Testimony of Margaret Williams
Managing Director
Kamchatka/Bering Sea Ecoregion Program
World Wildlife Fund

before the

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U.S. Senate

"Examining Threats and Protections for the Polar Bear"

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Chairwoman Boxer, Ranking Member Inhofe, and Members of the Committee: on behalf of the World Wildlife Fund (WWF), I am pleased to provide you with comments on this very important topic -- the future of polar bears and polar bear habitat, particularly of our polar bear populations here in the United States.

WWF is an international conservation organization with 1.2 million members in the US and over 5 million members worldwide. WWF has been involved in Arctic conservation for over 20 years, and we have offices and field programs in all of the circumpolar Arctic countries.

My own educational and professional background is in conservation biology and policy and for ten years I have been director of WWF's Bering Sea Ecoregion Program, which involves work on both the Alaskan and Russian coasts of this region. In the last several years I have been working closely with Alaska and Russian polar bear biologists and community members to address changes in bear distributions and increasing human-bear interaction, particularly in the Russian Arctic. I am a member of the Council on Foreign Relations and also formerly the chair of WWF's international Arctic team.

Polar bears, the charismatic icon of the polar environment, have long been a focus in WWF's on-the-ground research and conservation projects in the Arctic. Polar bears are an essential part of the Arctic ecosystem: as an apex predator, polar bears also serve as bellweathers for the state of their northern surroundings, an indicator of health for the Arctic.

Polar bears also comprise a central part of Arctic indigenous cultures. For example, Chukchi native people in the Russian Arctic for years practiced ancient rituals and celebrations honoring the polar bear, and today the species remains part of the subsistence cultures of people of Alaska, Greenland and Canada.

Polar bears – and the issue that brings us together today at this hearing -- are also important for their ability to captivate the public's attention. During the public input period for the USFWS' proposed listing of polar bears, hundreds of thousands of comments were generated – a staggering number – indicating the intense interest in the fate of this species.

I. Threats to Polar Bears

Today polar bears face a very serious threat. Analyses recently published by the US Geological Survey show that by mid 21st century, two-thirds of the world's polar bear population could be lost, mainly due to loss of sea ice. As this sea ice habitat decreases, the entire food chain will be affected – from the tiniest plankton to the forage fish, the ringed seal, and the king of the north, the polar bear.

The impacts of global warming on polar bears have been well-documented and are described in World Wildlife Fund's public comments regarding the proposed listing, included as an appendix to this document. In summary, climate change will impact polar bear habitat, polar bear prey, and the reproduction and survival of polar bears. Some of those impacts are as follows:

A. Climate Impacts on Polar Bear Habitat

The most fundamental characteristic of polar bears in relation to their ecology is their utter dependence on sea ice habitats (Derocher et al. 2004). Anything that significantly changes the distribution and abundance, let alone the very existence of sea ice will have profound effects on the persistence of polar bears on Earth. Such habitat loss or fragmentation is well documented to be a primary cause of extinctions (Beissinger 2000, Ceballos and Ehrlich 2002).

Experts agree that the once-characteristic ecotype of the far north is undergoing an unprecedented and accelerating warming trend (ACIA 2004, Serreze et al 2000, Parkinson and Cavalieri 2002, Comiso 2002a, 2002b, 2003), shifting from arctic to subarctic conditions, and in some cases profoundly altering the fundamental biological components that are usually associated with the Arctic realm (e.g. Grebmeier et al. 2006). This consensus confirms what has been known for some time by Native peoples inhabiting this region (e.g. ACIA 2004, WWF *Climate Witness Program* testimony www.panda.org/arctic).

B. Climate Impacts on Polar Bear Prey

Sea ice also is the preferred habitat for polar bears' main prey: ringed and bearded seals (Smith 1980). Polar bears are specialists on these phocid seals, only rarely and opportunistically taking other prey, like walrus, small whales, or other seals (Derocher et al. 2002). Of concern is how accessible prey species will be in an altered sea ice environment. Sea ice is the physical platform

from which polar bears hunt; they only rarely capture prey successfully in open water (Furnell and Oolooyuk 1980). The emerging warmer climate regime is likely to negatively impact polar bears both by reducing the duration, thickness, and extent of available hunting habitat (as described above) and also by reducing populations of these two obligate prey species, which, like polar bears, are sensitive to perturbations in the sea ice environment and related changes in primary productivity (Derocher et al. 2004). In illustration of this, changes in ice characteristics have been documented to have a significant negative effect on population size and recruitment of ringed seals and subsequently of polar bears (Stirling 2002). Thus, predicted and observed changes in its distribution, characteristics, and timing of sea ice certainly have the potential to profoundly and negatively affect the species at the population level (Stirling and Derocher 1993, Derocher et al. 2004).

C. Climate Impacts on Polar Bear Reproduction and Survival

Changes to ice habitats also affect polar bear denning opportunities, ultimately reducing population reproductive success. For pregnant bears that den on land, ice must freeze early enough in the fall to allow them to walk or swim to the coast. As the distance from ice edge to coasts increases, it will become progressively more difficult for them to reach their preferred locations (Derocher et al. 2004). For females that den on multiyear ice rather than stable land, increased drift rates of this habitat could mean longer distances to travel with new cubs to reach the core of their normal home range (Derocher et al. 2004).

Such increased energy expenditure by individual polar bears could result in both lower survival and reproductive rates in the long term (Derocher et al. 2004) by reducing stores of fat tissue, thereby impacting body condition.

D. Other Threats to Polar Bears

1. Oil and Gas Development and Transport

Active oil and gas exploration, extraction, and transportation activities are increasing throughout the Arctic. As bear populations are compromised due to climate-related stress, the increase of offshore oil activities represents a particular concern. Polar bears are sensitive to oiling in the event of a spill (Stirling 1990), and their behaviors can be affected by disturbances related to hydrocarbon development (such as seismic blasting and infrastructure development; Derocher et al. 1998). Currently proposed offshore extraction activities pose the greatest threat to polar bears, especially if a spill occurred near a polar bear denning site (Isaksen et al 1998). Also, spills in frozen or partially frozen Arctic waters are hard to detect and no method has proven effective for clean up in this environment.

Finally, should climate warming lead to an open northern shipping route, the threat of a spill would be presented to more northerly polar bear populations, such as Alaska's bears in the Chukchi Sea. Recent accidents and near-misses in Alaska's Aleutian Islands, such as the grounding of the cargo freighter *Selendang Ayu* in 2004, have demonstrated the challenges in responding to such incidents in remote and rough waters of the north.

2. Pollutants and Disease

Many persistent organic pollutants (POPs), as well as heavy metals and radioactive elements, can reach high levels in polar bears due to their high fat diet and high trophic position (Norstrom et al 1998). Studies have demonstrated that such chemicals can negatively impact endocrine function (Skaare et al. 2001), immune function (Bernhoft et al 2000), and subsequent reproductive success (Derocher et al. 2003). Immune-compromised, not to mention hungry, bears may be more susceptible to disease or parasites. The northern expansion if range of disease organisms and the nearly complete lack of such organisms in polar bears' evolutionary past also make them vulnerable to novel pathogens (Derocher et al. 20004). Finally, environmental pollutants can cause pseudo-hermaphroditism in female bears, as has been observed in Svalbard, further reducing population reproductive rates.

3. Increased Aggressive Human-Bear Interactions

It has been predicted that human-bear interactions would increase as a result of climate-induced changes to polar bear habitat (Stirling and Derocher 1993). There is a documented correlation between date of ice break-up in spring and number of "problem" bears reported in some communities (Stirling et al 1999). More bears on land, especially if they are hungry, can lead to more attacks on humans and, correspondingly, more "defense of life and property" killings of bears. Just this year, in a remote village on Russia's Chukotka Peninsula, a young woman was killed by an unusually aggressive bear; this was the third reported bear shooting in Russia this winter.

4. Illegal Harvest of Polar Bears

Harvesting of polar bears has historically been the main threat to the species, but this has been largely mitigated through various management regimes (Prestrud and Stirling 2002). However, in some parts of the bears' range, poaching is still a problem that can have profound effects on population persistence. For example, the unregulated harvest of Chukchi Sea polar bears in Russia appears to be significant and raises concern about the status of this population. Notably, large numbers of polar bear hides have been offered for sale on the internet in Russia. Although it has not been proven that the source of these hides is Chukotka, we do know this population is vulnerable to illegal hunting. Although actual harvest levels are unknown, an estimated 250-300 polar bears were illegally taken on Russia's Chukotka Peninsula in 2002. Experts believe this harvest was at least twice the level experienced in previous years and likely resulted from the large number of bears that were stranded on land by an early ice retreat (Ovsyanikov 2003). A recent population viability analysis indicated that, even at a harvest level of 180 bears/year, there would likely be a 50% reduction in this population (which is shared with the U.S.) size within 18 years (Schliebe 2003).

II. Protecting the Polar Bear

This section examines protective measures in place domestically and internationally to protect the polar bear, points out our shortcomings, and demonstrates how listing the polar bear under the Endangered Species Act could help the polar bear.

A. Existing Protections

Currently, polar bears in the United States are protected under the Marine Mammal Protection Act ("MMPA"), enacted in 1972. The primary focus of this legislation, with respect to polar bears, has been the management and reporting of the limited legal harvest of polar bears by Alaska Natives. The MMPA also sets the conditions for specific activities in polar bear habitats, such as oil and gas exploration, development, and production. The MMPA protects the right of Alaskan natives to conduct subsistence harvest of polar bears. MMPA regulations played an important role in curbing rampant trophy hunting that was decimating polar bears throughout their range in the Arctic.

Elsewhere in the Arctic, other protective measures are in place. In Russia, polar bears have been included in the Red Data Book of Rare and Endangered Species and important polar bear habitat has been protected. Wrangell Island, known as the "polar bear nursery" for its large concentration of maternity dens, was designated in 1976 as a federally protected strict nature reserve, and surrounded with a 30-mile marine buffer zone. Russia continues to protect polar bear habitat, as evident in the establishment of regional sanctuaries, national parks, and community-managed areas in the Arctic. In Norway, hunting is prohibited and large protected areas have been established around polar bear habitat. In Canada, the species is under consideration for addition to the Species At Risk Act (SARA) list.

There are two international legal instruments to which the US is a party that commit the US government to protecting the polar bear and its habitat. The first is the 1973 International Agreement on the Conservation of Polar Bears. This treaty, like the MMPA, grew out of concern in the 1950s and 1960s about the increase in sport hunting of polar bears and the decline in polar bear populations throughout their range. High numbers of bears were being hunted as trophies for their hides. Those opposed to listing the bear under the ESA correctly point out that today polar bears are more numerous than they were 40 years ago. Throughout the 20th century, across the Arctic, from Canada to Russia, bears were being over-hunted. One scientist estimated that more than 150,000 polar bears had been taken in Eurasia between the late 18th Century and the late 1970s (Stirling, I, 2002). However, action was taken to recover polar bears.

Ironically, considering the State of Alaska's position against listing the polar bear (See "Bearing Up, New York Times editorial by Alaska Governor Sarah Palin, Jan. 5, 2008), the move to protect polar bears 40 years ago was in large part due to the efforts of an Alaskan leader. In 1965 Secretary of Interior Stewart Udall credited Alaska's Senator Bartlett with "awakening the public interest in the preservation of the polar bear" (see attached FWS press release). It was thanks to Senator Bartlett that the first international meeting of polar bear experts was convened – and hosted at the University of Alaska, Fairbanks—to address the problem of declining polar bear populations. Out of this first international event held in September, 1965, grew the Polar Bear Specialist Group (PBSG) (Young and Osherenko 1993). Formed in 1968, the PBSG today is considered the preeminent scientific body regarding polar bears.

Following two more meetings of the new Polar Bear Specialist Group and a series of draft

protocols on protecting polar bears, four nations agreed to meet in Oslo, and representatives of Canada, the US, Norway, and Denmark sign the International Agreement on the Conservation of Polar Bears. (Later the Soviet Union would sign). In 1981 the five range states agree to extend the agreement indefinitely, and today this agreement is still in force.

Most notable for today's discussion is Article II of the Agreement, which states that "*Each Contracting Party shall take appropriate action to protect the ecosystems of which polar bears are a part, with special attention to habitat components, such as denning and feeding sites and migration patterns, and shall manage polar bear populations in accordance with sound conservation practices based on the best available scientific data."*

Further reinforcing this point, Article IV states that *"Each Contracting Party shall enact and enforce such legislation and other measures as may be necessary for the purpose of giving effect to this agreement."* Protecting the polar bear under the Endangered Species Act constitutes one of those necessary measures.

Another international agreement, which was negotiated over many years, is the US-Russia Agreement on the Conservation and Management of the Alaska-Chukotka Polar Bear Population. The agreement was signed by both countries in 2000, then ratified by the US Senate in 2003 and went into effect in 2007. As a preamble to the agreement, both parties affirmed *"that the United States and the Russian Federation have a mutual interest in and responsibility for the conservation of the Alaska-Chukotka polar bear population*" and recognized that "*reliable biological information, including scientific data and traditional knowledge of native people, serves as the basis for development of an effective strategy for the conservation and management of this population*." Article III describes that area as being affected by the treaty as "*the waters and adjacent coastal areas subject to the national jurisdiction of the Contracting Parties in that area of the Chukchi, East Siberian and Bering Seas….*" The US-Russia polar bear agreement requires both countries to protect and sustainably manage the shared population of polar bears, whose home range includes both Russian and Alaskan portions of the Chukchi Sea.

While these treaties represent important milestones in polar bear conservation, there are some shortcomings. For example, there have been few meetings of the Parties since the signing of the treaty. Until the US hosted a meeting in June of 2007, the last conference of the parties had been in 1981. The treaty lacks a mechanism to adequately monitor the effectiveness of its overarching goal, and there is an insufficient connection between the Polar Bear Specialist Group and the Agreement (Bankes and Clark, 2007). Finally, there is currently no range-wide, internationally agreed-upon species action plan.

While the US works with its international partners to strengthen this treaty, it should take a stronger stand by listing the polar bear and activating the necessary measures under the ESA. Today, polar bears face a new threat – climate change – and action is needed just as it was forty years ago.

B. The Next Step in Protecting Polar Bears: Listing Under the ESA

The Endangered Species Act (ESA) was intended by Congress to provide a means to protect endangered and threatened species as well as the ecosystems on which they depend. Listing the polar bear under the ESA requires the federal government to take actions not available under other regulatory mechanisms for the protection of listed species.

For example, if the polar bear is listed, the US Fish and Wildlife Service will be required to identify and protect critical habitat for the polar bear. The Service will also be obligated to develop a recovery plan, which provides a science-based "road map" that guides managers responsible for the species. A recovery plan should include site-specific actions, estimates of time and cost of the recommended measures, and criteria for "de-listing" the species.

Additionally, if the polar bear is listed as threatened, the federal government will be required to identify and designate "critical habitat" for the polar bear. The Endangered Species Act defines "critical habitat" as "specific areas within the geographical area occupied by the species" which contain "physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection. Critical habitat can also include "specific areas outside the geographical area occupied by the species."

Finally, the listing of the polar bear under the ESA will prohibit any federal action from jeopardizing the continued existence of the species, or adversely modifying its critical habitat.

WWF supports the USFWS recommendation to list the polar bear as threatened under the ESA. This position is based on:

1) The preponderance of scientific, peer-reviewed papers and studies on the impacts of climate change to the Arctic sea ice

2) The numerous reports over several years from the Polar Bear Specialists Group indicating concerns about the status of polar bears, and the series of reports by our own federal agency, the US Geological Survey, that two-thirds of the world's polar bears could be lost if current climate trends continue.

3) The legal mandate of the Endangered Species Act to protect a species "threatened" or "endangered" species when any of the following criteria are met:

(1) The present or threatened destruction, modification, or curtailment of its habitat or range;
(2) Over-utilization for commercial, recreational, scientific, or educational purposes;
(3) Disease or predation;
(4) The inadequacy of existing regulatory mechanisms;
(5) Other natural or manmade factors affecting its continued existence.

The volume and gravity of scientific, peer-reviewed papers and studies on the impacts of climate change to the Arctic have increased significantly in the last several years and provide a compelling body of science to justify the listing of the polar bears as threatened under the Endangered Species Act.

In the last two years alone, several major studies – including the Noble Prize-winning report by the Intergovernmental Panel on Climate Change (IPCC, 2007), have been co-authored and peer-

reviewed by hundreds of well-respected scientists that document evidence of global climate change. These experts have reached widespread agreement that (1) climate change is real; (2) human-caused pollution is the main contributing factor; and that (3) the Arctic is one of the regions experiencing climate change most acutely.

One widely accepted scientific study suggests that abrupt reductions in the extent of summer ice are likely to occur over the next few decades, and that near ice-free September conditions may be reached as early as 2040. In December, 2007, Dr. Jay Zwally of NASA predicted that summer sea ice may be gone as early as 2012 (Associated Press 2007).

Besides diminishing sea ice, other impacts in the Arctic that are already being observed include: shrinking glaciers, thawing permafrost, and Arctic "greening" (encroachment of shrubs and trees into tundra ecosystems) validate -- and in many cases -- exceed predictions made regarding temperature trends, reductions to annual sea ice during the summer and winter periods, reductions to multi-year pack ice and reductions to ice thickness.

For several years, polar bear scientists have recognized these changes and have been warning us about the potential impacts to polar bear habitat from climate changed-induced loss of sea ice.

In 2004, Canada's leading polar bear biologists wrote that: "…polar bears are constrained in that the very existence of their habitat is changing and there is limited scope for a northward shift in distribution. Due to the long generation time of polar bears and the current pace of climate warming, we believe it unlikely that polar bears will be able to respond in an evolutionary sense. Given the complexity of the ecosystem dynamics, predictions are uncertain but we conclude that the future persistence of polar bears is tenuous" (Derocher et al., 2004).

In 2005, polar bear biologists from throughout the world recommended that the World Conservation Union (IUCN) reclassify the polar bear from *Least Concern* to *Vulnerable* (one of the categories which describes species that are "threatened with global extinction"), and the following year, IUCN did indeed add the polar bear to this category.

In 2007, scientists of the US Geological Survey produced a series of compelling reports indicating that if global climate trends continue, two-thirds of the world's polar bear populations could be lost. Among those populations that could witness localized extinctions are the Chukchi and Beaufort Sea populations.

The weight of scientific evidence supports the contention that polar bears' habitat is fast disappearing and that predicted individual and population level effects are already occurring. In the two best-studied polar bear populations in the world, the Western Hudson Bay and the Southern Beaufort Sea, we have witnessed population declines that correlate directly with the decline in Arctic Sea ice.

The sad and undeniable truth is that we are rapidly losing the polar bear's most important key to survival – its sea ice habitat. And there is unequivocal evidence for this: federal agencies have documented late summer Arctic sea ice declining by 7.7 percent per decade, and the perennial sea ice area declining up to 9.8 percent per decade since 1978. In some places, the Arctic sea ice has been shown to be thinning by 32 percent or more from the 1960's and 1970's to the

1990's. These figures are presented in peer-reviewed published data to which Alaska scientists had substantial input. So when Alaska government representatives and other opponents to the listing say that the proposed listing is "based on uncertain modeling of possible effects" (Compass, December 18, 2007) it is surprising to biologists and climatologists around the world. The facts are no longer "uncertain" or "possible" – we are seeing the impacts along the Bering Sea coast from Alaska to Russia.

It is clear that the listing of the polar bear as a threatened species is warranted chiefly because of the "threatened destruction, modification, or curtailment" of polar bear habitat or range, i.e. the sea ice. This is the primary Endangered Species Act standard that counsels listing of the polar bear.

Alaska has some of the world's best polar bear scientists, including one of the leading authors of the now-famous US Geological Survey (USGS) study that was released in September 2007. Based on the status of sea ice and polar bears, the USGS report warns that two-thirds of the world's polar bear populations could be lost by 2050. Other peer-reviewed research has shown negative impacts of declining sea ice. In the western Hudson Bay population, which is not "stable" but decreasing, the ice breaks up three weeks earlier than it did 20 years ago. Scientists have recorded nutritionally stressed bears, lower survival in the population, and a 22 percent population decline.

In another dramatic example of the consequences of shrinking sea ice to polar bears, scientists in 2004 found four dead polar bears floating in the ocean 60 miles offshore of northern Alaska, at a time when the polar ice cap had retreated a record 160 miles north of Alaska's coast. This led a marine biology professor at the University of Alaska to state: "*For anyone who has wondered how global warming and reduced sea ice will affect polar bears, the answer is simple – they die."*

C. Potential for Adverse Impacts to Polar Bears and their Habitat

Currently, as the USFWS deliberates over whether to list the polar bear as threatened under the ESA, another federal agency, the Minerals Management Service, is weighing an important decision which could have some significant impacts on polar bear habitat: the conducting of Lease Sale 193, nearly 30 million acres offshore in Alaska's Chukchi Sea, for oil and gas development.

1. The Chukchi Sea: Why It Matters

Until recently, few people in the American public knew where the Chukchi Sea is located, or why it matters. Yet this Arctic body of water, nestled north of the Bering Strait between Russia and Alaska, is one of the world's most productive seas. Fed by nutrient-rich currents from the Bering Sea and the Arctic Ocean, the Chukchi Sea supports a diverse and dynamic web of life. At the base of food chain are prodigious plankton communities that thrive along the ice edge. They, in turn, support ocean bottom shellfish, and crustaceans, and forage fish, which provide important prey for sea ducks, seabirds, walrus, ice seals, whales, and other marine species. These include populations of ringed and bearded seals which provide a high-energy food source for the ultimate predator at the top of this food chain -- the polar bear.

In addition to polar bears, numerous whale species, walrus, seals, birds and fish exist in the Chukchi Sea. For example, bowhead whales, including mothers and calves, migrate through the Chukchi lease sale area. Gray whales summer in the lease sale area, parts of which (e.g. the Hannah Shoal) contain important feeding habitat. Gray whale use of the Chukchi Sea is increasing, likely as a result of changing prey regimes due to climate change.

The Chukchi Sea provides the "main feeding grounds" for walrus, which are a "species of special concern." This is due to "the importance of offshore habitats within the Chukchi, the documented sensitivity of walruses to anthropogenic disturbances, and the significance of walrus hunting to the economy and culture of indigenous communities in Alaska and Chukotka."

The sea is also home to the Stellar and Spectacled Eider, both of which are protected under the Endangered Species Act (ESA). A portion of the Chukchi Sea, Ledyard Bay, is so important to continued survival of the North Slope breeding population of spectacled eider – the majority of which molt in the bay each summer – that it has been designated as critical habitat under the ESA.

2. Leasing in the Chukchi Sea: a Cause for Concern

WWF joins the conservation community in its grave concern over plans by Minerals Management Service (MMS) to conduct Sale 193 in the Chukchi Sea. This concern is based on several factors:

(i) A series of scientific comments provided by numerous federal agency experts who believe that the Chukchi Sea – and another important place for marine life, the North Aleutian Basin (otherwise known as Bristol Bay) -- should not have been included in the 2007-2012 MMS' Five Year Program for oil and gas development of the Outer Continental Shelf.

(ii) Minerals Management Service's own recognition of the high probabilities of oil spills that could result from development of the Chukchi Lease sale area. Specifically, MMS states that there is a 40% chance of a large crude oil spill; 26% for a pipeline spill; and 19% for a platform spill. MMS also estimates that 179 small crude oil spills could occur, totaling 1,214 barrels, or over 50,000 gallons of oil, in this region (Final Environmental Impact Statement for Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea).

(iii) The USFWS in its proposed ruling to list the polar bear stated that although there have been few direct mortalities associated with oil and gas activities, "the greatest concern for future oil and gas development is the effect of an oil spill or discharges in the marine environment impacting polar bears or their habitat."

(iv) To date, there is no proven technology to contain oil spills in the Arctic ice environment. And, unfortunately, there have been thousands of spills already on the North Slope – on land. Over 4,000 spills totaling 1.9 million gallons of toxic substances occurred during a nine-year period, according to the Alaska Department of Environmental Conservation (Alaska Department of Environmental Conservation spill database 1996-2004 (no villages, DEWlines). If this record

is any indication of what is to be expected in terms of oil spills and environmental contamination, offshore development in the Chukchi Sea would be highly irresponsible. Indeed, the infrastructure and preparedness in place to address even small spills in the icy, Arctic environment of the Chukchi Sea do not even exist.

3. Overview of the Threat of Oil and Gas to Polar Bears in the Chukchi Sea

Given the importance of the Chukchi Sea to polar bears and the growing climate-induced threats to this species, WWF is concerned about the proposed oil and gas leasing in the region. These concerns are bolstered by the following facts**:**

(i) A series of scientific comments were provided to MMS by numerous federal agency experts who believe that the Chukchi Sea – and another important place for marine life, the North Aleutian Basin (otherwise known as Bristol Bay) -- should not have been included in the MMS Five Year Plan for the OCS.

For example, in two separate formal written submissions to MMS, the National Marine Fisheries Service (NMFS) raised concerns about MMS's lack of scientific data about how drilling in these Arctic waters could affect wildlife and Native cultures. In comments dated April 10, 2006, NMFS recommended that MMS remove the Chukchi Sea entirely from its proposed 5-year plan due to the critical lack of science:

"The NMFS Alaska Region believes the proposed leasing schedule is unrealistically ambitious and would not allow for necessary environmental research . . . This is particularly true for the North Aleutian Basin (Bristol Bay) and Chukchi Sea proposed sales. ***The NMFS Alaska Region recommends deletion of these areas and initiation of a comprehensive research program to support future plans subsequent to the 2007-2012 plan*** *. . . For instance, MMS states repeatedly that little is known about the distribution, abundance, behavior, and habitat use of marine mammals in the Chukchi Sea, and the few existing studies are very dated. It is extremely important to gain a better understanding of these issues prior to any exploration, leasing, or development. The need for baseline data on the distribution of marine mammals in the Chukchi Sea is particularly urgent" (*NMFS Comments on Department of the Interior's Minerals Management Service (MMS) Draft Proposed Outer Continental Shelf (OCS) Oil and Gas Leasing Program 2007-2012, dated April 10, 2006).

Again on January 30, 2007, NMFS raised its concerns with MMS about MMS' lack of scientific understanding of the potential impacts on polar bears, whales, walrus, sea lions and other wildlife from drilling in the Chukchi Sea. NMFS also pointed out serious issues with potential impacts on Native cultures and traditional ways of life:

"*We remain very concerned about potential impacts to living marine resources and their habitats, fisheries, and subsistence uses of marine resources as a result of lease sales, exploration, and development in the Chukchi Sea Planning Area. The individual and cumulative effects of development in these relatively pristine environments could be significant* . . . [Yet MMS's] data to describe marine mammals within the sale area and their habitat use are lacking or inadequate . . . Some of these [scientific data] gaps are striking given the ecological, social and cultural importance of the marine mammals in question" (Comments of the National Marine

Fisheries Service on the Minerals Management Service (MMS) Draft Environmental Impact Statement for the Chukchi Sea Planning Area, January 30, 2007).

(ii) MMS's EIS recognized that there is a 40% chance of a large crude oil spill; 26% for a pipeline spill; and 19% for a platform spill (Final Environmental Impact Statement for Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea).

MMS admits that 750-1,000 oil spills are likely from its proposal to open-up the Chukchi Sea to oil and gas development (MMS's Environmental Assessment for the Proposed Oil and gas Lease Sale 20, Beaufort Sea Planning Area, p. 97 and MMS's Chukchi Sea Planning Area Oil and Gas Lease Sale 193 and Seismic Surveying Activities Draft Environmental Impact Statement. 2006. http://www.mms.gov/alaska/ref/EIS%20EA/Chukchi_DEIS_193/DEIS_193.htm).

While clearly the overwhelming threat to polar bears today is the loss of sea ice habitat and access to prey, we must consider other sources of stress to the species. Oil and gas development is certainly one of those sources.

a) Oil and Gas as a Threat to Polar Bears

Polar bears are sensitive to oiling in the event of a spill (Stirling 1990), and their behaviors can be affected by disturbances related to hydrocarbon development, such as seismic blasting and infrastructure development (Derocher et al 1998). In 2001, the Polar Bear Specialist Group, in its final proceedings, stated that "Industrial development of oil and gas resources and a consequent increase in shipping are main concerns as future threats for polar bears and their habitats (Isaksen et al 1998).

At its next international meeting in 2005, the IUCN Polar Bear Specialist Group cautioned that "Expansion of winter-time petroleum exploration and development in the Arctic has increased concerns that oil and gas activities could disturb denning polar bears, resulting in premature den abandonment and cub mortality" (IUCN Polar Bear Specialists Group 2005). Sources of disturbance include noise and vibration from exploratory drilling, construction of ice roads and ice pads, aircraft and ground traffic. Although some experiments have been conducted testing noise levels inside artificial dens, the experts concluded that "there is currently a lack of pertinent information that is necessary to determine how industrial noise and vibration effects on polar bears should be mitigated." Currently the petroleum industry is required to avoid a one-mile buffer around known polar bear den sites. However, the PBSG has pointed out that this distance was arbitrarily established and the required buffer can be overridden if the USFWS provides authorization for "incidental taking" (IUCN Polar Bear Specialists Group 2005).

Also, spills in frozen or partially frozen Arctic waters are hard to detect and no method has proven effective for clean up in this environment. Finally, should climate warming lead to an open northern shipping route, the threat of a spill would be presented to more northerly polar bear populations, such as Alaska's bears in the Beaufort and Chukchi Seas alike.

b) Oil and Gas as a Threat to Other Wildlife Species

Oil threatens nearly all arctic wildlife, and as an apex predator, the polar bear can be harmed if other wildlife is oiled. This section summarizes some of the impacts that oil activities can have on other wildlife.

Oil spills can affect wildlife in numerous ways, depending on location, timing, and weather at time of spill, as well as the type of oil spilled. As oil "weathers" it can adhere to wildlife even more. Marine wildlife will not necessarily avoid an oil spill and in fact may be attracted to slicks that can appear like floating food.

Known impacts resulting from oil, usually crude and bunker fuels, include but are not limited to:

- hypothermia in birds by reducing or destroying the insulation and waterproofing properties of their feathers;
- hypothermia in seal pups by reducing or destroying the insulation of their fur;
- marine mammals such as fur seals become easy prey if oil sticks their flippers to their bodies, making it hard for them to escape predators;
- birds sink or drown because oiled feathers weigh more and their feathers cannot trap enough air to keep them buoyant;
- birds lose body weight as their metabolism tries to combat low body temperature;
- marine mammals lose body weight when they can not feed due to contamination of their environment by oil;
- disguise of scent that seal pups and mothers rely on to identify each other, leading to rejection, abandonment and starvation of seal pups;
- damage to the insides of animals and birds bodies, for example by causing ulcers or bleeding in their stomachs if they ingest the oil by accident.

Other types of less direct impacts of spills can be felt by wildlife. For example, oil persisting in the environment or oil that is ingested can cause:

- poisoning of wildlife higher up the food chain if they eat large amounts of other organisms that have taken oil into their tissues;
- interference with breeding by making the animal too ill to breed, interfering with breeding behavior such as a bird sitting on their eggs, or by reducing the number of eggs a bird will lay;
- damage to the airways and lungs of marine mammals;
- damage to and suppression of a marine mammal's immune system, sometimes causing secondary bacterial or fungal infections;
- damage to red blood cells;
- organ damage and failure such as a bird or marine mammal's liver;

- damage to a bird's adrenal tissue which interferes with a bird's ability to maintain blood pressure, and concentration of fluid in its body;
- damage to fish eggs, larvae and young fish;
- interference with a baleen whale's feeding system by tar-like oil, as this type of whale feeds by skimming the surface and filtering out the water.

(From the Australian Maritime Safety Authority: http://www.amsa.gov.au/marine_environment_protection/educational_resources_and_information/teachers/the_effects_of_oil_on_wildlife.asp).

iii) In its proposed ruling to list the polar bear the USFWS stated that although to date there have been few direct mortalities associated with oil and gas activities, "the greatest concern for future oil and gas development is the effect of an oil spill or discharges in the marine environment impacting polar bears or their habitat." (US Fish and Wildlife Service Proposed Rule pp 1079-1080. Federal Register Vol 72, No 5. Jan 9, 2007])

USFWS noted in its ruling that such activity is "increasing as development continues to expand throughout the United States Arctic and internationally, including in polar bear terrestrial and marine habitats**.**

Echoing the cautions expressed by the National Academy of Science when it issued a report on cumulative impacts of oil development on Alaska's north slope, the USFWS noted that "A major spill in the Beaufort sea would have major impacts on polar bears and ringed seals. (US Fish and Wildlife Service Proposed Rule pp 1079-1080. Federal Register Vol 72, No 5. Jan 9, 2007).

iv) To date, there is no proven technology to contain oil spills in the Arctic ice environment.

Of great concern in the Chukchi Sea is the lack of known technology to contain and recover oil spilled in the marine environment. In a report resulting from an expert panel examining cumulative impacts of oil development on the North Slope, the National Academies of Science publication concluded that: "no current cleanup methods remove more than a small fraction of oil spilled in marine waters, especially in the presence of broken ice." (NRC 2003)

This message has been repeated in other parts of the world, as well, such as in Norway. A 2006 study examining methods to recover spilled oil in the Barents Sea pointed to the difficulty of operating in ice conditions, citing the usual long distance to infrastructure; increased viscosity of the oil; migration of the oil in the ice; spillage in pools and channels between ice floes, and even under the ice; difficulty in detection and monitoring spills; and other challenges. (Evers, K, Sørheim, KR and Singsaas, I , 2006).

One year ago, in examining the risks of oil development around Sakhalin Island in Russia, World Wildlife released a report called Offshore Oil Spill Response in Dynamic Sea Ice Conditions. (DeCola et al, 2006) The report is co-authored by a petroleum engineer with extensive experience on Alaska's North Slope; an Alaskan biologist with years of experience in the field of environmental compliance and drilling operations in Alaska, and a founding member of the Oil Spill Prevention and Response within the Prince William Sound Regional Citizens Advisory

Council. The report focuses on the Sea of Ohkotsk, an area where dynamic seas and long ice seasons make it in many ways similar to the Chukchi Sea. The bottom line is: **"mechanical recovery is extremely difficult in ice-infested waters; dispersants are an unproven technology; and in-situ burning has not been demonstrated in actual field tests to be effective in ice coverage above 30% or below 70%."** Where ice concentration exceeds 70%, the ice may provide natural containment, although the sea ice may transport oil great distances so that it is unavailable for response once spring break up occurs. At higher ice concentrations, significant logistical, technical, and safety challenges remain in tracking, assessing, and igniting the oil slicks and recovering burn residues."

Recently, the lack of capacity to respond to and contain spills has been quite evident, even highly developed, technologically sophisticated nations. For example, just last month in the North Sea, a large oil spill occurred in the cold waters of the North Sea, resulting in what may be the second largest spill in Norway's history. The incident occurred during the transfer of crude oil from a loading buoy to a tanker near an offshore oil platform known as Statfjord A and resulted in 4,000 cubic meters being spilled into the sea.

D. Other Concerns: Is the Race for Oil Leading to "Shortcuts" at the Expense of Our Environment?

As noted above, in pursuing the Chukchi Lease Sale 193, MMS disregarded expert opinions of other US agencies. In the past week, information released by the Public Employees for Environmental Responsibility (PEER) points out that MMS has also ignored the advice of its own experts in Alaska in its effort to expedite the permitting processes necessary to conduct lease sales. The agency ignored strong cautions of one biologist who warned about the potential for the introduction of invasive species into Alaskan waters by exploration activities. Rather, the agency "directed its scientists to exclude any assessments of the high likelihood that offshore oil drilling would introduce invasive species into Arctic waters."

"While MMS contends that it has done complete environmental assessments of its Arctic offshore drilling permits, its own specialists – many of whom have left in recent months – vehemently disagree. After he was removed from any role on invasive species issues and his work on native fish populations was altered, [the employee] resigned from MMS in disgust. In addition, MMS chose to ignore state and federal experts who seconded the warnings from MMS staff scientists." (PEER press release).

As the MMS Five Year Program unfolds in Alaska and throughout the US, such reports of internal pressure to expedited development at the cost of the best available science are alarming and must be further investigated.

III. Summary

World Wildlife Fund appreciates the efforts of this Committee and Congress more generally to investigate current and future protections for the polar bear.

In closing, I would like to say that listing this species under the Endangered Species Act is a last

resort, and in essence, signifies a failure of policy and management. We have known for some time of dangers of global warming, and should have acted more expediently to address them. Had we done so, perhaps we would not be faced with the need to list this species. Before we are faced with similarly difficult decisions for other species, we should enact legislation directly dealing with global warming, such as policies that will require the energy sector to rapidly and dramatically reduce CO2 emissions. In the short term, we need to closely scrutinize and prevent all actions that may add further stress to the polar bear, including conducting oil and gas leasing in prime polar bear habitat.

Finally to summarize the points in this testimony:

- The overwhelming body of peer-reviewed science regarding the relationship of declining Arctic sea ice to declines in polar bear populations meets the statutory criteria requiring a listing as threatened under the Endangered Species Act.
- While listing the polar bear would be a very important step, the US will have to also take dramatic steps to decrease CO2 emissions, the source of global warming that is melting polar bear habitat and transforming the Arctic.
- The US has an obligation to heed the science and to uphold its international commitments to protect polar bears and their habitat.
- The US has only two polar bear populations, inhabiting the Beaufort and Chukchi Sea. We must reduce all known sources of stress to these populations, including offshore oil and gas development.
- Global experience tells us that the technology to effectively contain and clean up such spills does not exist at this time and the risks to marine life posed by offshore oil and gas development are too great.
- We must do everything possible to allow for the polar bear to persist, and to leave future generations of Americans with a chance of knowing that polar bears and other Arctic wildlife exist in the wild. Listing the polar bear will be the first step in the right direction.

Thank you for your consideration.

References

ACIA. 2004. Impacts of a warming climate: Arctic climate impact assessment. Cambridge University Press. Available at http://amap.no/acia/.

Alaska Department of Environmental Conservation spill database 1996-2004 (DEWlines).

Associated Press. Ominous Arctic Melt Worries Experts. December 11, 2007

Australian Maritime Safety Authority: http://www.amsa.gov.au/marine_environment_protection/educational_resources_and_information/teachers/the_effects_of_oil_on_wildlife.asp)

Bankes, Nigel and Clark, Douglas. 2007. Time for Action. WWF Arctic Bulletin, No. 1, 2007.

Beissinger, S.R. 2000. Ecological mechanisms of extinction. Proc. Nat. Acad. Sci. U.S.A. 97: 11688-11689.

Ceballos, G. and P.R. Ehrlich. 2002. Mammal population losses and the extinction crisis. Science 296: 904-907.

Comiso, J.C. 2002*a*. Correlation and trend studies of the sea-ice cover and surface temperatures in the Arctic. Ann. Glaciol. 34: 420-428.

Comiso, J.C. 2002*b*. A rapidly declining perennial sea ice cover in the Arctic. Geophys. Res. Lett. 29: 1956 doi 10.1029/2002GL015650.

DeCola, Robertson, T., Fletcher, S. Harvey, S. 2006. Offshore Oil Spill Response in Dynamic Ice Conditions: A Report to WWF on Considerations for the Sakhalin II Project. Alaska, Nuka Research.

Derocher, A.E., N.J. Lunn, and I. Stirling. 2004. Polar bears in a warming climate. Integr. Comp. Biol., 44: 163-176.

Evers, K, Sørheim, KR and Singsaas, I. 2006. Oil Spill Contingency Planning in the Arctic – Recommendations. Arctic Operational Platform (ARCOP). Also available: http://www.arcop.fi/reports/D4224.pdf (See page 37)

Final Environmental Impact Statement for Oil and Gas Lease Sale 193 and Seismic Surveying Activities in the Chukchi Sea ("FEIS") at III-51 (the full FEIS is available at http://www.mms.gov/alaska/ref/EIS%20EA/Chukchi_feis_Sale193/feis_193.htm.)

Furnell, D.J., and D. Oolooyuk. 1980. Polar bear predation on ringed seals in ice-free water. Can. Field-Nat. 94: 88-89.

Grebmeier, J.M., J.E. Overland, S.E. Moore, E.V. Farley, E.C. Carmack, L.W. Cooper, K.E. Frey, J.H. Helle, F.A. McLaughlin, and S.L. McNutt. 2006. A major ecosystem shift in the northern Bering Sea. Science 311: 1461-1464.

Isaksen, K., V. Bakken, and Ø. Wiig. 1998. Potential effects on seabirds and marine mammals of petroleum activity in the northern Barents Sea. Norsk Polarinst. Medd. 154, 66 pp.

IUCN Polar Bear Specialists Group. 2001. Polar Bears: Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group. 223-28 June, 2001, Nuuk, Greenland.

IUCN Polar Bear Specialists Group. 2005. Polar Bears: Proceedings of the 14h Working Meeting of the IUCN/SSC Polar Bear Specialist Group. 20-24 June, 2005, Seattle, Washington.

Minerals Management Service Environmental Assessment for the Proposed Oil and gas Lease Sale 20, Beaufort Sea Planning Area, p. 97 and MMS's Chukchi Sea Planning Area Oil and Gas Lease Sale 193 and Seismic Surveying Activities Draft Environmental Impact Statement. 2006.
http://www.mms.gov/alaska/ref/EIS%20EA/Chukchi_DEIS_193/DEIS_193.htm

National Marine Fisheries Service Comments on the Minerals Management Service (MMS) Draft Environmental Impact Statement for the Chukchi ea Planning Area, January 30, 2007.

National Marine Fisheries Service Comments on Department of the Interior's Minerals Management Service (MMS) Draft Proposed Outer Continental Shelf (OCS) Oil and Gas Leasing Program 2007-2012, dated April 10, 2006.

National Research Council (NRC) (2003). Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope. The National Academies Press. Washington, DC.

Ovsyanikov, N. 2003. Dark Times for Chukotka Polar Bears. WWF Arctic Bulletin 2.03:13-14.

Palin, Sarah. 2008. Bearing Up: Letter to the New York Times. Jan. 5, 2008.

Parkinson, C.L. and D.J. Cavelieri. 2002. A 21 year record of Arctic sea-ice extents and their regional, seasonal and monthly variability and trends. Ann. Glaciol. 34:

Prestrud, P. and I. Stirling. 1994. The International Polar Bear Agreement and the current status of polar bear conservation. Aquat. Mamm. 20. 3: 113-124.

Public Employees for Environmental Responsibility. January 24, 2008. Press Release: INVASIVE SPECIES THREAT FROM ARCTIC OFFSHORE DRILLING IGNORED: Interior Purged Scientific Concerns about Introduction of Exotics in Arctic Waters

Schliebe, S. 2003. Chukchi sea polar bears: A population concern. USFWS Factsheet. U.S. Fish & Wildlife Service, Anchorage, AK.

Serreze, M.C., J.E. Walsh, F.S. Chapin, III, T. Osterkamp, M. Dyurgerov, V. Romanovsky, W.C. Oechel, J. Morison, T. Zhang, and R.G. Barry. 2000. Observational evidence of recent change in the northern high-latitude environment. Clim. Change 46: 159-207.

Smith, T.G. 1980. Polar bear predation of ringed and bearded seals in the land-fast sea ice habitat. Can. J. Zool. 58: 2201-2209.

Stirling, I. 1990. Polar bears and oil: Ecological perspectives. *In* J. R. Geraci and D. J. St. Aubin (eds.), *Sea mammals and oil: confronting the risks*, pp. 223-234. Academic Press, San Diego.

Stirling, I. 2002. Polar bears and seals in the eastern Beaufort Sea and Amundsen Gulf: A synthesis of population trends and ecological relationships over three decades. Arctic 55: 59-76.

Stirling, I. And A.E. Derocher. 1993. Possible impacts of climatic warming on polar bears. Arctic 46: 240-245.

US Fish and Wildlife Service Proposed Rule pp 1079-1080. Federal Register Vol 72, No 5. Jan 9, 2007

Young, O and Osherenko, G (eds.): Polar Politics: Creating International Environmental Regimes. 1993. Cornell University

Attachments

Facts and Fallacies about Polar Bears: Polar Bear Listing – Dispelling Fallacies with Facts

WWF Comments to the Fish and Wildlife Service on the Proposed Listing of the Polar Bear April 10, 2006

WWF Comments to the Fish and Wildlife Service on the Proposed Listing of the Polar Bear April 1, 2007

WWF Comments to the Fish and Wildlife Service on the Proposed Listing of the Polar Bear October 22, 2007 [Comment Period Reopened]

1965 USFWS Press Release: "Five-Nation Conference on Polar Bears Scheduled for September in Alaska"