

**Report to Inupiat of the North Slope, Alaska, and the Inuvialuit of
the Northwest Territories on Polar Bear Management in the
Southern Beaufort Sea, 2007-2008
Barrow, Alaska
April 28-29, 2009**



Photo by Rosa Meehan

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**REPORT FOR THE NORTH SLOPE BOROUGH-INVIALUIT GAME COUNCIL
FOR THE 18TH ANNUAL JOINT MEETING FOR MANAGEMENT
OF POLAR BEARS IN THE SOUTHERN BEAUFORT SEA**

April 28–29, 2009
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Introduction

This is the 18th year of implementation of the "Polar Bear Management Agreement for the Southern Beaufort Sea" signed in January 1988 by the Inuvialuit of the Inuvialuit Game Council (IGC), Northwest Territories, Canada, and the Inupiat of the North Slope Borough (NSB), Alaska, U.S. The principles of sustained yield derived from scientific information are the integral core of the agreement.

The initial Technical Committee, which met on October 17, 1988, reviewed population and harvest data and determined a sustainable allocation quota of 76 bears. The sustainable harvest was changed to 81 bears in 1997 based on a sustainable harvest rate of 4.5%, a population size estimate of 1800+ polar bears, and a 2:1 male to female harvest sex ratio (33% females).

Alaska Harvest Summary - July 1, 2007 to June 30, 2008

The 2007/2008 harvest for villages of the North Slope party to the North Slope Borough/Inuvialuit Game Council (Inuvialuit/Inupiat - I/I) management agreement with the Inuvialuit was 13 polar bears: 6 males, 5 females, and 2 of unknown sex (Table 1). There were six months in which no bears were harvested (January, March, and June through September) (Table 2). The sex composition harvest of known-sex animals in 2007/2008 was 54% (6/11) male and 45% (5/11) female. Harvest year 2005/2006 was the last year in which enough teeth were aged to be able to evaluate the age class composition of the harvest. The age class composition of the 2005/2006 harvest (n=11), was 36% (4/11) adults, 27% (3/11) sub-adults and 36% (4/11) cubs. Hunter estimated age class composition for the 2005/2006 harvest season (n=31) was 54% adults, 32% sub adults, and 12% cubs which is closer to the long-term (since 1980) age class distribution of polar bears is 48% adults, 39% sub-adults, and 13% cubs since 1988/1989 when the MTRP started. During 2007/2008 teeth were collected from 31% (4/13) of the bears harvested and complete sex information was provided for 85% (11/13) of the harvest.

The decline in the vital rates from the mark/recapture data suggest that the Southern Beaufort Sea population may be declining. If this is occurring then there is no sustainable harvest. However there are provisions in the MMPA and the ESA which allow for a harvest as long as it doesn't prevent the recovery of the population.

Collecting complete and accurate harvest age information is fundamental for management decisions and improvement in reporting is needed. The U.S. Fish and Wildlife Service (Service) kindly requests that **Alaska Nanuuq Commission help make hunters aware that if you take a**

polar bear, you must have it tagged within 30 days, and a pre-molar tooth must be provided for aging. Providing accurate, timely harvest data will help promote sustainable management of Alaska's polar bear populations. If at all possible, please also encourage hunters to provide samples for the ongoing Bio-monitoring Program.

Fall Coastal Surveys in the Southern Beaufort Sea

The Service continued aerial surveys of polar bears on the barrier islands and coastline of the Southern Beaufort Sea during the fall of 2008. Unlike previous years the surveys were started in August in response to increasing reports of polar bear sightings in the oil and gas fields during 2007 and in preparation for capture work in August being conducted by the University of Wyoming. As in previous years the surveys were conducted to determine the spatial and temporal abundance of polar bears using coastal habitat and barrier islands during the late summer open water period. The timing of the surveys is designed to occur between the ice break up in the summer and the beginning of ice formation in the fall. Surveys were conducted between 6 August 2008 and 16 October 2008 using a Cessna 185 in August and a twin engine turbine Aero Commander fixed wing aircraft during September and October. Surveys were conducted between Barrow and the Canadian border at an elevation of 300 ft and a speed of 90-120 knots. Fall coastal surveys were also conducted in the Yukon at the same time by Ramona Maraj of Yukon Environmental. Polar bear observations increased from a low of 24 seen August 6-7, to approximately a 100 from 19 August to the 1 October 2008, and then decreased to 70 (40%) after the sea ice began to freeze on October 14-16, 2008. A maximum of 107 bears, including dependent young, were observed on September 15-16, 2008 between Barrow and the Canadian border. Most of the bears looked healthy although fewer sub adults and yearlings were seen compared to previous surveys. Once again, the highest concentrations of polar bears were seen at Cross Island and Barter Island, two locations where subsistence harvested bowhead whale remains were present.

Polar Bear Conservation Activities at Barter Island

Field work for the Feeding Ecology Study (2002-2007) and Bear Interaction Study (2005-2007) is completed; final publications are in preparation. Focus in 2008 switched to developing more active involvement by local residents in polar bear conservation issues.

Minimizing bear-human conflicts: the Native Village of Kaktovik (NVK) received a tribal grant from Service to minimize bear-human conflicts in and around the village. In 2008, NVK hired a coordinator and created a Bear Committee that met several times to address the best way to minimize attractants, develop a polar bear deterrence program (polar bear patrols), address polar bear viewing, and identify education/outreach needs. During the peak bear season, polar bear patrols were up and running, resulting in successful hazing of polar bears out of the village area. Improvements in handling and storage of whale meat were made through the Bear Committee's coordination with whaling captains. Later in the season, a few bears were reported as problem bears in the village and three were shot. A high degree of concern exists regarding neck damage from collared bears, the effects of capture on polar bears, and the potential for "research" bears

to become problem bears in the village. This issue is currently being addressed by both Service and USGS through meetings and outreach, but will require additional attention in 2009 to ensure that research and management activities can continue without further conflict with Native residents.

Monitoring polar bear numbers: The Service turned over long-term monitoring of the number of bears at Barter Island to the village of the Kaktovik. A local resident was trained to conduct daily bear counts through the open water period, as initiated during the Feeding Ecology Study. Polar bears were first observed in late July and present well into October, reflective of the trend of a longer period of use of the coastline. The official monitoring period was September 3–October 4, 2008; the minimum, maximum, and average number of bears observed were 12, 33, and 23, respectively (see Table 5). The highest count (33 bears) was recorded on Oct. 4 after a major blizzard. In 2009 we will extend the official monitoring period into mid–October to accommodate the potential change in peak season.

Polar Bear Bio-monitoring Program

Samples from all sex and age classes continue to be collected in Alaska for contaminant analysis, genetic analysis, food habitat studies, assessment of physiological parameters, and long term archival through the Alaska Marine Mammal Tissue Archival Project (AMMTAP).

Alaska samples were also provided to a circumpolar contaminant study recently conducted to document spatial and temporal trends organic and metal contaminants in polar bears throughout the Arctic. Results from the Northern Contaminants Program (NCP) were presented at a workshop held in Yellowknife, NT on September 22–25, 2008 by Rob Letcher and Melissa McKinney. The title of the presentation was *Temporal and Spatial Trends of Legacy and Emerging Organic and Metal Contaminants in Canadian Polar Bears*. The objective of this study is to determine and monitor the spatial and temporal trends (e.g., concentrations and congener patterns), bioavailability, fate, and toxicokinetics (e.g., biotransformation and tissue distribution) of legacy and “new” persistent pollutants (POPs, chlorinated, brominated, and fluorinated), persistent degradation products, and metals in polar bears from the seven Canadian Arctic management zones with extension to bears from other circumpolar Arctic regions (Alaska, Svalbard, and Greenland).

Factors that affect spatial trends of contaminants are diet, inter-population variation, inter-individual variation, age, sex/reproductive status, nutritional condition (fasting, body condition).

Preliminary results were consistent with what has been found before that concentrations of ClBz, Clordanes (CHL), Σ -PBDEs, PFCs, and Σ -PCBs are lowest in Alaska compared to the other Canadian populations, Svalbard, and east Greenland. The one exception is the high concentrations β -HCH (lindane) (seed insecticide) in Alaska populations which are only exceeded by concentrations in Fox Basin and the Gulf of Boothia populations. Analysis of temporal trends indicated that Σ -PBDEs, Σ -CHL, and Σ -DDT generally decreased in all populations whereas Σ -PCBs decreased in Alaska populations but were variable in other populations.

In addition to evaluating the spatial and temporal trends of various POPs, perflurochemical (PFC) and metals, stable isotopes and fatty acid profiles were determined from polar bears and ringed seals from all possible circumpolar locations. Preliminary conclusions are that each of the six Canadian polar bear populations analyzed subsists on significantly different diets which were confirmed by the stable isotopes and fatty acid profiles. Contaminant concentrations in turn are affected from regional contamination and dietary differences. Thus there is a direct association with the diet and the exposure to specific contaminants.

The Service and Alaska Science Center of the U.S. Geological Survey are working in cooperation with the North Slope Borough (NSB) to coordinate efforts to obtain carcasses of bears that have died of apparent natural causes. Carcasses will be examined to assess body condition (signs of starvation) and the presence of diseases in polar bears, as well as to store samples for future studies. Results from these examinations are important for understanding what environmental stressors may be causing polar bear deaths. **If you or someone in your community finds a dead bear, if possible, please photograph and measure the animal, note its location, age/sex, and body condition, and call the U.S. Fish and Wildlife Service at 1-800-362-5148 to report it.** The Service and partners will collect the carcass (or certain parts) if possible.

International Treaties and Conventions

Listing of Polar Bears as a Threatened Species Under the Endangered Species Act

The Service listed the polar bear as a threatened species under the Endangered Species Act (ESA) on May 14, 2008. <http://alaska.fws.gov/fisheries/mmm/polarbear/issues.htm> At that time the Service also issued an interim final rule under section 4(d) of the ESA for the polar bear and accepted comment on that interim 4(d) rule. The ESA listing of the polar bear was based on the best available science, which shows that loss of sea ice threatens and will likely continue to threaten polar bear habitat. This loss of habitat puts polar bears at risk of becoming endangered in the foreseeable future, the standard established by the ESA for designating a threatened species.

The Service finalized its protections for the polar bear under the ESA with the publication of a Final Rule under Section 4(d) of the ESA on December 16, 2008. The Final 4(d) rule took effect on January 16, 2008. <http://alaska.fws.gov/pdf/pb4d.pdf> The Final rule: (a) in most instances, adopts the conservation regulatory requirements of the Marine Mammal Protection Act of 1972, as amended, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora as the appropriate regulatory provisions for the polar bear; (b) provides that incidental take of polar bears resulting from activities outside the bears' current range is not prohibited under the ESA; (c) clarifies that the Special Rule does not alter the Section 7 consultation requirements of the ESA; and (d) applies the standard ESA protections for threatened species when and activity is not covered by an MMPA or CITES authorization or exemption.

The 4(d) rule does not change the status of polar bear trophy importation, which was banned when the listing occurred in May 15, 2008. Listing the polar bear as a threatened species under ESA automatically designated the bear as a depleted species under MMPA. As a result, importation of sport hunted polar bear trophies was prohibited by MMPA when the ESA listing occurred, and remains unchanged by the special 4(d) rule.

Follow-up actions include designation of Critical Habitat, establishing guidelines for human/bear interactions, and development of a Polar Bear Conservation Plan. Key conservation actions have been identified that, if fully implemented, will help minimize further stress or mortality to the species and ultimately help the species survive in the wild over the long-term. The Service has outlined the following initiatives, for possible implementation, over the next year as part of a domestic and international polar bear conservation action plan:

- Aid local communities in managing bear-human interactions and improve conservation outreach, including assisting Alaska Native communities in developing bear-human interaction plans, establishing polar bear patrol programs, visiting villages to discuss polar bear conservation issues in public forums, and developing effective outreach materials.
- Plan and conduct the first Commission meeting under the US-Russia bilateral agreement and support US and Russian based research and management activities. The understanding of the Chukchi Sea polar bear population is limited and field studies are critical to ensuring that management of this population is based on sound science.
- Expand coordination with industry and monitor distribution and habitat use of polar bears on the North Slope of Alaska.
- Advocate active involvement and information exchange with Native communities regarding polar bear harvest issues. Take proactive steps through the US-Russia Bilateral Agreement and the Inupiat/Inuvialuit Agreement to ensure that harvest levels are sustainable and adjusted as populations decline.
- Initiate a comprehensive circumpolar monitoring strategy for the species identified in the Inter-Governmental Polar Bear Range States meeting of June 2007.

Range States Meeting

The polar bear Range States, Canada, Denmark/Greenland, Norway, Russia and USA, entered into an agreement in 1973 to protect polar bears and their habitat. The five Contracting Parties met last in Shepherdstown, WV in 2007 and prior to that in 1986. Norway hosted a meeting of the Parties of the *1973 Agreement on the Conservation of Polar Bears* occurred in Tromso from March 17-19, 2009. The U.S. delegates included Steve Amstrup, Terry D. DeBruyn, Steven DeVincent, Mike Gosliner, Geoff Haskett, Taquilik Hepa, Charlie Johnson, Denby Lloyd, and

Rosa Meehan, The purpose of the 2009 meeting was to: provide an update on the conservation status for the polar bears; review implementation of the polar bear Agreement; identify useful polar bear conservation strategies; and discuss mechanisms for enhanced implementation of the polar bear Agreement.

The outcomes of the meeting included:

- Acknowledgement that climate change has a negative impact on polar bears and their habitat and is the most important long-term threat facing polar bears. The parties agreed that the primary adaptive strategy in response to climate change is to manage and reduce the negative impacts of habitat destruction, harvest, pollution, and other human caused disturbances. In the long-term it was recognized that there is an urgent need for effective global response to address climate change.
- Recognition of the cultural and nutritional importance of subsistence harvest of polar bears and the need to develop sustainable harvest regimes.
- Recognition of the need for an effective global response to address contaminants and pollution. This should include comprehensive monitoring and research efforts of contaminant concentrations on polar bears.
- Recognition of the need to identify key habitats for polar bears and having mitigation measures including monitoring in place to protect polar bears from the negative impacts of industrial development, shipping, tourism, and expanding human populations.
- Recognition of the need to reduce bear/human interactions to protect both polar bears and humans. As part of this effort Dr. Terry D. DeBruyn was asked to develop a range-wide database of polar bear/human interactions. This effort will involve Native peoples throughout the Arctic including the Alaska Nanuuq Commission and North Slope Borough in Alaska.
- Recognition of the need to develop a coordinated, comprehensive, and circumpolar plan to address polar bear conservation and management.
- Recognition of the important role that polar bears play in the socio-economic and cultural well being of aboriginal peoples. This includes incorporating both Traditional and Scientific knowledge.
- Acknowledgement that the Polar Bear Scientific Review group would continue its role as the Scientific Advisory Group for all parties.

It was agreed to meet again in 2111 in Canada and in 2113 in Russia. More information on the Range States meeting can be found at: <http://www.polarbearmeeting.org>

Canada/United States Memorandum of Understanding

On May 8, 2008, just prior to the signing of the petition to list polar bears as threatened under the ESA, a Memorandum of Understanding (MOU) was signed by the Secretary of Interior, Dirk Kempthorne, and the Minister of Environment, Canada, John Baird. This agreement was set to facilitate and enhance coordination and cooperation for the conservation and management of polar bears between the two countries. This MOU builds upon existing agreements and ongoing collaborations and is not intended to supersede previous and significant contributions by Inupiat and Inuvialuit people, U.S. Fish and Wildlife Service, Canadian Wildlife Service, U.S. Geological Survey, and Environment Canada, for the conservation and management of polar bears.

The MOU establishes the Bilateral Oversight Group in recognition of the need to leverage rather than duplicate the polar bear expertise and management experience of agency and Native/aboriginal people of both countries. The MOU also identifies the need to establish a Scientific Working Group to assess the available scientific information and aboriginal traditional knowledge of North American polar bear populations, and the establishment of other working groups as necessary to advise the Environment Canada and the U.S. Department of the Interior on polar bear management and conservation. Representatives from entities outside the Oversight Group may be invited to participate in the Group's deliberations, and where appropriate, the MOU encourages the Oversight Group to facilitate cooperation with such entities.

Marine Mammal Protection Act Amendments

Marine Mammal Protection Act Re-Authorization

The Marine Mammal Protection Act (MMPA) of 1972 created a moratorium on take of all marine mammals. However, an exception was granted to allow take by coastal dwelling Alaska Natives for subsistence purposes or for creating authentic articles of native handicraft. Harvests could only be regulated if populations were declared depleted or the harvest is wasteful.

In 2003, an amendment package was submitted to Congress after negotiations among the Service, Alaska Native community, National Marine Fisheries Service (NMFS), and the Marine Mammal Commission. No action has occurred to date. The amendment package includes language that proposes to: 1) develop authority to regulate harvest of marine mammals prior to depletion through cooperative agreements between the Service, NMFS and Alaska Native organizations; 2) clarify inconsistencies in the current legislation and address marine mammal/fisheries interactions; 3) address marine mammal stranding; 4) streamline permitting requirements; and 5) address the definition of take by harassment.

Co-Management

The Alaska Nanuuq Commission (ANC) was formed in 1994 to represent Alaska Native hunters concerning issues related to the conservation and subsistence uses of polar bears. The ANC consists of representatives from 15 villages from northern and western coastal Alaska. The last annual meeting was held in Nome, Alaska on January 17-18, 2008. The Executive Committee chose Charles H. Johnson to represent the Alaska Nanuuq Commission. In addition Enoch Oktollik was chosen as the alternate for the Joint Commission for the U.S./Bilateral Agreement. Members of Association of Traditional Mammal Hunters of Chukotka (CHAZTO-Russian Acronym) attended the annual meeting in January.

The ANC has been very active working with the Indigenous Peoples for Marine Mammals (IPCoMM), which represents Alaska Native Organizations that are involved in the co-management of marine mammals in Alaska. The ANC also participated in Harvest Assessment Workshop in Barrow on August 27–28, 2008. The main focus of the workshop was seeking ways to improve compliance with the reporting and tagging provisions of the Marking and Tagging Reporting Program.

Incidental Take Program

The MMPA allows for incidental, non-intentional take of small numbers of marine mammals during specific oil and gas industrial activities. The Service administers an Incidental Take Program through Letters of Authorization (LOA) that allow for polar bear managers to work cooperatively with oil and gas operators to minimize impacts of their activities on polar bears. The Service evaluates LOA with special attention to mitigating impacts to polar bears, such as limiting industrial activities around barrier island habitat, which is important for polar bear denning, feeding, resting, and seasonal movements. Incidental take regulations have been issued since 1993 in the Beaufort Sea. The regulations typically extend for a five year period and the current regulatory period for the Beaufort Sea is 2006 to 2010. The five year regulatory duration is to allow Service (with public review) to periodically assess whether the level of activity continues to have a negligible impact on polar bears and their availability for subsistence uses.

During 2008, in the Beaufort Sea region, 14 Letters of Authorization were issued to oil and gas companies for marine, terrestrial, and on-ice activities along the North Slope of Alaska (Figure 1). Ten companies observed 313 polar bears during 186 sightings (Figure 2). The highest number of bears was recorded in August, where 87 sightings totaling 162 bears were observed. The sighting trend was similar to bear sightings observed in 2007. The high number of bear sightings was most likely the result of an increased number of bears using terrestrial habitat, as well as increased compliance and monitoring of industry projects, especially during August and September, where some repeat sightings of individuals occurred.

Oil and gas activities continued in the Chukchi Sea region during 2008. Incidental take regulations were promulgated in June 2008. Three companies were issued LOA to conduct activities during the open water period. There were 28 sightings of 40 individual polar bears

during the open-water season in the Chukchi Sea. While the majority of the sightings occurred in the marine environment in the Chukchi Sea Lease Sale 193, bears were also observed on the mainland. Seven sightings of 13 polar bears were recorded near support operations at Wainwright, Alaska.

The Service continues to work with oil and gas companies to improve polar bear monitoring and mitigation procedures within and around the North Slope oil and gas fields to limit disturbance to bears and subsistence uses. This includes conducting polar bear awareness programs, such as safety and deterrence training; providing guidance for industry; community plans of cooperation; and creating train-the-trainer curriculum for both polar bear deterrence and polar bear den detection surveys.

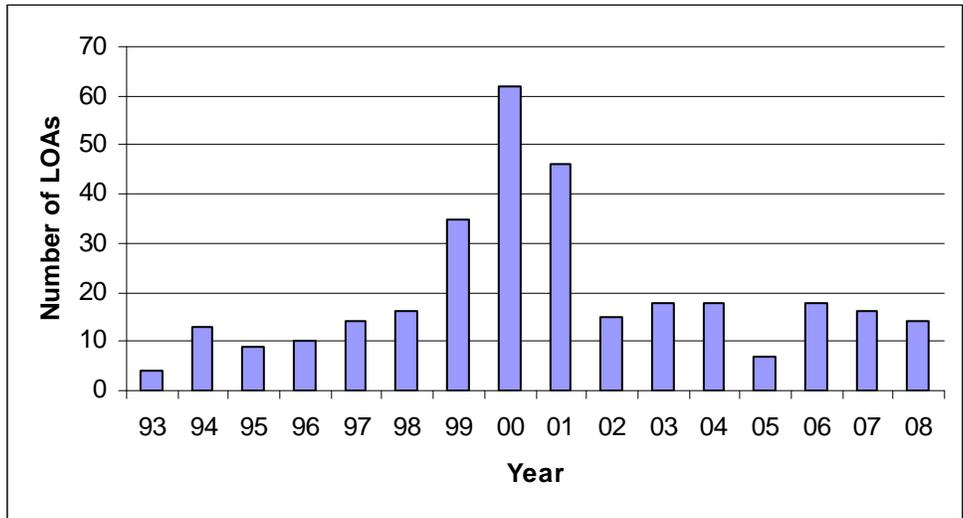


Figure 1. Number of Letters of Authorization (LOA) issued for the oil and gas industry (1993-2008), North Slope, Alaska.

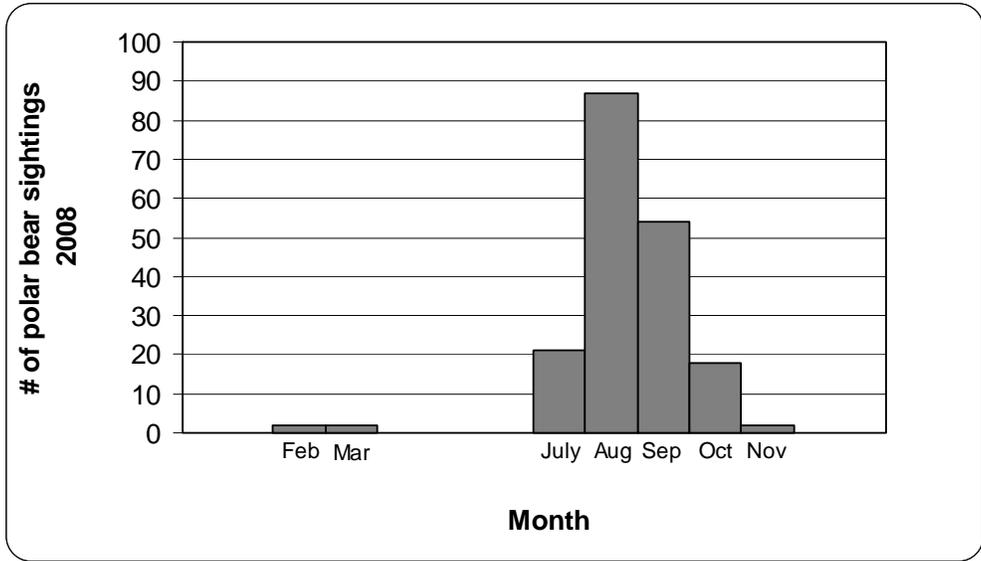


Figure 2. Number of polar bear sightings in 2008 from oil and gas industry monitoring reports, North Slope, Alaska.

**ALASKA POLAR BEAR SUBSISTENCE HARVEST
SOUTHERN BEAUFORT SEA, 2007/2008**

Table 1. Alaska polar bear harvest, Southern Beaufort Sea, 2007/2008^a.

Sex	Village					Total
	Kaktovik	Nuiqsut	Barrow	Fort Yukon	Wainwright	
Male	-	-	6	-	-	6
Female	1	-	3	1	-	5
Unknown	-	-	1	-	1	2
Total	1	0	10	1	1	13

^a Harvest season extends from July 1, 2007 to June 30, 2008.

Table 2. Chronology of village polar bear harvest, Southern Beaufort Sea, 2007/2008^a.

Village	Month												Total
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	
Kaktovik	-	-	-	1	-	-	-	-	-	-	-	-	1
Nuiqsut	-	-	-	-	-	-	-	-	-	-	-	-	0
Barrow	-	-	-	-	3	3	-	1	-	1	2	-	10
Wainwright	-	-	-	1	-	-	-	-	-	-	-	-	1
Atqasuk	-	-	-	-	-	-	-	-	-	-	-	-	0
Fort Yukon	-	-	-	-	-	-	-	-	1	-	-	-	1
Total	0	0	0	2	3	3	0	1	1	1	2	0	13

^a Harvest season extends from July 1, 2007 to June 30, 2008.

Table 3. Number of harvested polar bears taken during the subsistence hunt from the Southern Beaufort Sea Population from 1988-2008. M = Males, F = Females, U = Unknown

Village	1988/1989 ^a			1989/1990			1990/1991			1991/1992			1992/1993			1993/1994			1994/1995			1995/1996			1996/1997		
	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
Atqasuk	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-
Barrow	19	1	9	10	4	-	10	4	-	15	7	1	17	7	2	21	6	2	6	4	1	14	2	2	19	18	3
Kaktovik	6	2	2	1	1	-	-	-	2	-	-	-	3	-	1	2	3	-	-	1	3	-	1	-	1	1	2
Nuiqsut	2	-	2	-	-	-	-	-	-	-	2	-	-	-	-	2	2	1	-	1	-	1	-	-	-	-	-
Wainwright	10	-	4	6	1	2	4	2	-	1	2	-	4	1	3	7	2	1	4	2	1	5	-	9	6	1	2
Subtotal	38	4	17	17	6	2	14	6	2	16	11	1	24	8	6	33	13	4	10	8	5	20	3	11	26	21	7
Total	59			25			22			28			38			50			23			34			54		
Village	1997/1998			1998/1999			1999/2000			2000/2001			2001/2002			2002/2003			2003/2004			2004/2005			2005/2006		
	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U	M	F	U
Atqasuk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-
Barrow	12	4	2	8	5	3	15	-	2	11	6	11	18	4	3	22	2	1	13	7	2	12	1	-	13	10	1
Kaktovik	1	-	1	-	1	1	1	-	-	-	-	-	2	-	1	1	2	1	-	2	5	-	4	5	-	-	-
Nuiqsut	2	-	-	2	1	-	5	1	1	2	2	1	1	-	2	2	1	-	1	1	-	1	1	-	3	-	-
Wainwright	2	2	2	1	-	1	4	1	-	7	2	1	2	-	-	2	2	1	5	2	6	1	2	2	3	2	-
Subtotal	17	6	5	11	7	5	25	2	3	20	10	13	23	4	6	28	7	4	19	12	13	14	9	7	19	12	1
Total	28			23			30			43			33			39			44			30			32		

^a Harvest season extends from July 1 to June 30. The 1988/1989 harvest season is not shown

Table 3 (cont). Number of harvested polar bears taken during the subsistence hunt from the Southern Beaufort Sea from 1988-2008. M = Males, F = Females, U = Unknown

Village	2006/2007 ^a			2007/2008 ^a			Total		
	M	F	U	M	F	U	M	F	U
Atqasuk	1	-	-	-	-	-	4	3	1
Barrow	8	6	4	6	3	1	270	101	50
Fort Yukon	-	-	-	-	1	-	-	1	-
Kaktovik	-	-	-	-	1	-	18	19	24
Nuiqsut	-	-	1	-	-	-	23	12	8
Wainwright	-	-	1	-	-	1	74	24	37
Subtotal	9	6	6	6	5	2	389	160	120
Total		21			13			669	

Table 4. Age class of known-aged polar bears harvested from the Southern Beaufort Sea 1988-2008. Ages based on cementum annuli of the first premolar. Three year old bears are considered subadults after April 30. () = Percentage by harvest year.

Age Class	1988/1989 ^a	1989/1990 ^a	1990/1991 ^a	1991/1992 ^a	1992/1993 ^a	1993/1994 ^a	1994/1995 ^a	1995/1996 ^a
Adults (5+ yrs)	14(52)	8(62)	6(50)	9(70)	7(64)	10(37)	6(43)	9(47)
Subadults (3-4 yrs)	11(40)	4(31)	3(25)	3(23)	3(27)	11(41)	7(50)	6(32)
Cubs (0-2 yrs)	2(8)	1(8)	3(25)	1(8)	1(9)	6(22)	1(7)	4(21)
Unknown Age	32	12	10	14	27	23	9	15
Total	59	25	22	27	38	50	23	34

^a Harvest season extends from July 1 to June 30.

Table 4 (cont). Age class of known-aged polar bears harvested from the Southern Beaufort Sea 1988-2007. Ages based on cementum annuli of the first premolar. Three year old bears are considered subadults after April 30. () = Percentage by harvest year.

Age Class	1996/1997 ^a	1997/1998 ^a	1998/1999 ^a	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
Adults (5+ yrs)	10(53)	6(50)	2(29)	6(67)	3(33)	8(50)	4(44)	6 (35)	3(37)
Subadults (3-4 yrs)	6(32)	6(50)	5(71)	3(33)	4(44)	6(38)	3(33)	11(65)	5(63)
Cubs (0-2 yrs)	3(16)	0	0	0	2(22)	2(12)	2(22)	0	0
Unknown Age	35	16	16	21	34	17	30	27	22
Total	54	28	23	30	43	33	39	44	30

^a Harvest season extends from July 1 to June 30.

Table 4 (cont). Age class of known-aged polar bears harvested from the Southern Beaufort Sea 1988-2008. Ages based on cementum annuli of the first premolar. Three year old bears are considered subadults after April 30. () = Percentage by harvest year.

Age Class	2005/2006 ^a	2006/2007 ^a	2007/2008 ^a	Total ^a
Adults (5+ yrs)	4(36)	1(33)	2 (67)	126(48)
Subadults (3-4 yrs)	3(27)	2 (67)	1(33)	103(39)
Cubs (0-2 yrs)	4(36)	0	0	34(13)
Unknown Age	21	18	10	406
Total	32	21	13	669

^a Harvest season extends from July 1 to June 30.

Table 5. Minimum, maximum and average number of polar bears observed at Barter Island, Alaska, 2002-2008.

Whole Island Count Summary Entire Study Period*, 2002-2008							
	2002	2003	2004	2005	2006	2007	2008
Minimum	0	3	22	0	0	18	12
Maximum	51	61	65	36	31	37	33
Mean	22.77	33.58	40.88	13.18	13.27	28	23.06
SD	17.71	14.32	9.88	10.17	8.8	8.26	4.83
*Study Period	Sep.3-29	Aug.29-Oct. 3	Sep.7-Oct. 4	Aug.29-Sep. 26	Sep.26-Oct. 2	Sep.6-27	Sep.3-Oct. 4

Whole Island Count Summary for Core Monitoring Period of September 7-26, 2002-2008							
	2002	2003	2004	2005	2006	2007	2008
Minimum	3	23	22	6	0	18	12
Maximum	51	61	65	36	25	37	29
Mean	26.24	38.72	41.33	18.63	11.71	28.2	22.55
SD	15.18	10.39	11.28	7.36	7.89	5.96	4.5