there are any communities in which the income from polar bear trophy hunting is large enough and well enough distributed that the community as a whole realizes some significant financial gain from the hunts. If so, they are in the minority.

That said, there is no doubt that there are a number of individuals—chiefly guides and owners of outfitting companies—in Nunavut and the Northwest Territories who have enjoyed significant economic benefit as a result of polar bear trophy hunting. There are also a larger number of individuals—chiefly those who serve as assistants on polar bear trophy hunts—who have realized more modest economic gains from their involvement in polar bear trophy hunting.

Just as it would be wrong to pretend that the demise of polar bear trophy hunting will have no economic impact on anyone in Nunavut or the Northwest Territories, it would likewise be wrong to pretend that polar bear trophy hunting made attainment of a land-based lifestyle feasible for large numbers of people. In truth, the pool of people for whom income from polar bear trophy hunting made a decisive economic difference is likely several dozen individuals at most. The economic benefits of polar bear trophy hunting were far too limited and far too heavily concentrated in too few hands to amount to anything approximating a solution to the broader socio-economic troubles faced by Inuk people seeking to integrate subsistence food sourcing into their lives.

Endnotes

[1] Some readers may be unfamiliar with the term *trophy hunting*. Trophy hunting is the selective hunting of animals by sport hunters with the goal of keeping parts of the slain animal as a *trophy* commemorating the killing. Sometimes trophy hunting is referred to as sport hunting. In this paper, except when quoting others, the term trophy hunting will be used to describe this type of hunting.

[2] With the exception of trophy hunters led on hunts by Inuit guides and polar bears killed in self-defense, polar bear hunting in Canada is limited to Inuit hunters in the Inuvialuit Region of the Northwest Territories, in Nunavut, and in northern Quebec. The Inuit communities in Quebec stand apart from those in the other two regions as there is neither a polar bear quota in place nor is there polar bear trophy hunting in Quebec. As this paper deals with polar bear trophy hunting, it does not involve discussion of polar bear hunting in Quebec.

[3] Freeman, M.M.R., "Respect and reciprocity as key elements in arctic sustainable use strategies," in Oglethorpe, J. ed. Tenure and Sustainable Use, IUCN, 1999, p. 95.

[4] Wenzel, George, "Nunavut Inuit and Polar Bear: The Cultural Politics of the Sports Hunt," *Senri Enthnological Studies* 67: 263-388, 2005, pp. 363-364.

[5] Ibid.

[6] Dowsley, Martha, "Polar Bear Management in Nunavut and Nunavik," in M.M.R. Freeman et al. (eds), Inuit Polar Bears and Sustainable Use: Local, National and International Perspectives, Canadian Circumpolar Institute Press, 2009, p. 217.

[7] Ibid.

[8] Stirling, Ian, "Polar Bears and Seals in the Eastern Beaufort Sea and Amundsen Gulf: A Synthesis of Population Trends and Ecological Relationships over Three Decades," *Arctic, Vol. 55* Supp 1 (2002), p. 70.

[9] Davies, Lawrence, "Alaska Curbs Hunting Licenses to Save Polar Bear Population," *New York Times,* July 10, 1966.

[10] Dowsley, Martha and Wenzel, George, "Economic and Cultural Aspects of Polar Bear Sport Hunting in Nunavut, Canada," in M.M.R. Freeman et al. (eds), Conservation Hunting: People and Wildlife in Canada's North, Canadian Circumpolar Institute Press, 2009, p. 37.

[11] Ibid.

[12] Wenzel, George, Sometimes Hunting Can Seem Like a Business: Polar Bear Sport Hunting in Nunavut, Canadian Circumpolar Institute Press, 2008, pp. 14-16.

[13] Ibid, pp. 11-12.

[14] Tyrrell, Martina, "Guiding, Opportunity, Identity: The Multiple Roles of the Arviat Polar Bear Conservation Hunt.," in M.M.R. Freeman et al. (eds), Inuit Polar Bears and Sustainable Use: Local, National and International Perspectives, Canadian Circumpolar Institute Press, 2009, p. 30.

[15] Wenzel, George, "Nunavut Inuit and Polar Bear: The Cultural Politics of the Sports Hunt," *Senri Enthnological Studies* 67: 263-388, 2005, p. 382. And Tyrrell, Martina, "More bears, less bears: Inuit and scientific perceptions of polar bear populations on the west coast of Hudson Bay," Etudes/Inuit/Studies, 2006, 30(2): 191-208.

[16] As the data in Figure 1 show, the most robust trophy hunting years occurred in the five years preceding the 2008-2009 hunt. In May of 2008, the United States listed the polar bear as threatened under the Endangered Species Act, thus triggering a provision in the MMPA that prohibited the import of all polar bear products, including trophies. The 2008/09 hunt year is the first (and only completed) hunt year after this decision went into effect. Though hunt data for the 2008/09 hunt year from Nunavut's 26 polar bear hunting communities has been made public, the Northwest Territories has not yet made its 2008/09 polar bear hunt data publicly available. For the purposes of the calculations in this section, data for the 2003/04 through 2007/08 years were examined. The aim of selecting these years was to show the most recent years prior to the decision. Some may argue that the huge spike in the number of polar bears killed by trophy hunters in the 2006/07 hunt makes inclusion of data from this year inadvisable given that it is far from representative. It is widely felt that this spike in trophy hunts was the result of an influx of US trophy hunters seeking to go on a polar bear trophy hunt prior to the ESA listing. Others may argue that one should not include trophy hunt data from the 2007/08 hunt year as they feel that the impending ESA decision kept some trophy hunters at home and resulted in lower than usual numbers of polar bears killed by trophy hunters that year. An examination of the data does not support this position. The number of polar bears killed by trophy hunters in Canada in 2007/08 was lower than the 2006/07 figure, but one must recall that the 2006/07 figure was the highest figure on record. In fact, the five years selected for inclusion in these calculations are the five highest years on record in terms of the number of polar bears killed in Canada by trophy hunters.

[17] Though there are 31 communities in Canada's Arctic that are allowed to hunt for polar bears, only 30 of them are allowed to make polar bear hunting tags available to trophy hunters. Years ago, a decision was passed under which Iqaluit — the capital of Nunavut — surrendered its right to host trophy hunts.

[18] Data on the number of tags allocated to trophy hunters provided by the Government of Nunavut.

[19] Ibid.

[20] Ibid. Though 17% + 47% = 64%, the figure noted above — 63% - is, thanks to rounding, the accurate share of communities that either offered no trophy hunts or offered them only sporadically across the five year period in question.

[21] Freeman, M.M.R., "Respect and Reciprocity."

[22] Ibid.

[23] Dowsley, Martha, "Inuit-organized polar bear sport hunting in Nunavut territory, Canada," Journal of Ecotourism, Vol. 8, Issue 2, June 2009, pp. 161-175.

[24] Wenzel, George, "Nunavut Inuit and Polar Bear," p. 383.

[25] Ibid, pp. 379-385. And Tyrrell, Martina, "More Bears, Less Bears," pp. 191-208.

[26] Trophy hunt data for hunt years 1969/70 through 1977/78 for the communities that now comprise Nunavut and for hunt years 1969/70 through 1980/81 for the Inuvialuit Region of the NWT from George Wenzel, "Polar Bear as a Resource: An Overview," Plenary Address, The Resilient North conference, Northern Research Forum, 2004, p. 5. Trophy hunt data from hunt years 1978/79 through 1980/81 for the communities that now comprise Nunavut from the Government of Nunavut.

[27] Trophy hunt data for hunt years 1981/82 through 1990/91 for the Inuvialuit Region of the NWT from George Wenzel, "Polar Bear as a Resource: An Overview," Plenary Address, The Resilient North conference, Northern Research Forum, 2004, p. 5. Trophy hunt data for hunt years 1991/92 through 1993/94 for the Inuvialuit Region of the NWT from the Government of the Northwest Territories. Trophy hunt data for hunt years 1981/82 through 1993/94 for the communities that now comprise Nunavut from the Government of Nunavut.

[28] Trophy hunt data for hunt years 1994/95 through 2007/08 for the Inuvialuit Region of the NWT from the Government of the Northwest Territories. Trophy hunt data for hunt years 1994/95 through 2007/08 for the communities that now comprise Nunavut from the Government of Nunavut.

[29] The three populations are Lancaster Sound, Norwegian Bay, and M'Clintock Channel. Lancaster Sound and Norwegian Bay were not included in the list of approved populations in June 1997, but were approved in January 1999, halfway through the 1998-1999 hunt year. M'Clintock Channel was included in the list of approved populations in June 1997, but it had its approval reversed effective May 31, 2000 based on information provided by the Canadian Wildlife Service indicating that "the population was in a depleted state and that harvest quotas had not ensured a sustainable population level." History of MMPA polar bear population status from Schliebe, S., Bridges, J., et. al, "Polar Bear Management in Alaska 1997-2000" from The Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 23-28 June 2001, Nuuk, Greenland, p. 93.

[30] While there was no legal means of bringing polar bear trophies into the United States for personal use prior to implementation of the 1994 MMPA amendments, some American hunters did succeed in importing their polar bear trophies through use of the MMPA species enhancement provision, which allows for museum specimens to be imported. Such trophies were donated to museums in the United States.

[31] Schliebe, S., Bridges, J., et. al, "Polar Bear Management in Alaska 1997-2000" from The Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 23-28 June 2001, Nuuk, Greenland," p. 93. M'Clintock Channel and Gulf of Boothia were both included in the list of six communities in the proposed rule. Thus, for our calculations, starting in the 1995-96 hunt year, these two communities will be counted in the MMPA approved category. Gulf of Boothia was not included in this category for the 1997/98 hunt year forward as it was not granted MMPA approval in the final 1997 rule.

[32] In fact, the fate of these polar bear trophies remained in limbo until November of 2003 when the MMPA was amended to allow trophies from polar bears killed between April 1994 and February 1997 to be imported. See Schliebe, S., Evans, T., et. al, "Polar Bear Management in Alaska 2000-2004" from The Proceedings of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20-24 June 2005, Seattle, Washington," p. 72.

[33] Schliebe, S., Bridges, J., et. al, "Polar Bear Management in Alaska 1997-2000" from The Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 23-28 June 2001, Nuuk, Greenland," p. 93.

[34] The European Union expanded twice in the eleven years covered in Period III. In the interest of consistency across the data period, the European Union for the purposes of this analysis includes all 27 nations that are currently part of the European Union. Were one to include nations in the EU tally only once they became EU members, the impact would be minimal — instead of 22% of the hunters having come from the European Union during Period III, the figure would be 21%.

[35] CBC News, "Inuit Group Denounces EU Decision to Ban Import of Polar Bear Parts," December 12, 2008.

[36] Thompson, John, "Boost price for polar bear hunt, researcher urges," *Nunatsiaq News,* August 26, 2005.

[37] Wenzel, George, Sometimes Hunting Can Seem Like a Business: Polar Bear Sport Hunting in Nunavut, Canadian Circumpolar Institute Press, 2008, p. 98.

[38] Ibid, p. 98.

[39] Two points should be made regarding Wenzel's work. First, he has put a great deal of energy into assessing benefits of polar bear trophy hunting that extend beyond the economic. Assessing the merits and weaknesses of arguments made in the socio-cultural and psychological realms is outside the scope of this paper, but should nonetheless be noted as germane to the broader discussion. Second, Wenzel has included estimates of the value of polar bear meat that comes from polar bear trophy hunting in his income estimates for each community he studied. These values are based on the cost of a similar amount of store bought food. There is room for debate as to whether store bought food would be the appropriate substitute and indeed whether substitution values of any sort should be included in the value of polar bear trophy hunting. It is unclear whether the $1.5 million figure includes an estimated value of the polar bear meat derived from trophy hunts. Interestingly on this point, Wenzel notes that in the case of the village [or community] of Taloyoak, he has used a replacement value based on the cost of store-bought dog food, as the people of Taloyoak do not have a tradition of eating polar bear meat and instead feed it to their dogs. Among communities that host polar bear trophy hunts, Taloyoak is not alone in having a population that does not have a history of eating polar bear meat. As Martina Tyrrell has noted, the same is true of the people of Arviat. Arviat is one of a number of communities settled largely by the so-called Caribou Inuit who, until settlement, lived principally (and in some cases exclusively) inland away from coastal areas frequented by polar bears.

[40] Judy McLinton, Manager, Public Affairs and Communications, the Department of Environment and Natural Resources, Government of the Northwest Territories, posting on www.biggamehunt.net May 28, 2008.

[41] This section focuses exclusively on Nunavut, as no data exist for the Inuvialuit Region of the Northwest Territories to perform the analysis undertaken here. The Inuvialuit Region is comprised of six communities at the northern tip of the Northwest Territories. It accounts for only a fraction of all economic activity in the Northwest Territories. As a result, data for the Northwest Territories fail to tell us anything of meaning about the Inuvialuit Region. Unfortunately, nobody has calculated gross domestic product (GDP) information for the Inuvialuit region. If and when they do, we can examine how large a contribution polar bear trophy hunting makes to the region's economy.

[42] Simialak, D, Consolidated Financial Statements Government of Nunavut, Iqaluit, Nunavut, http://www.gov.nu.ca/finance/pa/pa2005.pdf, March 2005.

[43] GDP data from Statistics Canada.

[44] Statistics Canada, 2007. 2006 Community Profiles. 2006 Census.

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