



U.S. Fish & Wildlife Service

# Polar Bear News

2010



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## Polar Bear Management in Alaska

The US Fish and Wildlife Service (FWS) has primary management responsibility for polar bears in Alaska. The objective of the polar bear program is to ensure that polar bear populations in Alaska continue to be healthy, functioning components of the Bering, Chukchi, and Beaufort seas ecosystems. The FWS' conservation activity is largely mandated by the Marine Mammal Protection Act (MMPA) and more recently, by the Endangered Species Act (ESA). The U.S. is also a member of

several international treaties that call for coordinated polar bear conservation.

An important part of polar bear conservation is co-management with Alaska Natives who live in polar bear habitat and harvest polar bears for subsistence purposes. The Alaska Nanuuq Commission is FWS' primary co-management partner and was formed in 1994 to represent villages in Northern and Northwestern Alaska on matters concerning the conservation and sustainable



Fig. 1. Polar bears occur throughout the circumpolar Arctic and are recognized as 19 populations based on movement patterns, genetics, and ecology.

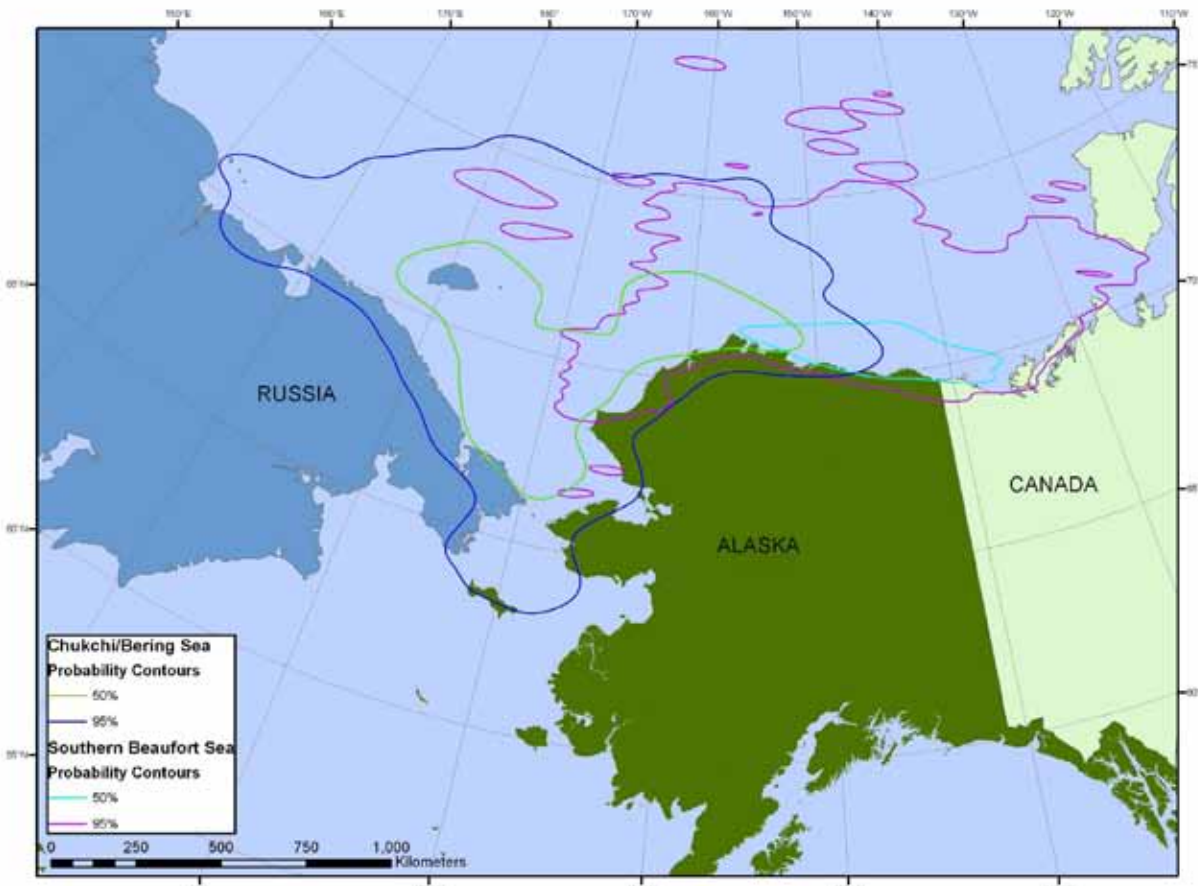


Fig. 2. The two polar bear stocks (or populations) managed by the FWS: the Chukchi/ Bering Sea stock and the Southern Beaufort Sea stock. This map shows where 50 and 95% of bear locations in each population occur.

subsistence use of polar bears.

Another important part of polar bear conservation is having reliable scientific information on which to base sound management. The FWS works in partnership with the US Geological Survey (USGS), the agency primarily responsible for conducting polar bear research in Alaska. For decades, USGS's Alaska Science Center has provided critical scientific information that has been used as a basis for management decisions.

Currently, 19 polar bear populations are recognized throughout the circumpolar Arctic (Fig. 1). Based on movement data and genetic analyses, Alaska's polar bears are divided into two stocks or populations: the southern Beaufort Sea (SB) stock, shared with Canada, and the Chukchi/Bering seas (CS) stock, shared with Russia (Fig. 2). The SB stock of polar bears is currently estimated at 1,500 bears and thought to be declining due to loss of sea ice. At present, we do not have a reliable population size estimate for the CS population of polar bears; loss of sea ice habitat and potentially unsustainable levels of human caused mortality in Alaska and Russia are the main issues of concern for this population.

The purpose of this newsletter is to provide current information regarding polar bear research and monitoring studies, and on-going management activities.

### Proposed Designation of Critical Habitat

#### *Critical Habitat*

On May 15 2008, the U.S. Fish and Wildlife Service (FWS) published a Final Rule in the Federal Register listing the polar bear (*Ursus maritimus*) as a threatened species under the Endangered Species Act of 1973 (ESA). Details regarding the ESA listing can be found at <http://alaska.fws.gov/fisheries/mmm/polarbear/issues.htm>. The ESA requires that the FWS identify and protect critical habitat

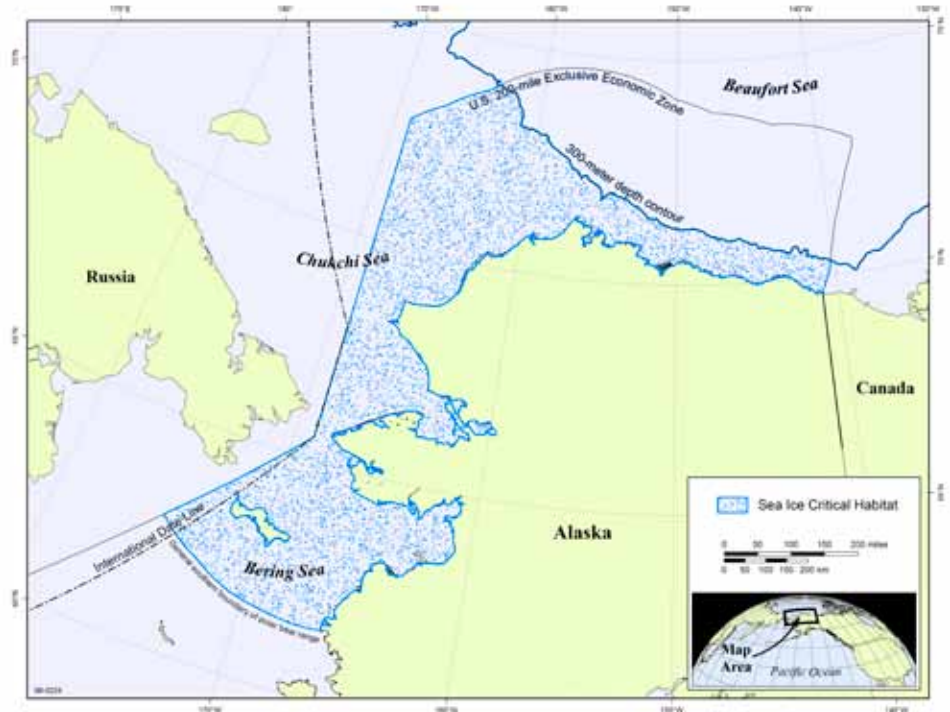


Fig. 3. Proposed polar bear sea-ice critical habitat.

for listed species. A proposal identifying critical habitat for polar bear (*Ursus maritimus*) populations in the United States has recently been proposed as specified under the ESA. In total, approximately 484,764 square kilometers (187,166 square miles) fall within the boundaries of the proposed critical habitat designation. The proposed critical habitat is located in Alaska and adjacent territorial and U.S. waters.

For a geographical area to be included in a critical habitat designation, the species must have occupied the area at the time it was listed and the area must contain the physical and biological features essential to the conservation of the species and have features that require special management considerations or protection. Critical habitat

designations, as specified under the ESA, should identify habitat areas that provide essential life cycle needs of the species.

Based on polar bear needs and our current knowledge of the life history, biology, and ecology of the species, we have determined that the critical habitat types necessary for the polar bear in the United States are:

#### *Sea-ice Habitat*

Sea-ice habitat consists of approximately 464,424 km<sup>2</sup> (179,314mi<sup>2</sup>) of the sea-ice habitat ranging from the mean high tide line to the 300-m (984.2-ft) depth contour. The vast majority (93 percent) of this habitat is located within Federal waters. Sea-ice habitat is required for feeding, breeding, denning, and movements that are essential for the conservation of polar bear

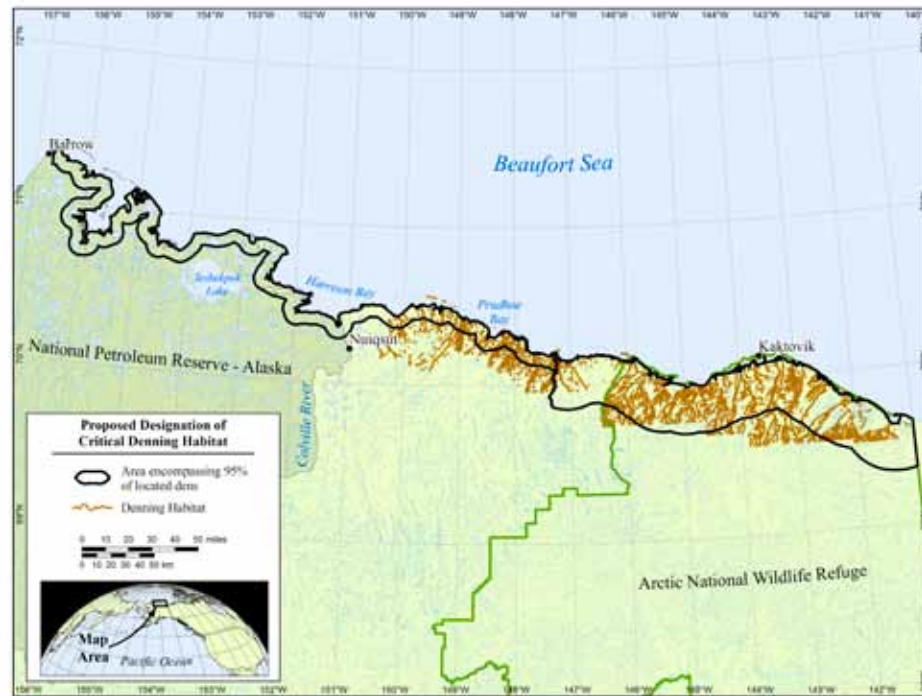


Fig. 4. Proposed critical terrestrial denning habitat.

populations in the United States.

### *Terrestrial Denning Habitat*

Terrestrial denning habitat consists of an estimated 14,678 km<sup>2</sup> (5,668 mi<sup>2</sup>) of land, located along the northern coast of Alaska, with the appropriate denning macrohabitat and microhabitat characteristics. The area proposed as critical habitat contains approximately 95 percent of the known historical den sites from the southern Beaufort Sea population. The FWS did not identify critical terrestrial denning habitat for the Chukchi and Bering Seas population because denning for this population is believed to occur almost exclusively on Wrangel Island and the Chukotka Peninsula in Russia and on sea ice.

### *Barrier Island Habitat*

Barrier island habitat consists of an estimated 10,588 km<sup>2</sup> (4,089 mi<sup>2</sup>) and includes the barrier islands themselves and associated spits, and the water, ice, and terrestrial habitat, where present, within 1.6 km (1 mi) of the islands. Barrier island habitat is essential for the conservation of polar bear populations in the United States.

You can view detailed, colored maps of areas proposed as critical habitat at <http://alaska.fws.gov/fisheries/mmm/polarbear/criticalhabitat.htm>. You can obtain hard copies of maps by contacting: Thomas J. Evans at 907-786-3800 or 1-800-362-5148.

## Draft Polar Bear Conservation Plan: Threats Assessment and Objectives to Address Identified Threats

In compliance with the requirements of the Marine Mammal Protection Act and the Endangered Species Act, the U.S. Fish and Wildlife Service (FWS) is in the pre-preliminary stage of developing a Conservation Plan for polar bears to help guide management and research activities into the future. We envision the plan as being threat-based, action driven, and involving others. Recently, the FWS Polar Bear Team summarized our understanding of the threats and issues facing polar bears based on what we have heard from the public to date. Our thinking was informed by a long-standing collaborative history with our diverse partners and the public. The result was a draft “straw-man” list of 23 objectives and associated action items to address the threats identified facing polar bears now and into the future. This list of objectives and action items represents a distillation of the threats identified in the 2008 listing Final Rule and the 1994 Conservation Plan. As such, the objectives and action items developed also represent a distillation of the analyses resulting from recent collaborations with US Geological Survey (USGS) and our other partners during the listing process, and serve to facilitate understanding of our



*Diminishing sea-ice is a threat to polar bears.*

multifaceted program by organizing conservation activities by threat category. This framework is intended as a starting point to facilitate productive discussions with our partners, to provide for public participation in planning, and to ensure that FWS polar bear conservation and research programs are attentive and responsive to public interest and need. We recognize that this is necessarily an iterative process;

therefore, we want to make sure we capture issues that are important to others throughout the process, incorporate others' comments, and work to build on the collaborative relationships necessary to most effectively achieve our combined conservation goals for polar bears.

Ultimately, this plan will lead to coordinated conservation

strategies prioritized by the threats that polar bears face now and into the future. By ensuring that management strategies are threats-based, scientifically sound, and based on collaborative efforts with our partners, the FWS will help ensure that it most effectively uses available resources for polar bear conservation.

On October 29, the FWS will host a meeting at the Hotel Captain Cook to begin engaging our partners and stakeholders in the development of this conservation plan. If you are interested in attending, please contact Jim Wilder at [james\\_wilder@fws.gov](mailto:james_wilder@fws.gov) or 907-786-3378.

### **US – Russia Bilateral Agreement**

A treaty between Native and government representatives of the U.S. and Russia was signed in 2000 due to the need for coordinated management of the shared Alaska-Chukotka polar bear population that inhabits the



*U.S. Russia Commission Meeting (2009). In June 2010, the Commission agreed on a harvest of 58 polar bears from the Alaska-Chukotka population to be shared between the U.S. and Russia. Absent from photograph is US Native Commissioner Charlie Johnson.*

Chukchi and northern Bering seas. This treaty identified goals to improve polar bear conservation and safeguard the cultural and traditional use of polar bears by Native peoples. Natives in Alaska and Russia began laying the groundwork for this agreement starting in the 1980s. For Native peoples of Chukotka this treaty acknowledges the cultural importance of hunting polar bears for subsistence purposes. Hunting of polar bears (including by Native peoples) has been illegal in Russia since 1956. Alaskan Natives have supported the right of their

Russian neighbors and have long recognized the need to cooperatively manage this population to ensure that polar bears are available for future generations.

Recent implementation of this treaty which began in 2007 established a joint U.S.-Russia Commission responsible for making management decisions concerning polar bears in this region. The Commission is composed of a Native and federal representative from each country. Representatives from the United States are Geoffrey Haskett, Regional Director of the

FWS Alaska Region and Charlie Johnson, Executive Director of the Alaska Nanuuq Commission. Russian representatives include Amirkhan Amirkhanov, Deputy Director of the Department of State Policy and Regulations in the Field of Environment Protection and Ecological Safety within the Ministry of Natural Resources and Environment, and Sergey Kavry, a representative of the Chukotka aboriginal people.

In September of 2009, the inaugural meeting of the US-Russia polar bear Commission was held in Moscow, Russia. At their inaugural

### US-Russia Bilateral Agreement Summary

At a meeting in June 2010, the US-Russia polar bear Commission decided to place an upper limit on harvest from the Alaska-Chukotka population of 19 female and 39 male (for a total of 58) polar bears per year. This limit was set based on subsistence needs and the best available science and local information. Harvest will be split evenly between Native peoples of Alaska and Chukotka. The decision made by the U.S.-Russia polar bear Commission is important to Native peoples of Chukotka because it re-establishes their ability to hunt polar bears for subsistence purposes. Hunting of polar bears (including by Native peoples) has been illegal in Russia since 1956.

The Alaskan share of the harvest is 29 polar bears per year, which is slightly lower than the average of 37 polar bears harvested each year between 2004 and 2008. In Alaska, this limit will not go into effect for another 1 or 2 years. Until that time, hunters should continue to report and tag harvested polar bears within 30 days with their local tagger. The U.S.-Russia polar bear treaty affects management of polar bears in villages in the Chukchi Sea and northern Bering Seas to the west and south of Point Lay, including Point Lay. Wainwright will continue to be managed with the Southern Beaufort Sea population. Over the next year, the U.S. Fish and Wildlife Service (FWS) will work with the Alaska Nanuuq Commission (ANC) and local communities to figure out how to implement the harvest. Local communities are encouraged to provide input into this process by contacting their local ANC Commissioner or the ANC office in Nome at 907-443-5044 ([www.nanuuq.info](http://www.nanuuq.info)) or the FWS Marine Mammals Management program at 1-800-362-5148.

meeting the Commission appointed a scientific working group with a co-chair and 5 members from each country. The Commission tasked this scientific working group with a number of objectives, but specifically identified the top priority as identifying a sustainable harvest level for the Alaska-Chukotka population. In response to this initiative, the scientific working group held their first meeting March 1–5, 2010 in Anchorage, Alaska and provided the Commission with a peer-reviewed report of their recommendations regarding harvest and future research needs. This included a recommendation that total harvest from the two countries not exceed 45 polar bears per year.

At a meeting in June 2010, the Commission decided to place an upper limit on harvest from the Alaska-Chukotka population of 19 female and 39 male (for a total of 58) polar bears per year based on the recommendation of the scientific working group and identified subsistence needs. Harvest will be split evenly between Native peoples of Alaska and Chukotka. The Alaskan share of the harvest is 29 polar bears per year, which is slightly lower than the average of 37 polar bears harvested each year between 2004 and 2008. Over the next year, the USFWS will work with the Alaska Nanuuq Commission and local communities to figure out how to implement the harvest. Local communities are encouraged to

### CAN YOU GUESS WHAT THIS IS?



*\*\*See back page for answer.*

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### **Polar Bear-Human Information Management System**

As a result of on-going and predicted future habitat loss, polar bears are expected to spend

longer periods of time on land where they are susceptible to human disturbance. At the same time, human activity in coastal areas of the Arctic is increasing (e.g., oil and gas exploration, tourism). The increasing trend of both polar bear and human use of coastal areas has the potential to result in increasing polar bear/human interactions. Interactions with humans may threaten polar bears. To date, polar bear attacks on humans have been rare, but when they do occur they evoke strong public reaction.

Polar bear managers can help conserve polar bear populations by reducing lethal take of polar bears during bear/human interactions. To prevent conflicts between polar bears and humans, bear/human interaction plans need to be developed and

## Development of International Bear-Human Database

implemented. To implement sound management strategies for polar bears, and to adequately protect people living, recreating, and working in polar bear country, it is imperative that polar bear managers assemble critical information related to bear/human interactions.

At a “Meeting of the Parties to the 1973 Agreement of the Conservation of Polar Bears” held in March 2009 in Tromso, Norway, the parties agreed on the need to develop comprehensive strategies to manage bear/human interactions. Tor Punsvik, Environmental Advisor, Office of The Governor of Svalbard, Norway and Dr. Terry D. DeBruyn, FWS Polar Bear Project Leader, were

tasked with taking the lead on developing a polar bear/human interaction initiative to address the anticipated future increase in interactions due to climate change. The parties agreed to exchange experiences with management of bear/human interactions in collaboration with polar bear experts and managers from the other parties (Canada, Russia, and Greenland).

Objectives of the polar bear/human interaction initiative are:

1. Develop a user-friendly, range state-wide database of bear-human interactions and natural history information.
2. Display those bear-human interactions and natural history

information in a GIS format, and link it with a database which is designed to analyze the important variables associated with bear-human interactions.

3. Develop specific guidelines for managing polar-bear human interactions at both site-specific and regional scales.

4. Develop consistent and scientifically based bear-human interaction safety messages adaptable to specific sites via the development of bear-safety brochures for use by member range states.

James Wilder of the Alaska Region Marine Mammals Management, Polar Bear Branch has taken the lead in developing



*During the open water period, about 5% of the Southern Beaufort population comes to land.*

the database along with Dag Vongraven and Tor Punsvik of Norway. The Polar Bear/Human Information Management System (PBHIMS) has been developed to standardize the collection of polar bear data across the polar bear Range States (U.S., Norway, Canada, Russia, and Greenland). This system enables a data-based assessment of bear/human interactions and provides a scientific framework

can be attached to each incident to provide additional information that may not be captured in the system. Data are also entered into GoogleEarth for subsequent spatial analysis, and can be exported to ArcGIS.

A draft database, populated with data from the U.S. and Norway, will be completed by March 2011 for review by the Polar Bear Specialist Group (PBSG).

human interactions). To ensure the success of the project, partnering with various agencies and pertinent groups in the range state countries is needed.

### Minimizing Human-Bear Conflicts in Alaska's Villages

Increasing use of coastal habitat by bears during the open water period, particularly along the Beaufort Sea coast, has been

a concern since the 1990s.

While the North Slope Borough has historically run a "bear patrol" program in its region, in recent years the ability to fund and keep the patrols going has been problematic. However, in 2010, U.S. Fish and Wildlife Service (FWS) was able to secure enough funding to develop a cooperative agreement with the North Slope Borough to fund patrols in Barrow, Kaktovik, Wainwright, Point Hope and Point Lay for 2010-2012. Hiring and training will begin in fall 2010. In addition, the World Wildlife Fund worked with the

Kaktovik Polar Bear Committee and FWS to obtain several bear resistant meat storage containers that will be tested this year in Kaktovik (and several Canadian communities) to see if they help reduce access to household whale meat by polar bears. FWS efforts to support Nuiqsuit whalers in preventing human-bear conflicts during fall whaling at Cross Island are also underway and will



*Polar bear patrollers use vehicles to keep bears from coming into villages.*

for preventing negative bear/human interactions in the future. The system provides a user-friendly data entry interface and the ability to analyze collected data. Data stored in the system include bear/human interactions, bear observations, bear harvests, and bear natural history. Scanned images of the original bear forms, narratives, reports, and photos

The draft database will then be distributed to the Range States, comment sought, and a request made that members populate the database with pertinent polar bear/human incidents (of primary interest, initially, are records from each country that relate to the use of bear spray and fatalities [both bear and human] resulting from bear/

## Polar Bear Conservation Activities at Barter Island

be continued in the coming year.

In the Bering/Chukchi Seas region, FWS was also able to provide funding to the Alaska Nanuuq Commission to initiate a needs assessment in Gambell, Savoonga, Wales, Shishmaref, Kivalina, and Little Diomedes to identify what actions can be taken to avoid human-bear conflicts, such as minimizing attractants and implementing deterrence programs such as bear patrols. Village visits are planned for late 2010 through 2011.

### Polar Bear Conservation Activities at Barter Island

In 2009 FWS's Marine Mammals Management Office and Arctic National Wildlife Refuge staff

*Development of viewing guidelines:* Interest in guided polar bear viewing is increasing on Barter Island. To address the growing bear viewing/tourism industry around Kaktovik, FWS developed Polar Bear Viewing Guidelines for the Arctic National Wildlife Refuge lands and waters, and worked with the Kaktovik Polar Bear Committee to develop viewing guidelines for Native-owned lands around Kaktovik. The FWS also developed a guide training program and provided polar bear viewing guide training to residents of Kaktovik, in partnership with the State of Alaska, U.S. Coast Guard, Circumpolar Expeditions, and Ilisagvik College, Barrow. In February 2010 a workshop

and a Division of Management Authority photography permit is required for any photography that may disturb bears. Viewing and photography in the absence of a photographic permit must avoid disturbing or changing the behavior of polar bears. For more information contact Susanne Miller at 1-800-362-5148 or e-mail [Susanne\\_Miller@fws.gov](mailto:Susanne_Miller@fws.gov).

*Minimizing human/bear conflicts:* In 2009, the Native Village of Kaktovik (NVK) continued with initiatives started in previous years under a FWS tribal grant to minimize human/bear conflicts in and around the village. Polar bear patrols were again implemented by the community, as well as efforts to minimize attractants during whaling. Polar bear patrols were successful in hazing polar bears (and brown bears) out of the village area; however, four bears were shot in August/September when patrols were not operational, further demonstrating the importance of these patrols as a polar bear conservation tool.

*Monitoring polar bear numbers:* In 2009, two residents assisted in monitoring polar bear numbers at Barter Island. Polar bears were first reported in town on August 10; most (4/5) were adult males. The official monitoring period was 20 August–28 September 2009; the minimum, maximum, and average number of bears observed was 11, 35, and 23, respectively. Monitoring efforts are continuing in 2010.



*Polar bear viewing guidelines have been developed to address the growing number of visitors to the Kaktovik area.*

continued efforts to support the community of Kaktovik in addressing human/bear interactions, and to engage local residents in polar bear conservation issues. A new focus in 2009 involved addressing the increase in polar bear tourism/viewing.

was held for residents interested in guiding. The purpose of the workshop was to provide information on how to conduct polar bear viewing and provide other visitor services (i.e. boat operation) safely, professionally, and legally. Permits are required to conduct polar bear viewing on Refuge lands and waters

### 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. Every year, FWS provides funding to

and enters into a cooperative agreement with the ANC, and develops mutual scopes of work. Progress is reported during annual meetings. The two primary scopes of work in 2009 were: 1) co-management operations (maintaining a co-management office, staff, meetings, travel, and other operational expenses); and 2)

representing Native interests in meetings under the U.S./Russia Bilateral Agreement for the Conservation of Polar Bears in the Chukchi/Bering Seas.

The last annual ANC meeting was held in Nome, Alaska on August 25–26, 2009. The meeting was also attended by the Association of Marine Mammal Hunters of Chukotka

### Bear Safety

As fall freeze-up is delayed it's quite possible that polar bears using coastal areas will increasingly enter human settlements, particularly if they are nutritionally stressed. If a bear succeeds in finding food in a human settlement, it is more likely to become a problem. However, if it does not find food it is more likely to move on. *Please be sure to minimize any food attractants in your communities and camps and work with community members to develop strategies for minimizing conflicts with bears.*

Polar bears are very curious and it is normal for them to investigate anything that is unusual. If you see a bear, watch to see what it is doing, but also think about what to do if it gets too close. All bears are potentially dangerous and should be treated with respect. Bears that are surprised suddenly, starving, threatened, or defending their food or cubs are more likely to be aggressive. Extreme caution should be taken in these circumstances and the bear should be avoided. Make sure the bear has an open route to escape if it is behaving threatened.

Although subsistence hunting is legal under Federal law, we encourage everyone to seek non-lethal methods to deal with problem bears when possible and to ensure that any harvest is conducted for subsistence purposes only.

If polar bears do not pose an immediate threat to human safety, stay away from bears and do not approach or harass them.

When in coastal areas, remain vigilant, and be aware of your surroundings; avoid surprising bears.

Do not let bears associate food with humans; lock up or remove anything which could attract a bear, such as food, garbage, human waste, petroleum products, or animal carcasses.

If a polar bear poses an immediate threat to human safety, make loud noises and other distractions to encourage it to leave camp/village areas.

Please report polar bear harassment or lethal take for public safety reasons to FWS at 1-800-362-5148.

## Co-Management

(CHAZTO), as well as the FWS. On-going research, management, and the Treaty with Russia were discussed. Representatives from Chukotka presented information on their efforts to monitor polar bears at walrus haulouts near communities to prevent human-bear conflicts (Umky Patrol). Near Vankarem, Chukotka, walrus haul out annually (~30,000 animals in 2009) during fall and attract polar bears that feed on walrus that become trampled during disturbance events induced by both humans and polar bears. The Umky Patrols educate



*Some polar bears feed on whale carcasses during the fall open water period.*

and restrict visitors, and move walrus carcasses away from the village to minimize conflicts with bears. They reported up to 200 bears near the village in 2009.

The ANC and CHAZTO also developed research and management recommendations on behalf of the Native people of Alaska and Chukotka for the Joint Commission of the US-Russia Treaty to consider during their upcoming meetings regarding conservation of polar bears in the Chukchi/Bering seas. In 2010, the FWS plans to provide additional funding to ANC to assess

village-specific needs for further minimizing human/bear conflicts in villages in the Chukchi/northern Bering Seas. Similarly, the FWS is providing funding to the North Slope Borough to conduct polar bear patrols and other activities to minimize human-bear conflicts where needed in northern Alaska communities.



*Polar bear tracks on the sea-ice North of Cape Lisburne*



*Polar bear's large paws are similar to snowshoes. The bear's weight is distributed evenly over the paws, allowing the bear to walk easily on snow and ice.*

**Table 1. Native subsistence polar bear harvest in Alaska by village for 2008/2009 harvest season.**

<i>Village</i>	<i>Male</i>	<i>Female</i>	<i>Unknown</i>	<i>Total</i>
Kaktovik*	2	-	2	4
Nuiqsut*	-	-	-	0
Barrow*	13	1	5	19
Atqasuk*	-	-	1	1
Wainwright*	1	-	-	1
Point Lay	-	-	-	0
Point Hope	2	1	1	4
Kivalina	-	-	-	0
Noatak	1	-	-	1
Shishmaref	-	-	-	0
Wales	-	-	-	0
Little Diomede	3	2	-	5
Savoonga	1	-	-	1
Gambell	-	-	-	0
Total	23	4	9	36
Percent	(63.9)	(11.1)	(25.0)	(100)

\* Villages party to the Inupiat-Inuvialuit management agreement. Harvest season extends from July 1, 2008 to June 30, 2009.

**Harvest Summary**

The total Alaska harvest of polar bears by Native subsistence hunters from June 2008 to July 2009 was 36 bears which was comprised of 12 males, 13 females, and 9 with sex unknown (Table 1). Harvest reports are continuing to come in from the more recent time period of June 2009 to July 2010. The harvest

in 2009 was the second lowest harvest recorded and only exceeded the 2008 harvest by two bears. The number of bears taken from the Southern Beaufort Sea population was 25 (mean= 31 from 2000/2001-2008/2009) and 11 from the Chukchi/Bering seas population (mean= 31 from 2000/2001-2008/2009). The current

management regime allows for a 2M:1F sex ratio of the harvest and thus no more than 33% of the harvest should be female. The sex ratio of known-sex bears harvested during 2008/2009 was highly skewed toward males with 85% male and 15% female. If the nine bears, for which sex was unknown, were designated

**Please encourage hunters to report their harvest. Information provided by hunters is used to document their traditional subsistence use and to monitor the health of polar bears in Alaska.**

as females, as is customary in Canada, then the percentage of females in the 2008/2009 harvest would be 36%. Sex was reported for 75% (27/36) of the harvest in 2008/2009. The harvest from the Chukchi/Bering Sea population continues to decline. The 2009 Chukchi Sea harvest was the lowest recorded since 1980/1981, the first year for which we have reliable data.

The reasons for a low statewide polar bear harvest in 2008/2009 are unknown but could be a result of changes in the distribution or abundance of polar bears due to changes in their sea ice habitat or due to reduced hunter effort. Many hunters have reported that the high price of fuel has limited



*Teeth from harvested polar bears provides information about the age of the polar bear.*



*Polar bears are strong swimmers and have been seen swimming up to 100 miles away from land or ice.*

the number, length, and distance traveled during hunting trips.

Although not as extreme as the Chukchi Sea harvest, the harvest levels from the Southern Beaufort Sea were lower than normal. The Southern Beaufort Sea harvest has remained relatively constant since 1980 at 35 bears per year (SD=11.9, n=29, range 14 -62).

Teeth from harvested polar bears are used to determine each bear's age. This information is critical to monitoring the health of harvested polar bear populations. Teeth collected from the 2007/2008 harvest (8/34) and the 2008/2009 harvest (19/36) are currently being aged; thus 2006/2007 harvest is the most recent hunting season with available ages of harvested bears. The proportion of the harvest for which premolar teeth were obtained during 2007/2008 was 36% (13/36) which is an increase

from the 23% the previous year but still well below what is needed to accurately monitor age structure of the harvest. Collecting complete and accurate harvest age information continues to be fundamental for making informed management decisions and understanding population dynamics. This under-reporting is part of a continuing trend that is occurring in Alaska, and improvement is needed.

The FWS continues to try ways to encourage harvest reporting. In 2008, we increased payments to taggers for collection of complete harvest information from the hunters and hope that this will increase compliance. In 2011 we will be increasing outreach efforts in the villages. Please continue to encourage hunters to report their harvest and remind them of the importance of documenting their traditional subsistence use, as well as the importance of harvest information for monitoring the health of polar bears in Alaska.

### What is “Take” and how does it Apply to Polar Bear Management?

“Take” is a term defined under the Marine Mammal Protection Act as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal”. The MMPA prohibits the “taking” of marine mammals unless exempted or authorized. Exemptions include: 1) the harvest of marine mammals, including polar bears, by Alaska natives for subsistence purposes; and 2) the lethal take of a polar bear by anyone in defense of human life. Authorizations for nonlethal take of polar bears (including activities that disturb a bear or alter a bear’s behavior) can be for: 1) scientific purposes, such as research to study bears by wildlife agencies, 2) educational purposes, such as museums and universities, 3) incidental take, and 4) intentional take. Incidental take occurs when an accidental or unavoidable interaction occurs between humans and bears in the course of human activities. Intentional take is the deterrence, or non-lethal hazing, of bears from human activities for the safety of the people and the bear.

### Incidental and Intentional Take Program

The FWS administers an Incidental and Intentional Take Program that allows for polar bear managers to work cooperatively with various stakeholders working in polar bear habitat to minimize impacts of their activities on polar bears. The Marine Mammal Protection Act (MMPA) allows for the incidental non-intentional take of small numbers of marine mammals during specific activities. The MMPA also allows for intentional take by harassment of marine mammals for deterrence purposes. Stakeholders seeking take authorizations from the FWS include the oil and gas industry, the mining industry, the military, local communities, and researchers.

Two types of authorizations are available: Incidental Take Regulations (ITR) which can be issued for up to five years,



*Oil and gas operators and anyone with a Letter of Authorization is required to report polar bear sightings.*

and Incidental Harassment Authorization (IHA) which can be issued for up to one year. Activities are allowed if it is determined that they will have no more than a negligible impact upon marine mammal species and do not have an unmitigable

adverse impact on the availability of these species for subsistence uses.

Oil and gas operators, or any other citizen group, may apply for a Letter of Authorization (LOA) which, if granted, allows them to incidentally “take” polar bears during the course of specifically defined activities within a specific geographical area. Most “take” that results from industry interactions with polar bears are limited to changes in bear behavior. For example, a bear may avoid or investigate an area or alter its direction of travel because of industry activity.

Activities authorized by an LOA under ITRs and IHAs must adopt measures to minimize any adverse impacts to polar bears, their habitat and their availability for Alaska Native subsistence use. The FWS evaluates all industry projects with special attention to mitigating impacts on polar bears, such as limiting

## Incidental and Intentional Take Program

industrial activities around denning habitat. Authorizations also specify monitoring and reporting requirements which provide a basis for evaluating potential current and future impacts of activities on polar bears. Authorizations require that all polar bear sightings, including tracks, dens and other signs of presence, be reported to the FWS during the course of any activity. Without incidental take authorizations industry activities could still continue, however, the FWS would have no formal means to require monitoring and reporting, mitigate specific activities or communicate with industry; and any form of resulting “take” would be a violation of the MMPA.

For 2009, in the Beaufort Sea region, 21 LOAs were issued to oil and gas companies for activities between Barrow and Kaktovik. Companies observed 420 polar bears during 245 sightings. Similar to prior years the highest number of bears was recorded in fall: In August 77 sightings occurred while September had 51. Polar bear sightings by industry has increased over the years due to a combination of factors including an increase in repeat sightings of individual bears, extended use



*Climate change is a major concern for polar bears.*

of terrestrial habitat by bears as a result of changes in sea ice habitat and continued compliance and monitoring of industry projects.

In the Chukchi Sea region for 2009 the FWS issued two LOAs for exploratory programs during the open water period. Thus, monitoring and mitigation measures are primarily for walrus since few polar bears are observed in the Chukchi Sea during this time. No polar bear interactions were reported under these two LOAs.

In 2009 the FWS issued 15 intentional take authorizations to various organizations to deter bears, including oil companies, the military and local communities. Of the 245 polar bear sightings reported approximately 25% (63)

were deterrence events.

The FWS has received a petition from the oil and gas industry to develop incidental take regulations for the Beaufort Sea region for the period of 2011–2016. The FWS is currently analyzing the petition. Regulations were established in 2008 for the Chukchi Sea and will expire in 2012. The FWS continues to work with stakeholders improving polar bear monitoring and mitigation procedures around the North Slope oil and gas fields to limit disturbance and impacts to bears and subsistence uses. Additional FWS activities include polar bear awareness and deterrence training, Forward-looking infrared (FLIR) training for bear den surveys, and guidance with industry/community plans of cooperation.

### Bear Den Detection Study

We are currently teaming with the Alaska Department of Fish and Game to evaluate methods to detect grizzly and polar bear dens in the North Slope oilfield region of Alaska. North Slope oil and gas construction and exploration activities are primarily conducted in winter to reduce cost and minimize damage to tundra. Industry

activities such as geophysical exploration, ice road construction, and overland equipment and material transport can disturb denning polar and grizzly bears, potentially resulting in accelerated loss of energy reserves required for successful rearing of newborn cubs, as well as potential den abandonment leading to subsequent adult and cub mortality. Human safety can

also be compromised if industry personnel accidentally encounter dens. In order to minimize den disturbance, agencies require that industry activities during the denning period remain at least one-half from known grizzly bear dens and one mile from known polar bear dens. To be effective this mitigative method requires identification of accurate den locations in proposed work areas.



*Riley, a Karelian bear dog, investigates the area near an active grizzly bear den.*

Two promising methods to detect bear dens are Forward Looking Infrared (FLIR) imagery, which uses thermal heat sensing, and use of trained scent dogs. Airborne FLIR has been used to detect polar bear dens in snow dens with up to a 90% success rate under ideal conditions, and many of the operational constraints are known.

Preliminary FLIR tests suggest that this technology could be applied successfully on grizzly bear dens. However, FLIR may also give false positives (indicating a false den) that could unnecessarily restrict industry activities. Therefore, evaluating a method to ground-truth the FLIR is warranted. Borrowing on a centuries-old technology,

trained scent dogs have been used in preliminary tests on the North Slope to confirm FLIR “hotspots” as polar bear dens and to identify the precise location of known grizzly bear dens. Results suggest that dogs are effective, even locating presumed dens that were missed by FLIR. In addition, dogs may be able to “clear” FLIR false positives,

thus allowing industry activities to proceed.

The objectives of this two-year study are to evaluate the effectiveness and operational constraints of helicopter-mounted, fixed-wing mounted, and hand-held FLIR on the detection of polar bear and grizzly bear dens, and evaluate the precision and operational constraints on use of trained scent dogs to detect polar bear and grizzly bear dens.

Information from this study can be applied to future oil and gas industry activities that occur



*Den detection is necessary to reduce disturbance.*

in already successful grizzly bear and polar bear denning habitat. Application of these methods to frontier areas of oil and gas industry interest, such as the Foothills region of the Brooks Range and the National

Petroleum Reserve-Alaska, can reduce potential consequences of den disturbance, including safety of industry personnel.

In winter 2010 we used helicopter-mounted and fixed-wing mounted FLIR units and flew established transects in known polar bear denning habitat and radio-collared grizzly bear dens. We tested the dogs on the same dens in March-April, and marked presumed den locations indicated by the dogs. We will calculate errors in precision and evaluate factors that contribute to this error. This summer we are planning to ground-truth the den sites in order to calculate the detection probability for each type of detection method. Eventually, we hope to develop a matrix of

### **What do I do if I Find a Dead Polar Bear?**

Reports of dead polar bears provide extremely valuable information about factors other than harvest that may be affecting polar bear populations. If you find a dead polar bear, note its location, age/sex, and body condition, and call FWS to report it as soon as possible (1-800-362-5148). If possible, a photograph and collection of the skull (or a tooth with the root) and a femur bone would provide us the necessary information to assess the age, condition, and size of the bear. We will pay for sample shipment back to our office or another location where they can be analyzed. We appreciate your help!

operational conditions that will allow industry or researchers to select the best den detection method for their unique type of activity.

### Summer Ecology Studies in the Southern Beaufort Sea

In August 2008, the University of Wyoming initiated a study to investigate the physiological and ecological response of polar bears to longer ice-retreat seasons in the southern Beaufort Sea.

This project was funded by the National Science Foundation and included the U.S. Geological Survey (USGS), the University of Wyoming, and the FWS as collaborators. Similar to 2008, in 2009 polar bears were again captured onshore in the southern Beaufort Sea in August, and then recaptured in October prior to sea ice formation. Additionally, in 2009 the offshore component of the study was accomplished, in which polar bears were first captured on the sea ice during spring capture-recapture operations by the USGS.

These bears were targeted for recapture in October on the offshore pack ice of the southern Beaufort and Chukchi Seas. To access the remote regions of the Arctic Ocean where these bears occurred, the project used two Bell 206 helicopters based on the U.S. Coast Guard icebreaker the Polar Sea. Of 8 polar bears fitted with radiocollars in the spring that were identified as high priority bears, 4 were successfully recaptured during the Polar Sea cruise. Additionally, 2 polar bears that had been

previously fitted with radiocollars by the USGS were recaptured, and 3 new polar bears were recaptured opportunistically, for a total of 17 individuals (including dependent young). The partial success in recapturing high priority polar bears was due in large part to poor ice conditions, which resulted in difficulty finding sea ice that was sufficiently thick to safely capture polar bears. Indeed, all 8 high priority polar bears were sighted, some multiple times, but unsafe ice conditions repeatedly prevented capture. This study will provide information on the physiological and ecological mechanisms available to polar bears to withstand longer ice-free periods, and is expected to help scientists refine models that predict the future status of polar bears in relation to climatic

warming. Data from this study are currently being analyzed by the University of Wyoming (contact Dr. Merav Ben-David, BenDavid@uwyo.edu).

### Fall Coastal Surveys in the Southern Beaufort Sea

The FWS continued aerial surveys of polar bears on the barrier islands and coastline of the Southern Beaufort Sea during the fall of 2009. As in previous years the surveys were conducted to determine the spatial and temporal distribution of polar bears using coastal habitat and barrier islands during the late summer open water period. The surveys are designed to occur during the period between summer sea ice break-up and the beginning of ice formation in autumn.



*Helicopters are used to help determine polar bear distribution on land and barrier islands during open water periods.*

## New Radiotelemetry Tags

Satellite radiotelemetry provides critical information on the movement, ecology, and population dynamics of polar bears. Historically, radiocollars provided the only viable method to obtain satellite relocations of polar bears. While radiocollars remain an important research tool for polar bear studies, they have limitations, including: they cannot be attached to male and growing polar bears in a safe and effective manner and they have the potential to injure the necks of polar bears that gain large amounts of weight. To address these concerns, the FWS and USGS began a new collaboration in 2009 to evaluate non-radiocollar satellite telemetry tags on polar bears, including ear-tag and glue-on tags, and to redesign collars in a way that will further minimize the potential for neck abrasion.

To date, ear-mounted and glue-on tags have been deployed on polar bears in the Southern Beaufort and Chukchi Seas. While these tags do show promise for the collection of short-term data (up to 3 months) they were not successfully retained for a long enough period to obtain information on year-round movement patterns or habitat use. Evaluation of these new tags is ongoing. In 2010, the width of collars deployed on polar bears in the Chukchi and Bering Seas was reduced on the collar and for 2011 we are working to further develop a lighter collar of reduced thickness with material mounted on collar edges that will further reduce the risk of abrasion for bears that gain large amounts of weight in the fall.

Surveys were conducted between Barrow and the Canadian border. Surveys were conducted between August 24 and October 7, 2009 using a Robinson R44

Raven II helicopter. Only 3 of the 4 schedule bi-weekly surveys were completed because of bad weather during one scheduled flight week. The R44

helicopter replaced a fixed wing aircraft used in previous years and proved to be an excellent survey platform. The increased maneuverability made it easier to estimate sex and age class of observed bears, to evaluate body condition using a standardized fatness index, and to read numbers on bears that had been captured earlier in the summer by the USGS. Of the 17 bears captured and marked by USGS and the University of Wyoming in August, we were able to see all of the bears at least once during the surveys. Re-sightings of marked polar bears allowed us to move beyond simple counts, and attempt to estimate the abundance of polar bears onshore during the ice-retreat season, using mark-resight methods.

A maximum of 88 bears, including dependent young, were observed on October 5-7,



*Ear-mounted satellite radiotelemetry tags provide information on movement, ecology, and population dynamics of polar bears.*



*Collecting samples, and measuring polar bears is essential for estimating survival, reproduction, condition, diet, and health.*

2009. The body condition of most of the bears was good (i.e., subjective fatness index of 3) and, similar to 2008, few subadults and yearlings were seen compared to previous surveys. Once again the highest concentrations of polar bears were seen at Cross and Barter Islands; two locations where subsistence-harvested bowhead whale remains are present.

### **Chukchi/Bering Seas Research**

Information on the size, status, and movement patterns of the Alaska-Chukotka polar bear

population are currently needed to guide management under the US-Russia agreement, protect bears under the Endangered Species Act, and to mitigate any potential effects of oil and gas development. Currently, the size of the Chukchi/Bering Seas polar bear population is unknown and there is minimal information on trends in reproduction, survival, or health of bears in the Chukchi sea. A newly formed Commission established under the US-Russia Treaty for the Conservation and Management of Polar Bears will require the best available science to make management decisions. To address the need for

quantitative information in which to base management decisions, the FWS has been capturing and collecting samples and measurements on polar bears that inhabit the Chukchi and Bering Seas since 2008. The objectives of this study are to identify the best methodology for estimating survival rates and population size, evaluate the condition, health, and foraging ecology of bears in the population, examine seasonal distribution and habitat use of polar bears, and to assess these measures in response to environmental changes.

During field work between March and May from 2008 to 2010, 140 bears were captured out on the sea ice between Shishmaref and Cape Lisburne in the Alaskan Chukchi and Bering Seas. Bears were measured and weighed and a variety of biological samples were taken to inform studies on feeding ecology, bear condition, disease, contaminants, and genetics. Over 35 radiocollars have been deployed on adult females during this 3 year study and in 2010, a newly developed radio eartag was deployed on 20 bears. Eartags provide the opportunity to gather movement data on sex/age classes other than adult females who are the only segment of the population in which radiocollars can be deployed. Additionally, the use of radio eartags in combination with radiocollars is being investigated as a means of obtaining survival information on adult females. All collars



*Body mass is an important factor in determining a bear's health.*

deployed include an automatic release device, programmed to release the collar one year after deployment. Radiocollars provide information on the distribution, habitat use, and movement patterns of polar bears in the Chukchi/Bering Seas population. This information will be used to determine how bears may be

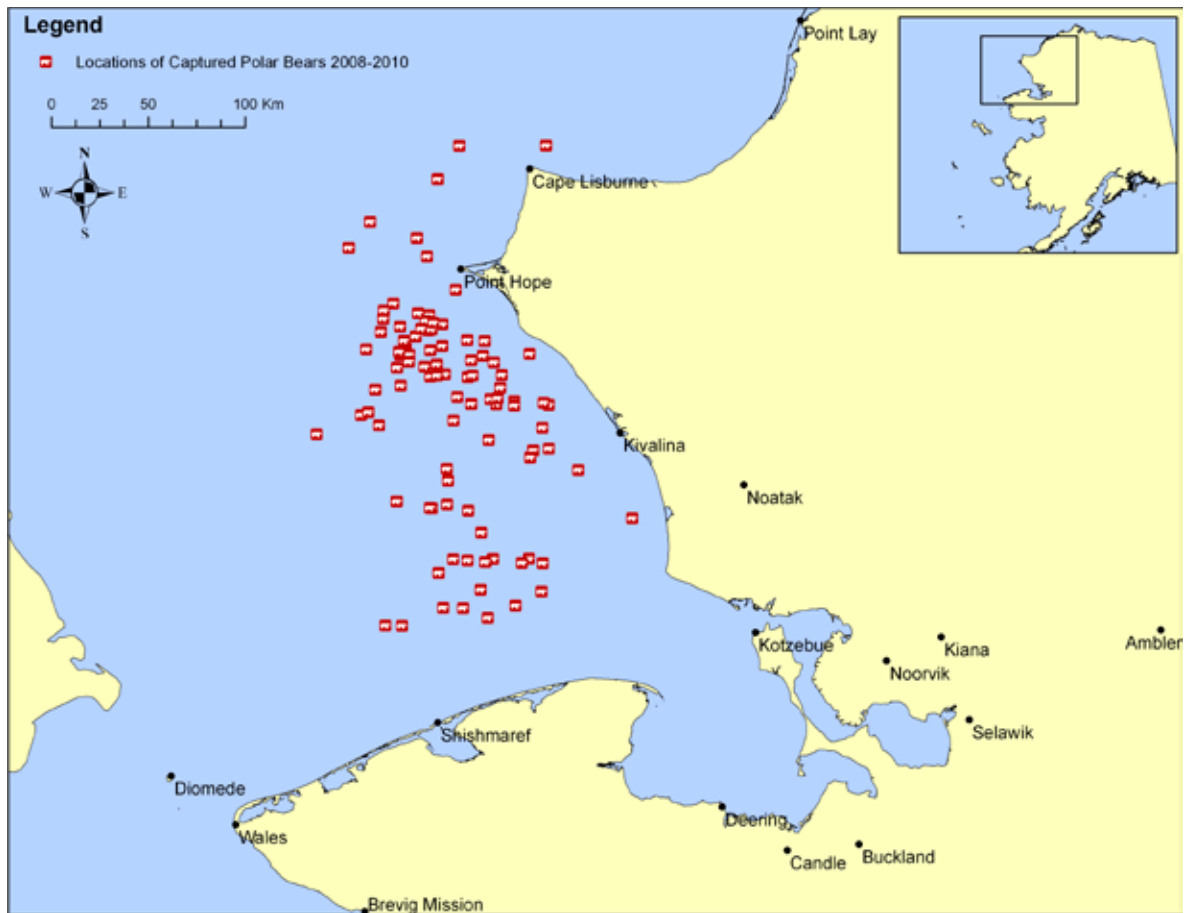
responding to changing sea ice conditions and human activities, identify preferred habitats and observed and projected changes in the availability of those habitats, and to identify the most appropriate time periods and locations for future capture efforts.

Our observations during these 3 capture seasons suggest that the offshore area between Kotzebue and Point Hope is good breeding and feeding grounds for polar bears in the spring. Numerous seals were observed, including bearded and

ringed seal pupping, during the field season. Overall, captured polar bears appeared to be in good nutritional condition. Measures and samples collected between 2008 and 2010 are currently being analyzed to assess the condition and feeding ecology of bears in this region with the intent of providing a summary of results at the next scientific working group meeting under the US-Russia polar bear treaty. The first three years of data will also provide the initial capture history patterns (i.e., when and where individuals were observed over multiple years) necessary to design longer-term population studies, that will provide critically needed information on population size and/or status (i.e., is the population increasing, decreasing or stable).

Sex and age class	Mean Weight (lbs)	Maximum Weight (lbs)	Standard Deviation (lbs)	Sample Size
Female Adult	453	590	67	9
Male Adult	955	1266	248	16
Female Subadult	386	476	97	3
Male Subadult	522	715	162	5
Two-year-old	330	427	86	3
Yearling	181	181	NA	1

*Table 2. Body masses of polar bears captured in the Chukchi Sea by FWS, 26 March – 01 May, 2009. This table excludes two adult males that were not weighed due to weather.*



*Fig. 5 Locations of captured polar bears at time of capture between 2008 and 2010.*

Polar bears are long-lived animals, occurring at low densities in a rapidly changing environment. Therefore multiple years of study are necessary to understand and monitor population status and account for variability among years. The FWS expects to continue polar bear studies in the Chukchi Sea in 2011 and 2012. In addition to our standard annual capture operations off the US coastline, we are currently investigating expanding capture efforts over a broader geographic area within the US and Russia. Additionally, we are working with the North Slope Borough to pair our capture study with a study of local ecological

knowledge on polar bears. We look forward to working with local communities to document local observations, share our study results, and continue to ensure

that our local research activities are compatible with native subsistence activities.



*Sea-ice is critical habitat for polar bear feeding, denning, and breeding.*

### International Meetings and Coordination of the FWS Polar Bear Team

Whitehorse, Canada – Feb 2009 – Canadian Polar Bear Technical Committee meeting (PBTC) – attended by Terry DeBruyn and Tom Evans. This is an annual meeting of researchers, managers, Native representatives, and other stakeholders to discuss research and management of the thirteen subpopulations of polar bears that occur within, or are shared with, Canada.

Tromso, Norway – March 2009 – Polar Bear Range State meetings – attended by Terry DeBruyn 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 Agreement, identify useful polar bear conservation strategies, and discuss mechanisms for enhanced implementation of the Agreement. More information on the Range States meeting can be found at: <http://www.polarbearmeeting.org>.

Copenhagen, Denmark – July 2009 – International Union for the Conservation of Nature (IUCN) polar bear specialist group (PBSG) meeting – attended by Terry DeBruyn, Eric Regehr, and Karyn Rode; the PBSG is a group of international specialists who study polar bears. This meeting includes information sharing and identification of recommendations for critical aspects of polar bear research and management. Each meeting is accompanied by a detailed report that includes a table outlining the status of each of the 19 identified polar bear populations.

Moscow, Russia – Sept 2009 – 1st meeting of the Commission for the Agreement between the United States of America and the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population (Agreement) – attended by Geoffrey Haskett, Rosa Meehan, Terry DeBruyn, and Karyn Rode

Canmore, Alberta - Nov 2009 – Bear-Human Conflicts workshop – attended by Terry DeBruyn, Craig Perham, Susanne Miller, and Jim Wilder

Ottawa, Canada – February 2010 – Canadian Polar Bear Technical Committee (PBTC) meeting– attended by Terry DeBruyn and Eric Regehr. This is an annual meeting of researchers, managers, Native representatives, and other stakeholders to discuss research and management of the thirteen subpopulations of polar bears that occur within, or are shared with, Canada.

Anchorage, Alaska – March 2010 – FWS hosted the scientific working group meeting under the US-Russia polar bear treaty. – attended by Eric Regehr, Karyn Rode, and Terry DeBruyn. The FWS additionally hosted a harvest workshop to discuss ways of standardizing harvest management in the US and Russia.

Svalbard, Norway – April 2010 – Polar Bear/Human Information Management System (PBHIMS) workshop – attended by Jim Wilder and Terry DeBruyn to discuss a polar bear-human interaction database developed for use across all countries that manage polar bears.

North Slope villages, Alaska - Feb 2010 – Chukotkans visit North Slope villages to hold native to native discussion of polar bear and walrus conservation efforts that US & Russia share.

Anchorage, Alaska – June 2010 – FWS hosted the US-Russia polar bear Commission – attended by Geoffrey Haskett, Rosa Meehan, Terry DeBruyn, Eric Regehr, and Karyn Rode. The Commission

decided on a harvest of the Alaska-Chukotka polar bear population to be shared between the US and Russia.

Tuktoyaktuk, Canada – July 2010 – Terry DeBruyn and Eric Regehr attend the Inupiat-Inuvialuit meeting to discuss harvest management of the southern Beaufort Sea population.

Kalinigrad, Russia – October 2010 – Informal meeting of the US-Russia scientific working group to begin to develop a joint research program for the Alaska-Chukotka population - attended by Rosa Meehan, Eric Regehr, and Jim Wilder.

Anchorage, Alaska - October 2010 - FWS hosted a meeting to discuss a polar bear conservation plan with stakeholders - attended by Geoffrey Haskett, LaVerne Smith, Rosa Meehan, Terry DeBruyn, Jim Wilder, Karyn Rode, Thomas Evans, Eric Regehr, Susi Miller, Craig Perham, and Christopher Putnam.



## Meet the Staff of the FWS Polar Bear Program



**Terry DeBruyn**

*is the supervisor of the polar bear program. He identifies and recommends strategies and priorities for US polar bear management and research. Terry also coordinates polar bear management activities within the Alaska region and with other Federal and State agencies, Alaska Native organizations, foreign governments, and private organizations.*



**Karyn Rode**

*is a research biologist studying foraging ecology, diets, and health of Alaska's polar bear populations with particular emphasis on the Chukchi Sea population. She also conducts outreach on polar bear biology and research activities.*



**Eric Regehr**

*is a research biologist specializing in the study of polar bear population dynamics, including harvest management and the effects of sea ice changes on polar bear populations. He also conducts outreach and develops materials to communicate about research activities and results.*

**Thomas Evans**

*has worked as a wildlife biologist in the polar bear program for over 20 years. Tom has specialized in harvest management, contaminants, and more recently with the development of polar bear critical habitat under the Endangered Species Act.*





**Craig Perham**

*handles all polar bear issues related to oil and gas exploration and development. He also provides training to industry and Native villages in techniques to deter bears and minimize bear-human interactions.*



**Susi Miller**

*specializes in studying and managing polar bear-human interactions and conducts outreach. She is a certified firearms and bear safety instructor.*



**Jim Wilder**

*is new to the polar bear program. He works on polar bear Endangered Species Act issues, bear-human conflicts, and polar bear conservation planning efforts.*

**Christopher Putnam**

*is a new addition to the polar bear program. He works on permitting, training and minimizing bear-human interactions through the incidental take program related to oil and gas exploration and development. Christopher joins us after leaving active duty with the U.S. Army. Prior to that he lived and worked as a biologist in Arizona and Southwestern United States.*



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