

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Sixteenth meeting of the Conference of the Parties
Bangkok (Thailand), 3-14 March 2013

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Transfer from Appendix II to Appendix I of *Ursus maritimus* in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, paragraph C) ii): A marked decline in the population size in the wild, which has been inferred or projected on the basis of a decrease in area of habitat and a decrease in quality of habitat.

B. Proponent

United States of America*

C. Supporting statement

1. Taxonomy

- | | | | | | | | | | | | | | | | | |
|------------|--|---|----------|------------|---------|--------------------------|----------|---------------|------------|---------|---------|---------|----------|-----------|------------|-------|
| 1.1 | Class: | Mammalia | | | | | | | | | | | | | | |
| 1.2 | Order: | Carnivora | | | | | | | | | | | | | | |
| 1.3 | Family: | Ursidae | | | | | | | | | | | | | | |
| 1.4 | Genus, species or subspecies, including author and year: <i>Ursus maritimus</i> (Phipps, 1774) | | | | | | | | | | | | | | | |
| 1.5 | Scientific synonyms: | <i>Thalarctos maritimus</i> | | | | | | | | | | | | | | |
| 1.6 | Common names: | <table style="border-collapse: collapse; margin-left: 20px;"> <tr><td>English:</td><td>Polar bear</td></tr> <tr><td>French:</td><td>Ours blanc, Ours polaire</td></tr> <tr><td>Russian:</td><td>Bélyj medvédj</td></tr> <tr><td>Norwegian:</td><td>Isbjorn</td></tr> <tr><td>Danish:</td><td>Isbjorn</td></tr> <tr><td>Spanish:</td><td>Oso polar</td></tr> <tr><td>Inuktitut:</td><td>Nanoq</td></tr> </table> | English: | Polar bear | French: | Ours blanc, Ours polaire | Russian: | Bélyj medvédj | Norwegian: | Isbjorn | Danish: | Isbjorn | Spanish: | Oso polar | Inuktitut: | Nanoq |
| English: | Polar bear | | | | | | | | | | | | | | | |
| French: | Ours blanc, Ours polaire | | | | | | | | | | | | | | | |
| Russian: | Bélyj medvédj | | | | | | | | | | | | | | | |
| Norwegian: | Isbjorn | | | | | | | | | | | | | | | |
| Danish: | Isbjorn | | | | | | | | | | | | | | | |
| Spanish: | Oso polar | | | | | | | | | | | | | | | |
| Inuktitut: | Nanoq | | | | | | | | | | | | | | | |
| 1.7 | Code numbers: | A-112.002.006.003 | | | | | | | | | | | | | | |

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

2. Overview

Article II of the Convention text provides that Appendix I shall include all species threatened with extinction which are or may be affected by trade. The polar bear is affected by trade within the context of CITES. According to the Polar Bear Specialist Group (PBSG, Obbard et al. 2010), about 800 polar bears are harvested annually for primarily subsistence purposes. Of these, during the period 2001–2010, approximately 400-500 polar bears were exported/re-exported annually by the several range States (see Section 6). Most of these items came from wild polar bears. In addition, most specimens originated from Canada.

The available information indicates that polar bears are threatened with extinction in accordance with biological criteria in Resolution Conf. 9.24 (Rev. CoP15), Annex 1, paragraph C) ii), due to a marked decline in the population size in the wild, which has been inferred or projected on the basis of a decrease in area of habitat and a decrease in quality of habitat.

Polar bears exist entirely in the circumpolar Arctic sea-ice environment within five range States: Canada, Denmark (Greenland), Norway, Russian Federation, and the United States (DeMaster and Stirling 1981; UNEP-WCMC 2009). Polar bears are completely dependent on sea-ice, their habitat, which they use for hunting prey, reproduction and movement (Stirling 1998, 2006). Sea-ice has been reduced by 8 percent in the past 30 years alone, while summer sea-ice has been reduced by 15-20 percent (ACIA 2004b; Johannessen 2008). An additional decline of 10-50 percent of annual average sea-ice extent is predicted by 2100 (IPCC 2007). A half dozen climate models, the best at predicting observed changes in sea-ice to date, predict the complete loss of summer sea-ice in the Arctic in about 30 years (Amstrup et al. 2007; Kerr 2009; but also see DeWeaver 2007 and Durner et al. 2007 about model uncertainty). In some locations where sea-ice already completely disappears in summer — for example, the Canadian Arctic islands and Svalbard, northern Alaska and Russian Chukotka — use of land by polar bears is increasing (Schliebe et al. 2006). The amount of time on land is critical because polar bears are not able to capture normal prey items and are more likely to be killed by human hunters (Stirling and Derocher 2007). Some experts have concluded that polar bears will not survive due to the complete loss of summer sea-ice (ACIA 2004a; ACIA 2004b; Derocher et al. 2004; Amstrup et al. 2007; Stirling and Derocher 2007; Amstrup et al. 2009).

Sea-ice changes will likely negatively impact polar bears by increasing energetic demands of seeking prey. Remaining members of many populations will be redistributed, at least seasonally, into terrestrial or offshore habitats with marginal values for feeding, and increasing levels of negative bear-human interactions. Increasing nutritional stress will coincide with exposure to numerous other potential stressors. Polar bears in some regions already are demonstrating reduced physical condition, reduced reproductive success, and increased mortality. As changes in habitat become more severe and seasonal rates of change more rapid, catastrophic mortality events that have yet to be realized on a large scale are expected to occur.

The decrease in polar bear habitat – sea-ice -- exacerbates all other potential threats to polar bear, including but not limited to, utilization and trade, disease or predation, contaminants, ecotourism, and shipping (see Section 5). Therefore, a precautionary approach, which includes polar bears in CITES Appendix I, is necessary to ensure that primarily commercial trade does not compound the threats posed to the species by loss of habitat.

3. Species characteristics

3.1 Distribution

The polar bear is found in the circumpolar Arctic marine environments of Canada (Manitoba, Newfoundland, Labrador, Nunavut, Northwest Territories, Quebec, Yukon Territory, Ontario), Denmark (Greenland), Norway (Svalbard), Russian Federation [North European Russia, Siberia, Chukotka, Sakha (Yakutia)], and United States (Alaska) (Figure 1; Amstrup 2003:587; Schliebe et al. 2006:10–12; Gunderson 2009).

3.2 Habitat

Polar bear habitat is sea-ice occurring in the circumpolar Arctic marine environment including coastlines, and shallow and open seas. Polar bears occur most commonly on the annual ice over the continental shelf and inter-island archipelagos that surround the polar basin (Schliebe et al. 2006). Their range is limited by the southern extent of sea-ice (NatureServe 2008). Polar bears hunt throughout the year from sea-ice, but in those areas where sea-ice is absent during part of the year, they are forced to live on land and must fast using stored fat reserves (Schliebe et al. 2006). Because their principal habitat is the sea-ice surface rather than adjacent land masses, they are classified as marine mammals (Amstrup 2003:587).

3.3 Biological characteristics

Polar bears are the largest of the bear species, and the largest extant species in the Order Carnivora (DeMaster and Stirling 1981; Amstrup 2003:588). Adult males reach their maximum size at 8-14 years old; they measure 240-260 cm total length and usually weigh 400-600 kg, but some large males can weigh more than 800 kg. Adult females are smaller than males and reach adulthood at 5-6 years when they weigh 150-250 kg (Amstrup 2003; Derocher et al. 2005; Taylor et al. 2008a,b). Polar bears have a comparatively longer neck and smaller head than other bears (Stirling 1998, 2006). The skin itself is black (Amstrup 2003). Their feet are large, oar-like, and covered with fur on the underside (Stirling 1998, 2006). Their claws are shorter and more curved than those of brown bears (*Ursus arctos*) and larger and heavier than claws of black bears (*Ursus americanus*; Amstrup 2003). Research into the relationship between changes in polar bear body size and shape within the context of environmental contaminants is underway (Gill 2009; Pertoldi et al. 2009).

Maximum life span is about 25 years for males and 30 years for females (Amstrup 2003:599). Age at first reproduction is 4-5 years for females and 8-10 years for males. Breeding occurs March-June, embryo implantation is delayed until autumn, and birth is believed to occur in November-January. Cubs are born in snow dens which are excavated by pregnant females located primarily on or along the coastline, but also within 10-20 km, or on fast sea-ice (Amstrup 2003:596). Mortality of cubs is high, sometimes exceeding 70 percent. Maternal dens are occupied by females for 5-6 months, during which time females subsist on stored fat. Average litter size is less than two. Cubs, altricial at birth, are usually dependent on their mothers until they reach 2.5 years of age, but in less-productive areas they may stay with their mothers for up to 4.5 years (Amstrup 2003:588; Rode et al. 2007). Females normally reproduce every 3 years. A low reproductive rate, high cub mortality, and a long generation time contribute to the low reproductive potential of the species (Amstrup and Durner 1995; Schliebe et al. 2006).

Polar bears do not wander aimlessly on the ice, nor are they carried passively with the ocean currents (Amstrup 2003:592-593). Rather, linear movements and activity areas are very large compared to those of most terrestrial mammals (Bergen et al. 2007). Movement rates of > 4 km/hr and > 50 km/day have been observed. Annual activity areas by 75 females in the Beaufort Sea area, for example, were approximately 149,000 km², but ranged up to 597,000 km² (Amstrup 2003:593; Amstrup et al. 2000).

3.4 Morphological characteristics

Bears (Family Ursidae; three genera with eight species) are large mammals with a big head and thick neck, small eyes, rounded ears, and no facial vibrissae (Garshelis 2009:448; Krause et al. 2008). They have muscular bodies with stout legs, large paws, and a short tail. The genus *Ursus* has four species (*arctos*, *americanus*, *thibetanus*, and *maritimus*; Wilson and Reeder 2005:586-590). The polar bear taxon is not subdivided into subspecies. The body of a polar bear typically is stocky, but lacks a shoulder hump exhibited by *arctos* (DeMaster and Stirling 1981:1). Polar bears have a longer neck and smaller head than other ursids (Stirling 1998, 2006).

3.5 Role of the species in its ecosystem

Polar bears are the apex predator in the Arctic and the keystone species in their ecosystem (Amstrup 2003:591; NatureServe 2006; Schliebe et al. 2008). The main prey of polar bears is ringed seals (*Phoca hispida*) and, to a lesser extent, bearded seals (*Erignathus barbatus*; Amstrup 2003:591-592; DFO 2009). They also prey occasionally upon other locally available mammals, including seals and whales, as well as polar bear cubs. On land they may consume large ungulates, as well as birds. Polar bears are known to scavenge on whale carcasses, as well as eat berries, grass and kelp. As apex predators, loss of polar bears would have significant consequences to their ecosystem (ACIA 2004b; Polar Bear International 2009).

4. Status and trends

4.1 Habitat trends

Arctic sea-ice extent typically is greatest during the month of March (late Arctic winter). The 1979–2000 average for maximum sea-ice extent was 15.86 million km², while the actual value for March 2012 was 15.24 million km² (NSIDC 2009, 2012). Arctic sea-ice extent typically is least during the month of September (late Arctic summer). The 1979–2000 average for minimum sea-ice extent was 6.70 million km², while the actual value for 16 September 2012 was 3.41 million km² (NSIDC 2012). This was the lowest seasonal minimum extent in the satellite record since 1979 and reinforces the long-term downward trend in Arctic ice extent (Figure 2; Stroeve et al. 2007). An additional decline of 10-50 percent of annual average sea-ice extent is predicted by 2100 (IPCC 2007). Sea-ice thickness in the Arctic region is also declining (Kwok and Rothrock 2009). A half dozen climate models, the best at predicting observed changes in sea-ice to date, predict the complete loss of summer sea-ice in the Arctic in about 30 years (Figure 3; Amstrup et al. 2007; Kerr 2009; but also see DeWeaver 2007 and Durner et al. 2007 about model uncertainty). In some locations, sea-ice already completely disappears in summer (for example, the Canadian Arctic islands and Svalbard, northern Alaska, and Russian Chukotka; Schliebe et al. 2006).

4.2 Population size

There are presently believed to be between 20,000 and 25,000 polar bears in 19 putative populations (Table 1; Obbard et al. 2010). While the overall population size estimate has varied little over the past 15 years, individual population estimates have become more precise (see progression of population size estimates in, for example, IUCN/SSC PBSG 1999; Lunn et al. 2002; Obbard et al. 2007; Regehr et al. 2007; Stirling et al. 2007). In 1993, for example, the total population estimate was 21,470–28,370 individuals (Wiig et al. 1995:24). A 20th polar bear population may occur in the central polar basin (Amstrup 2003:593).

4.3 Population structure

Polar bears are categorized into several age classes. While the proportion of individuals in each class varies according to the circumstances of the subpopulation, adult males (age 6 years and above) constitute about 12–18% of the subpopulation, adult females about 17–26%, and cubs of the year, yearlings, and 2-year old collectively constitute about 26–32% (DeMaster and Stirling 1981; see also: Hensel and Sorensen, Jr. 1980; Lentfer et al. 1980; Kolenosky et al. 1994). More recently, Regehr et al. (2010) determined that survival and breeding of polar bears in the southern Beaufort Sea decreased in relation to decreased sea-ice. Taylor et al. (2008) also characterized the Kane Basin subpopulation, including sex classes (42.6% males and 57.4% females), average natality (cubs per adult female; 0.63), and age at which 50% of the females had produced their first litter (6.2 years). Taken collectively, the population structure parameters suggested that the Kane Basin population was severely over-harvested during the period 1992–1997.

Adult males are generally solitary, while adult females travel with their cubs until they are about 2.3 years of age (Amstrup 2003:599). Polar bears are known to aggregate seasonally at some locations, such as Churchill (Mulvaney 2009). The sex ratio is roughly equal (Stirling 1998, 2006). Population genetic analyses from Hudson Bay, Canada, suggest a high level of gene flow among polar bear management units (Crompton et al. 2008). Predicted changes in the distribution and

duration of sea-ice in Hudson Bay, however, suggest that gene flow among these clusters may be reduced in the future. For most polar bear populations, information is largely unavailable on polar bear population size and structure, distribution, habitat use, and survival and breeding rates, but new technology, such as global positioning systems, increasingly are being incorporated into polar bear research (e.g., Marques et al. 2006).

4.4 Population trends

While rangewide population data are not available, polar bear numbers likely were at a minimum during the late 1960s and early 1970s. At that time, hunting – both commercial and subsistence -- was widespread and largely unregulated (IUCN 1970, 1972; U.S. Department of the Interior and The University of Alaska 1966). Given those circumstances, species experts and range States worked together and developed the 1973 Agreement on the Conservation of Polar Bears and Their Habitat (Obbard et al. 2010:1 and 219–220). Since that time, the conservation status of the species has largely improved along with stable or increasing population trends in many regions.

Given the extreme nature of the environmental conditions where the polar bear occurs, it is very difficult to characterize accurately the population status or trends (Derocher et al. 1998; Hunter et al. 2007; DeGange 2008). Over the past 30+ years, however, many field studies have enhanced our knowledge of polar bear population trends (e.g., Andersen et al. 2008; Aars et al. 2009). The overall number of polar bears today, based on this research, probably is decreasing throughout their range, but some populations are stable while another is increasing in number (NatureServe 2008; Schliebe et al. 2006; Schliebe et al. 2008; Aars et al. 2006; IUCN/SSC PBSG 2009a,b,c; Obbard et al. 2010), as follows (Table 1):

- Increasing (M'Clintock Channel),
- Stable (Gulf of Boothia, Northern Beaufort Sea, and Southern Hudson Bay),
- Declining (Baffin Bay, Chukchi Sea, Davis Strait, Kane Basin, Lancaster Sound, Norwegian Bay, Southern Beaufort Sea, and Western Hudson Bay), and
- Data deficient (Arctic Basin, Barents Sea, East Greenland, Foxe Basin, Kara Sea, Laptev Sea, and Viscount Melville Sound)

Over the years, however, the current trend or status of the 19 subpopulations, as evaluated by the PBSG, in general has deteriorated (Table 2). In 1993 (Wiig et al. 1995), for example, 13 subpopulations were reported as stable or stationary, while 2 were characterized as decreasing or possibly decreasing. By 2010 (Obbard et al. 2010), 1 subpopulation was characterized as increasing or possibly increasing, 3 as stable or stationary, 8 as decreasing or possibly decreasing, and 7 as unknown or data deficient; see above).

Especially troubling is the lack of current polar bear population data. Only 8 of the 19 subpopulations have been surveyed and evaluated by the PBSG since 2000 (no published updates since 2007; Table 2). Of the remaining 11 subpopulations, 4 have not been surveyed ever (no date or unknown), while another 7 have not been evaluated since the 1990s (e.g., Viscount Melville in 1992, Laptev Sea in 1993, and Foxe Basin in 1994).

In 2008, the IUCN listed the polar bear as Vulnerable citing criterion A3c based on a suspected population reduction of >30% within three generations (45 years) due to decline in area of occupancy, extent of occurrence and habitat quality (Schliebe et al. 2008). Some experts have concluded that polar bears will not survive due to the complete loss of summer sea-ice (ACIA 2004a; ACIA 2004b; Derocher et al. 2004; Amstrup et al. 2007; Amstrup et al. 2009).

4.5 Geographic trends

Polar bears are distributed throughout the circumpolar basin with the southern extent of the distribution limited by the extent of Arctic sea-ice. Because they derive their sustenance from the sea, the distribution of polar bears in most areas changes with the seasonal extent of sea-ice cover (Amstrup 2003:587).

5. Threats

Under CITES, a species may be considered to be threatened with extinction and meet the biological criteria for inclusion in Appendix I if it can be shown to be experiencing a decrease in area of habitat or a decrease in quality of habitat. Polar bear habitat is both decreasing in area and quality [Biological criterion C ii)], and is projected to continue through the 21st century (Durner et al. 2009). The decrease in polar bear habitat exacerbates all other potential threats, including but not limited to, utilization and trade (see Section 6), disease or predation, contaminants, ecotourism, and shipping.

5.1 Habitat area and quality

Polar bears have evolved in a sea-ice environment that serves as an essential platform from which they obtain prey and meet other life functions (Service 2008d:28275). As we indicated above in Section 4, status and trends for polar bear habitat and populations are not positive.

Polar bears currently are exposed to a rapidly changing sea-ice platform, and in many regions of the Arctic already are being affected by these changes. While other species may respond to warming climates by shifting their distribution northward, polar bears cannot shift significantly northward, their physiology has a limited capacity to tolerate warm temperatures, and the warming climate is rapidly altering their habitat (Derocher et al. 2004). The long generation time and low reproductive rate of polar bears, and the rapid pace of sea-ice loss, means that polar bears are not expected to be able to adapt in an evolutionary sense (Service 2008d:28239). Sea-ice changes are projected to continue through the 21st century and positive feedbacks are expected to amplify changes in the arctic which will hasten sea-ice retreat. These factors likely will negatively impact polar bears by increasing energetic demands of seeking prey. Remaining members of many populations will be redistributed, at least seasonally, into terrestrial or offshore habitats with marginal values for feeding, and increasing levels of negative bear-human interactions. Increasing nutritional stress will coincide with exposure to numerous other potential stressors. Polar bears in some regions already are demonstrating reduced physical condition, reduced reproductive success, and increased mortality. As changes in habitat become more severe and seasonal rates of change more rapid, catastrophic mortality events that have yet to be realized on a large scale are expected to occur. Observations of drownings and starved animals may be a prelude to such events. These changes will in time occur throughout the world-wide range of polar bears. Ultimately, these interrelated factors will result in range-wide population declines (Stirling and Derocher 2007). Populations in different ecoregions will experience different rates of change and timing of impacts. Within the foreseeable future, however, all ecoregions will be affected.

Based on the information available on polar bear habitat (i.e., the current, inferred or projected effects of various factors, including climate change, on the area or quality of polar bear habitat will lead to a marked decline in the population size in the wild), the United States has determined that the polar bear meets the biological criteria for Appendix I [see: Annex 1; Conf. 9.24 (Rev. CoP15) *Criteria for amendment of Appendices I and II*].

5.2 Other Potential Threats

Utilization and Trade. The available scientific and commercial information on the utilization of polar bears for commercial, recreational, scientific or educational purposes indicates that harvest, increased bear-human interaction levels, defense-of-life take, illegal take, and take associated with scientific research live-capture programs are occurring for several populations (see Section 6, below). Loss of habitat will likely exacerbate the effects of utilization and trade habitat loss in several populations. In addition, polar bear mortality from harvest and negative bear-human interactions may in the future approach unsustainable levels for several populations, especially those experiencing nutritional stress or declining population numbers as a consequence of habitat change. The Polar Bear Specialist Group (Aars et al. 2006:57), through resolution (Res#1-2009: Effects of global warming on polar bears; IUCN/SSC PBSG 2009m), urged that a precautionary approach be instituted when setting harvest limits in a warming Arctic environment. Continued efforts are necessary to ensure that harvest or other forms of removal do not exceed sustainable levels.

Disease or predation. Disease pathogen titers are present in polar bears; however, no epizootic outbreaks have been detected (see Service 2008:28280–28281 and references included therein). For example, *Toxoplasma gondii* (a parasitic protozoan that causes toxoplasmosis in many mammals, but with varying impact and unknown severity in polar bears) has been reported from Svalbard (significantly higher prevalence in males than in females) and has been linked to oceanic vessel traffic in the Arctic, as well as the redistribution of the parasite from further south to the Arctic (Jensen et al. 2010). In addition, forms of intra-specific stress and cannibalism are known to be manifested by bear species, including polar bears (Derocher et al. 2004; COSEWIC 2008). For polar bears, there is no indication that these stressors have operated to influence population levels in the past. While cannibalism is an indication of intra-specific stress (Stirling 2011), we do not believe, however, that it has resulted in population level effects.

The available scientific information indicates that disease and predation (including intra-specific predation) do not threaten the species throughout its range. Potential for disease outbreaks, an increased possibility of pathogen exposure from changed diet or the occurrence of new pathogens that have moved northward with a warming environment, and increased mortality from cannibalism all warrant continued monitoring and may become more significant threat factors in the future for polar bear populations experiencing nutritional stress or declining population numbers.

Contaminants, Ecotourism, and Shipping. A recent study suggests that polar bears may be affected by mercury and polychlorinated biphenyls in the Southern Beaufort Sea (Knott et al. 2011). In general, however, contaminant concentrations are not presently thought to have population level effects on most polar bear populations (Service 2008:28288–28292 and references included therein). Increased exposure to contaminants, however, has the potential to operate in concert with other factors, such as nutritional stress from loss or degradation of the sea-ice habitat or decreased prey availability and accessibility, to lower recruitment and survival rates that ultimately would have negative population level effects. Increasing levels of ecotourism and shipping may lead to greater impacts on polar bears (Andersen and Aars 2008). The potential extent of impact is related to changing sea-ice conditions and resulting changes to polar bear distribution. These factors, particularly contaminants and shipping, may become more significant threats in the future for polar bear populations experiencing nutritional stress brought on by sea-ice and environmental changes (Service 2008d:28280).

6. Utilization and trade

6.1 National utilization

The principle national uses of polar bears in the United States, Canada, and Greenland are for subsistence purposes. Most polar bears are killed by indigenous people during hunts that have an important cultural role (IUCN/SSC PBSG 2009b). Human subsistence uses of polar bears include consumption of meat and use of hides in the construction of clothing such as mittens, boots (mukluks), fur ruffs for parkas, fur pants, and creation of handicraft items (Schliebe et al. 2006). Indigenous people also sell polar bear hides, skulls, and handicrafts made from polar bears. In Norway, the commercial, subsistence, or sport hunting of polar bears is prohibited (IUCN/SSC PBSG 2009k). In the Russian Federation, a program, based on harvest quotas, leading to the legal subsistence harvest of polar bears by Native people in the Chukotka region is being developed jointly with the United States (US Russia Polar Bear Treaty; Service 2011; also see Section 7.2).

6.2 Legal trade

Based on the UNEP-WCMC CITES Trade Database for the period 2001–2010 (10 years; for all Terms, Units, Sources, and Purposes combined; UNEP-WCMC 2012), approximately 32,000 polar bear items were reported as gross exports in international trade by the CITES Parties. Most of these items, however, were small parts, products, and derivatives that are difficult to link or relate back to the actual number of polar bears taken from the wild.

Restricting the items under consideration to “relatively large” polar bear items from the five range States, however, provides a clearer idea of the actual number of polar bears taken from the wild and traded internationally. During the period 2001–2010 (UNEP-WCMC 2012), a total of 6,798 relatively large polar bear items were reported as gross exports by the several range States, as follows: 4,114 Skins (60.5%), 1,441 Skulls, 867 Trophies, 294 Bodies, and 82 Live Bears. Based on separate data compiled by the PBSG, these items represent about 700–800 polar bears (ca. 3–4%) harvested annually worldwide of the total population size of 20,000–25,000 (Obbard et al. 2010:62–67; Table 1).

By range State during the same 2001–2010 period (UNEP-WCMC 2012), 5,386 (79.2%) of the 6,798 relatively large polar bear items were exported by Canada, 827 by Greenland, 327 by Norway, 176 by Denmark (Denmark + Greenland = 1,003 items), 76 by the Russian Federation, and 6 by the United States (Table 3).

On an annual basis during the same 2001–2010 period (UNEP-WCMC 2012), the annual average number of relatively large polar bear items was 679.8 items (individuals; range: 307 [2010]–1,333 [2007]). In terms of whole polar bears (combining skins and trophies), about 400–500 polar bears are traded annually. While gross exports were relatively steady at 527–831 items or individuals annually during the period 2001–2006, gross exports have declined steadily from 1,333 to 307 items or individuals annually beginning in 2007 and ending in 2010. Harvest data from the Chukchi/Bering Sea population shared between the United States and the Russian Federation suggests that 1/3 of the harvested polar bears could be females while 2/3 could be males (Service 2012).

6.3 Parts and derivatives in trade

Polar bears are traded in a wide variety of forms, including live animals, processed and unprocessed body parts (e.g., skin pieces, claws, teeth, carvings, meat, hides, skins, and trophies), and biological specimens used for research. Given the large size of the polar bear versus the small sizes of many of these items (for example, claws or teeth), a total count of items is uninformative when attempting to determine the approximate number of individual polar bears in trade. Furthermore, many parts and derivatives are exported and re-exported as they are converted into finished products (for example, trophies). This process may involve more than one country and may occur over more than 1 calendar year, thus potentially inflating and misrepresenting the overall trade in polar bears. In addition, because the polar bear is listed in Appendix II, items that qualify as personal effects, such as handicrafts, do not require CITES export permits by the Parties that recognize the CITES personal effects exemption and will be under-represented in the UNEP-WCMC CITES Trade Database.

6.4 Illegal trade

According to UNEP-WCMC (2012), a total of 528 items were reported as confiscated or seized during the period 2001–2010. These items were generally small polar bear parts, such as derivatives (62.9% of items), teeth (13.4%), and skin pieces (7.2%; Table 4). It should also be noted that most Parties do not report seizures in their CITES Annual Reports).

Poaching of polar bears is not thought to be a major concern throughout most of the polar bear’s range (IUCN/SSC PBSG 2009b). However, there are concerns about high levels of poaching in the Chukchi/Bering Sea population in Russia (Belikov 1998; Belikov et al. 2002,2010), where several hundred bears may be killed illegally each year (Angliss and Lodge 2004; Angliss and Outlaw 2008).

6.5 Actual or potential trade impacts

The most obvious impact of trade on polar bears is the direct removal of live individuals from the population. According to the PBSG (Obbard et al. 2010), approximately 800 polar bears are removed annually from the 19 subpopulations (estimated total population size of 20,000–25,000

individuals). Based on information from Canada (Lunn et al. 2010), Russian Federation (Belikov et al. 2010), and United States (Service 2010a,b), on average about 1/3 (= 33.3%) of the harvested polar bears are adult females. Beginning at the age of 5–6 years, adult females produce litters of about two cubs every 2–3 years for about 25–30 years (Gunderson 2009). This is approximately equivalent to an average annual rate of reproduction of 0.274 female cubs per adult female (DeMaster and Stirling 1981:2).

Recognizing the high likelihood of overharvesting shared polar bear populations due to communication and cooperation issues, several range States have initiated joint management and research agreements to limit actual or potential negative harvest and trade impacts:

- Agreement between the Government of the United States of America and the Government of the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population.—This 2000 agreement between the United States and the Russian Federation seeks to enhance the polar bear population the Alaska-Chukotka polar bear population (Chukchi Sea).
- Inuvialuit-Inupiat Polar Bear Management Agreement in the Southern Beaufort Sea.—This 1988 agreement between the United States and Canada seeks to enhance the polar bear population of Southern Beaufort Sea.
- Memorandum of Understanding between the Government of Canada, the Government of Nunavut, and the Government of Greenland for the Conservation and Management of Polar Bear Populations.—This 2008 agreement between Canada, Nunavut, and Greenland seeks to enhance polar bear populations in Kane Bay and Baffin Bay.

In response to public concerns about potential harvest and trade impacts in Canada, the Nunavut Wildlife Management Board in 2011 invited the PBSG to comment on a proposal to increase the total allowable harvest for the Western Hudson Bay (WH) polar bear subpopulation in the Nunavut Settlement Area. The proposal to increase the harvest from 8 bears to 21 bears for the 2011–2012 harvest season was based in large measure on Inuit Traditional Knowledge. In summary, the PBSG opposed the proposed increase (Vongraven 2011). In support of this conclusion, the PBSG specifically indicated that the current total allowable harvest was not sustainable, an increased harvest would be less sustainable, there was no evidence that other polar bear management agencies had been consulted or supported this proposal, and that the proposal perhaps was premature in that the results of two large polar bear research projects were about to be published. Despite this position, on October 28, 2011, Nunavut made the decision to increase the total allowable harvest in WH from 8 to 21 bears (IUCN/SSC PBSG 2011: News Archive).

7. Legal instruments

7.0 General

Regulatory mechanisms directed specifically at managing many of the potential threats to polar bears, such as overharvest or disturbance, exist in all of the countries where the species occurs, as well as between (bilateral and multilateral) range countries (Service 2008d:28281; see also Section 5.4, above, as well as Marine Mammal Commission 2004:77–81). In the case of the polar bear, national and international legal instruments are also guided by members of an advisory group.

IUCN/SSC Polar Bear Specialist Group: The Polar Bear Specialist Group (PBSG), formed in 1968, is not a regulatory authority nor do they provide any regulatory mechanisms. The PBSG, however, contributed significantly to the negotiation and development of the Agreement on the Conservation of Polar Bears (1973 Polar Bear Agreement), and has been instrumental in monitoring the worldwide status of polar bear populations. The PBSG operates under the IUCN Species Survival Commission (SSC) and meets periodically at 3-to-5 year intervals. At the 2009 PBSG working group meeting, there were status reviews for all populations given by their respective jurisdictions, as well as presentations on the status, management, and research of polar bears from all five nations (for additional information, see: Obbard et al. 2010).

Regulatory Mechanisms to Limit Sea-ice Loss: Although there are regulatory mechanisms for managing many of the potential threats to polar bears in all countries where the species occurs, as well as among range countries through bilateral and multilateral agreements, there are no known regulatory mechanisms that are directly and effectively addressing reductions in sea-ice habitat at this time (Service 2008:28287).

7.1 National

Canada:

(a) Canada's constitutional arrangement specifies that the Provinces and Territories have the authority to manage terrestrial wildlife, including the polar bear, which is not defined as a marine mammal in Canada. The Canadian Federal Government is responsible for CITES-related programs and provides both technical and administrative support to the Provinces and Territories. Regulated hunting by aboriginal people is permissible under Provincial and Territorial statutes. Traditional knowledge about polar bears is being incorporated into some management plans (Tyrrell 2006). For additional information, see Service (2008d:28215), COSEWIC (2002, 2008), Environment Canada (2009), Government of Canada (2009), Lunn et al. (2010), Peacock et al. (2009), and Peacock et al. (2011).

(b) The Species at Risk Act (SARA; implemented in 2004) provides a number of protections for wildlife species placed on the List of Wildlife Species at Risk, or "Schedule 1." Currently, under SARA, the polar bear is designated as a Schedule 3 species, "Species of Special Concern." A Schedule 3 listing under SARA does not include protection measures, whereas a Schedule 1 listing under SARA – being considered at this time for the polar bear (Lunn et al. 2010) -- may include protection measures for the polar bear and its habitat.

(c) There are several intra-jurisdiction polar bear agreements within Canada (Service 2008:28285–28286). Polar bears occur in 13 populations that lie within or are shared with the Northwest Territories or Nunavut. Although Canada manages each of the 13 populations of polar bears as separate units, there is a complex sharing of responsibilities (Government of Nunavut 2005; Thiemann et al. 2008; Peacock et al. 2011). While wildlife management has been delegated to the Provincial and Territorial Governments, the Federal Government (the Canadian Wildlife Service of Environment Canada) has an active research program and is involved in management of wildlife population shared with other jurisdictions, especially one with other nations.

Denmark (Greenland):

Under terms of the Greenland Home Rule (1979), the Government of Greenland is responsible for management of all renewable resources, including polar bears (Service 2008:28287). Greenland is also responsible for providing scientific data for sound management of polar bear populations and for compliance with terms of the 1973 Polar Bear Agreement. Trophy hunting of polar bears is prohibited, but there are specific regulations that apply to traditional take within several protected areas. A preliminary meeting between Greenland Home Rule Government and the Government of Canada (with the participation of the Government of Nunavut) has occurred to discuss management of shared populations. For additional information, see: Born (2009) and Jessen (2009).

Canada and Greenland now have an Memorandum of Understanding: Memorandum of Understanding between the Government of Canada, the Government of Nunavut, and the Government of Greenland for the Conservation and Management of Polar Bear Populations; signed in October 2009.

Norway:

(a) According to the Svalbard Treaty of February 9, 1920, Norway exercises full and unlimited sovereignty over the Svalbard Archipelago. Polar bears have complete protection from harvest

under the Svalbard Treaty (Derocher et al. 2002b:75; cited by Service 2008:28287). Under Norwegian Game Law, all game, including polar bears, is protected unless otherwise stated (Derocher et al. 2002b:75; cited by Service 2008:28287). The main responsibility for the administration of Svalbard lies with the Norwegian Ministry of Justice.

(b) Approximately 65% of the land area of Svalbard is totally protected, including all major regions of denning by female polar bears (Service 2008:28287). Norway claims control of waters out to 200 nautical miles (nm; 370.4 km) and regards polar bears as protected within this area.

(c) In 2001, the Norwegian Parliament passed a new Environmental Act for Svalbard (Service 2008:28287). This act was designed to ensure that wildlife, including polar bears, is protected, although hunting of some species is allowed. The only permitted take of polar bears is for defense of life.

(d) In 2003, Svalbard designated six new protected areas, including the main polar bear denning area at Kong Karls Land (Service 2008:28287). For additional information, see: Directorate for Nature Management (2009a,b) and Gerland (2009).

Russian Federation:

(a) Polar bears are listed in the second issue of the Red Data Book of the Russian Federation (cited by Service 2008:28286). The Red Data Book establishes official policy for protection and restoration of rare and endangered species in Russia. The main government body responsible for management of species in the Red Data Book is the Ministry of Natural Resources of the Russian Federation. Russia Regional Committees of Natural Resources are responsible for managing polar bear populations consistent with Federal legislation (Belikov et al. 2002:86).

(b) In the Russian Arctic, Natural Protected Areas (NPAs) have been established to protect marine and associated terrestrial ecosystems, including polar bear habitats (Service 2008:28286–28287). In May 2001, the Federal law “Concerning territories of traditional use of nature by small indigenous peoples of North, Siberia, and Far East of the Russian Federation” was passed and established areas for traditional use of nature (TTUN) within NPAs and other protected areas. The law “Concerning natural protected territories” (1995) regulates protection of plants and animals on the TTUNs. For additional information, see: Government of the Russian Federation (2009).

United States:

(a) Marine Mammal Protection Act of 1972, as amended (MMPA). The MMPA was enacted to protect and conserve marine mammals, including the polar bear, so that they continue to be significant functioning elements of the ecosystem of which they are a part (Service 2008d:28283–28284; National Marine Fisheries Service 1972, 1974; Service 1972). The MMPA places an emphasis on habitat and ecosystem protection. This act established a general moratorium on the taking and importing of marine mammals and a number of prohibitions, which are subject to a number of exceptions. Some of these exceptions include take for scientific purposes, for purposes of public display, for subsistence use by Alaska Natives, and unintentional incidental take coincident with conducting otherwise lawful activities. The interim final rule published in the Federal Register on May 15, 2008 (Service 2008e) addresses the ESA listing within the context of the MMPA. The Secretaries of Commerce and of the Interior have primary responsibility for implementing the MMPA.

(b) U.S. Endangered Species Act of 1973 (Act or ESA): On May 15, 2008, the polar bear was listed as threatened under this act meaning it is at risk of becoming an endangered species throughout all or a significant portion of its range (Service 2008d). The law provides civil and criminal penalties for actions that kill or injure bears and bars Federal agencies from taking actions that are likely to jeopardize the species or adversely modify its critical habitat. A special rule, also published on May 15, 2008, reconciled the several prohibitions and exemptions under the Act, CITES, and the MMPA (Service 2008e).

(c) Other domestic legislation: The **Outer Continental Shelf Lands Act of 1953 (OCSLA)** established Federal jurisdiction over submerged lands on the Outer Continental Shelf (OCS) seaward of the State boundaries (3 mile limit; 4.8 km). Implemented by the Minerals Management Service (MMS) of the Department of the Interior, the OCSLA does not itself regulate the take of polar bears, although through consistency determinations it helps to ensure that OCS projects do not adversely impact polar bears or their habitats. The **Oil Pollution Act of 1990** established new requirements and extensively amended the Federal Water Pollution Control Act to provide enhanced capabilities for oil spill response and natural resource damage assessment by the Service. The **Coastal Zone Management Act of 1972 (CZMA)** was enacted to “preserve, protect, develop, and where possible, to restore or enhance the resources of the Nation’s coastal zone” (Service 2008:28284). This act provides for the submission of a State program subject to Federal approval and requires that Federal actions be conducted in a manner consistent with the State’s CZMA plan to the maximum extent practicable. This act applies to polar bear habitats of northern and western Alaska, but does not itself regulate the take of polar bears. The **Alaska National Interest Lands Conservation Act of 1980 (ANILCA)** created or expanded National Parks and National Wildlife Refuges (NWR) in Alaska, including the expansion of the Arctic National Wildlife Refuge. One of the establishing purposes of the Arctic NWR is to conserve polar bears. The ANILCA does not itself regulate the take of polar bears, although through its designations it has provided recognition of, and various levels of protection for, polar bear habitat. The **Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA)** was enacted in part to “prevent or strictly limit the dumping into ocean waters of any material that would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities” (Service 2008:28285).

For a more-detailed discussion of existing national laws that are relevant to polar bears or their habitat, see Service (2008d:28281–28288), as well as Haskett (2009) and Hepa (2009).

7.2 International

The polar bear is listed in Appendix II of CITES under the higher taxon listing of Ursidae. All range states are Parties to CITES and none has taken a reservation on this species listing.

Agreement on the Conservation of Polar Bears (1973): Canada, Denmark (on behalf of Greenland), Norway, Russian Federation, and the United States are parties to the Agreement on the Conservation of Polar Bears (1973 Polar Bear Agreement). The 1973 Polar Bear Agreement requires that all parties take appropriate action to protect the ecosystem of which polar bears are a part, with special attention to habitat components such as denning and feeding sites and migration patterns, and to manage polar bear populations in accordance with sound conservation practices based on the best scientific data.

Inupiat-Inuvialuit Agreement for the Management of Polar Bears of the Southern Beaufort Sea (1988): In January 1988, the Inuvialuit of Canada and the Inupiat of Alaska (United States), groups that both harvest polar bears for cultural and subsistence purposes, signed a management agreement for polar bears of the southern Beaufort Sea. This agreement, based on the understanding that the two groups harvested animals from a single population shared across the international boundary, provides a joint responsibility for conservation and harvest practices (Treseder and Carpenter 1989:4; Nageak et al. 1991:341; cited by Service 2008:28282). Provisions of the agreement include annual quotas, hunting seasons, and protection of dens.

Agreement between the United States of America and the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population: On October 16, 2000, the United States and the Russian Federation signed a bilateral agreement for the conservation and management of polar bear populations shared between the two countries. Article 7 of the Bilateral Agreement provides that “[n]othing in this Agreement is intended to authorize the taking of polar bears for commercial purposes, or to limit the ability of native people, consistent with the domestic law of the Contracting Parties, to create, sell, and use traditional articles associated with native harvest of polar bears.” It also commits the parties to the conservation of important polar bear habitats. The first meeting of the U.S-Russia Polar Bear

Commission took place in Moscow on 23–25 September, 2009. The Commission developed the structure of a Scientific Working Group, which shall assist the Commission in resolving questions pertaining to the protection and management of the Alaska-Chukotka polar bear population.

For a more-detailed discussion of existing international laws that are relevant to polar bears or their habitat, see U.S. Department of the Interior (Service 2008d:28281–28288) and IUCN/SSC SSC PBSG (2009d,k; see: <http://pbsg.npolar.no/en/agreements/>).

8. Species management

8.1 Management measures [see Derocher and Stirling (2009) for a general summary, as well as IUCN/SSC PBSG 2009d].

In Canada, polar bears are managed by the Federal Government, three Territories and four Provinces which form management committees (Lunn et al. 2010; Peacock et al. 2009). With the signing of northern land claims and treaties, Canada has also integrated local aboriginal participation, values, and knowledge (Peacock et al. 2011). The quotas for each jurisdiction are based on recommendations of the committees. There are co-management boards for most polar bear populations which allow management changes to be based not only on scientific data, but also traditional knowledge. Sport hunted polar bears taken as trophies come from a quota assigned to a community so that the community receives the share of financial returns that is not retained by booking agents. Polar bear management measures were most recently assessed in 2008 (COSEWIC 2008). Through treaties, the aboriginal public in Canada also participates in polar bear management (Peacock et al. 2011). For additional information about polar bear research and management in Canada, see Lunn et al. (2010) and Obbard et al. (2010).

In Greenland, a quota system came into force on January 1, 2006 (prior to this there were no hunting quotas) (Schliebe et al. 2006). Beginning on April 1, 2008, Greenland placed a temporary ban on the export of polar bear products due to a negative non-detriment finding (Born and Ugarte 2007; Government of Greenland 2008). For additional information about polar bear research and management in Greenland, see Winther Hansen (2010) and Born et al. (2010).

Norway has banned polar bear take in the Svalbard Archipelago since 1973 (Aars et al. 2006). For additional information about polar bear research and management in Norway, see Vongraven et al. (2010) and Aars et al. (2010).

In the Russian Federation, polar bear hunting has been banned since 1956 (implemented in 1957; Belikov et al. 2002). The recent Alaska-Chukotka agreement between Russian Federation and the United States will allow for legalized hunting by native peoples in the Russian Federation under a managed quota system that will begin in 2013. For additional information about polar bear research and management in the Russian Federation, see Belikov et al. (2010) and Ovsyanikov (2010).

In the United States (Alaska), a conservation plan for the polar bear was initiated in 1994 (Service 1994). In 2007 at Shepherdstown, West Virginia, representatives of the several range states met to discuss polar bear conservation and management issues (Service 2007b). Native subsistence hunting today is allowed. The Southern Beaufort Sea population is managed through the I/I and has a quota 70—reduced from 80 in 2010 by the I/I Joint Commission in response to polar bear population changes. In addition, the Alaska-Chukotka population is managed through the US-Russian Federation bilateral agreement with a quota set in June 2010 but which will not be implemented until 2013. For additional about polar bear research and management in the United States, see DeBruyn et al. (2010) and Durner et al. (2010).

For a complete discussion of existing management measures that are relevant to polar bears or their habitat, see Service (2008d:28212–28234).

8.2 Population monitoring

The quality and quantity of population data are highly variable between polar bear populations. Of the 19 known populations of polar bears, population monitoring – according to the IUCN/SSC PBSG is insufficient to inform expert opinions on population status or current trends (“data deficient”; Obbard et al. 2010; Table 2). In some areas population surveys occur so infrequently – for example, 10–15 years – that there is concern that unsustainable harvest levels could occur and remain undetected before the next survey is made (IUCN/SSC PBSG 2005, 2009b).

8.3 Control measures

8.3.1 International

The 1973 Agreement on the Conservation of Polar Bears prohibits the commercial use of skins and other items of value resulting from taking for “conservation purposes” or to “prevent serious disturbance to the management of other living resources.” Bilateral agreements between Canada and Greenland and between Canada and the United States allow subsistence harvests under quota systems. The harvest for subsistence purposes of polar bear specimens from the Chukchi/Bering Sea population is addressed under the Agreement between the United States and the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population.

8.3.2 Domestic

See Section 7.1 for information on legal instruments as they relate to controls and polar bear species management in the range States aimed at ensuring sustainable take from the wild.

8.4 Captive breeding and artificial propagation

According to UNEP-WCMC (2012), about 180 live polar bears were exported/re-exported overall during the period 2001–2010. Of these, 101 originated in the wild (Source code = W), 53 were captive-bred animals (Source code = C), 25 were born in captivity (F1; Source code = F), and 3 were pre-Convention.

8.5 Habitat conservation

The threat with the most serious impact on polar bear habitat is climatic warming which is causing a reduction in sea-ice (ACIA 2004a; ACIA 2004b; Derocher et al. 2004). There are no known regulatory mechanisms in place at the national or international level that directly and effectively address the primary threat to polar bears—the rangewide loss of sea-ice habitat due to greenhouse gas emissions (Amstrup et al. 2010; Hunter et al. 2010; Service 2008d:28293; Stirling and DeRocher 2012).

8.6 Safeguards

Several organizations (primarily State and Federal) and ongoing activities provide an opportunity to safeguard species management for polar bears. The IUCN SSC Polar Bear Specialist Group (regularly scheduled meetings as well as outreach instruments), for example, as well as bilateral agreements and multilateral agreements (discussed elsewhere in this proposal) have regularly scheduled meetings between the Parties to discuss polar bear conservation and management issues. At the local or community level, polar bear populations are monitored for a variety of reasons, including for ecotourism activities and subsistence hunting. Several conservation non-governmental organizations also promote the conservation status of the polar bear through their support of plant and wildlife research projects and environmental education activities. Collectively, these mechanisms help safeguard polar bear populations.

9. Information on similar species

With the exception of the Spirit or Kermode bear, a white-phased black bear (Hedrick and Ritland 2011; Snyder Sachs 2010), the polar bear is the only all-white bear (except for the eyes, as well as black lips, skin, nose, and footpads). (Polar bear fur actually is transparent and reflects the color of the surrounding ice and snow.) Furthermore, there are no other large, all-white mammals (except for albino individuals). It is reasonable to expect an informed non-expert to be able to make a firm identification of essentially complete or intact specimens (e.g., rugs and trophies), while parts and derivatives of polar bears in trade (e.g., claws, teeth, and skulls) may be confused with those of other bears.

For additional information about similar species, see: Family Ursidae General Notes (CITES Identification Manual; Code A-112.002.000.001; Macey et al. 1982); Family Ursidae Identification Aids: Bear Heads (Code A-112.002.000.002); Bear Feet (Code A-112.002.000.003); Bear Claws (Code A-112.002.000.004); Bear Pelts (Code A-112.002.000.005); Bear Skulls (Code A-112.002.000.006)

10. Consultations

Five range States: Canada, Denmark (Greenland), Norway, Russian Federation, and the United States. By a combination of fax, electronic mail, and letter (overnight mail; courier), the Government of the United States on May 1, 2012, submitted preliminary consultation letters to the CITES Management and Scientific Authorities of all five range States. At that time, we indicated that – while still undecided – the Service, on behalf of the U.S. Government, was contacting them to consult on a possible Appendix I proposal for submission to CoP16.

Canada: By letter dated June 15, 2012, the Government of Canada provided extensive and detailed information about the conservation status of the polar bear in that country and the several management programs that are being implemented there. Canada specifically called attention to recent ongoing harvest management issues at Western Hudson Bay, Southern Hudson Bay, and Baffin Bay, as well as the importance of traditional knowledge and co-management of polar bears in that country. In conclusion, Canadian officials remain convinced that polar bears do not merit inclusion in CITES Appendix I.

Denmark (Greenland): By letter dated June 18, 2012, the Government of Greenland (Greenland Institute of Natural Resources; CITES Scientific Authority) provided information about ongoing polar bear projects that were underway in that country. They provided information about polar bear populations under their jurisdiction, as well as new legislation and regulations that restrict polar bear harvests. Based on the information provided, as well as the results of these ongoing management and monitoring programs, Greenland did not see any need to transfer polar bears from Appendix II to I.

Norway: By electronic mail dated June 14, 2012, the Government of Norway provided information about the conservation status of polar bears in that country and the several management programs that are being implemented there. In Norway, the polar bear is fully protected and is the subject of ongoing research and management. Illegal harvest and trade are not a problem, and polar bear populations have increased since the 1973 Agreement. In conclusion, Norwegian officials suggested that the species was adequately protected under CITES and that no further action was indicated.

Russian Federation: By letter dated September 28, 2012, the Russian Federation (Director, Department of International Cooperation) indicated that they would support a proposal by the United States to transfer the polar bear to Appendix I at CoP16.

11. Additional remarks

None.

12. References

Aars, J., N.J. Lunn, and A.E. Derocher (comps. and eds.). 2006. Polar bears: Proceedings of the 14th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 20–24 June 2005, Seattle, Washington, USA. Occasional Paper of the IUCN Species Survival Commission No. 32, Gland. 189 pp.

- Aars, J., A.E. Derocher, B.M. Jenssen, M. Andersen, and Ø. Wiig. 2010. Polar Bear Research in Norway, 2005–2009. Pp. 157–163 in *Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June–3 July 2009, Copenhagen, Denmark* (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Aars, J., T.A. Marques, S.T. Buckland, M. Andersen, S. Belikov, A. Boltunov, and Ø. Wiig. 2009. Estimating the Barents Sea polar bear subpopulation size. *Marine Mammal Science* 25(1):35–52.
- ACIA (Arctic Climate Impact Assessment). 2004a. Impacts of a warming Arctic. Cambridge University Press, Cambridge. [Author: S.J. Hassol] Available on the internet at: <http://amap.no/acia/>. Also available at: <http://www.acia.uaf.edu/pages/scientific.html>. Downloaded on October 11, 2009.
- ACIA (Arctic Climate Impact Assessment). 2004b. Impacts of a warming Arctic: Highlights. Cambridge University Press, Cambridge. [Author: S.J. Hassol] Available on the internet at: <http://amap.no/acia/>. Also available at: <http://www.acia.uaf.edu/pages/scientific.html>. Downloaded on October 11, 2009.
- Amstrup, S.C. 2003. Polar bear, *Ursus maritimus*. Pp. 587–610 in: G.A. Feldhamer, B.C. Thompson, and J. A. Chapman (eds.), *Wild Mammals of North America Biology, Management, and Conservation*. The Johns Hopkins University Press, Baltimore, Maryland, USA.
- Amstrup, S.C., and G.M. Durner. 1995. Survival rates of radio-collared female polar bears and their dependent young. *Canadian Journal of Zoology* 73:1312–1322.
- Amstrup, S.C., B.G. Marcot, and D.C. Douglas. 2007. Forecasting the range-wide status of polar bears at selected times in the 21st Century. Administrative Report. U.S. Geological Survey, Reston. 126 pp.
- Amstrup, S.C. G. Durner, I. Stirling, N.J. Lunn, and F. Messier. 2000. Movement and distribution of polar bears in the Beaufort Sea. *Canadian Journal of Zoology* 78:948–966.
- Amstrup, S.C., E.T. DeWeaver, D.C. Douglas, B.G. Marcot, G.M. Durner, C.M. Bitz, and D.A. Bailey. 2010. Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence. *Nature* 468:955–960.
- Amstrup, S.C., H. Caswell, E. DeWeaver, I. Stirling, D.C. Douglas, B.G. Marcot, and C.M. Hunter. 2009. Rebuttal of “Polar bear population forecasts: A public-policy forecasting audit.” *Interfaces* 39(4):353–369.
- Andersen, M., and J. Aars. 2008. Short-term behavioural response of polar bears (*Ursus maritimus*) to snowmobile disturbance. *Polar Biology* 31:501–507.
- Andersen, M., A.E. Derocher, Ø. Wiig, and J. Aars. 2008. Movements of two Svalbard polar bears recorded using geographical positioning system satellite transmitters. *Polar Biology* (DOI 10.1007/s00300-008-0428-x).
- Angliss, R.P., and K. L. Lodge. 2004. Alaska marine mammal stock assessments, 2003. United States Department of Commerce, NOAA Technical Memorandum, NMFS-AFSC-144, 230 pp. On-line. Available on the internet at: <http://www.nmfs.noaa.gov/pr/pdfs/sars/ak2003.pdf>.
- Angliss, R.P., and R.B. Outlaw. 2008. Alaska marine mammal stock assessments, 2007. United States Department of Commerce, NOAA Technical Memorandum, NMFS-AFSC-180, 252 pp. On-line. Available on the internet at: <http://www.nmfs.noaa.gov/pr/pdfs/sars/ak2007.pdf>.
- Belikov, S.E., and A.N. Boltunov. 1998. Problems with conservation and sustainable use of polar bears in the Russian Arctic. *Ursus* 10:119–127.
- Belikov, S.E., A.N. Boltunov, N.G. Ovsianikov, and G.I. Belchanskiy. 2002. Polar bear research and management in Russia 1997–2000. Page 85–88 in: N.J. Lunn, S. Schliebe and E.W. Born (eds), *Polar Bears: Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 23–28 June*

- 2001, Nuuk, Greenland. On-line. Available on the internet at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG13proc.pdf>.
- Belikov, S., A. Boltunov, and N. Ovshyanikov. 2010. Strategy for Polar Bear Conservation in the Russian Federation. Ministry of Natural Resources and Environment of the Russian Federation. Available online at: http://belyemedvedi.ru/downloads/documents/pb_strategy_eng.pdf; accessed on September 24, 2010.
- Bergen, S., G.M. Durner, D.C. Douglas, and S.C. Amstrup. 2007. Predicting movements of female polar bears between summer ice foraging habitats and terrestrial denning habitats of Alaska in the 21st Century: Proposed methodology and pilot assessment. Administrative Report. U.S. Geological Survey, Reston. 20 pp.
- Born, E. 2009. Studies of polar bears in Greenland. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Born, E., and F. Ugarte. 2007. Standing non-detriment findings for exports from Greenland of products derived from polar bear (*Ursus maritimus*). (Letter dated October 31, 2007; reference: 4000–0101). Greenland Institute of Natural Resources, CITES Scientific Authority, Nuuk, Greenland. 6 pp. Available on the internet at: http://www.natur.gl/UserFiles/File/Raadgivning/2007/2007-10_naturinstituttet_NDF%20polar%20bear_07_references.pdf. Downloaded on October 10, 2009.
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2002. COSEWIC assessment and update status report on the polar bear *Ursus maritimus* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. 27 pp.
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2008. COSEWIC assessment and update status report on the polar bear *Ursus maritimus* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa. 75 pp.
- Crompton, A.E., M.E. Obbard, S.D. Petersen, and P.J. Wilson. 2008. Population genetic structure in polar bears (*Ursus maritimus*) from Hudson Bay, Canada: Implications of future climate change. *Biological Conservation* 141:2528–2539.
- DeGange, A.R. 2008. Ice, climate change, and wildlife research in Alaska. *Endangered Species Bulletin* (Fall 2008):16–19.
- DeMaster, D.P., and I. Stirling. 1981. *Ursus maritimus*. *Mammalian Species*, No. 145, 7 pp.
- Derocher, A., and I. Stirling. 2009. Conservation status, monitoring, and information gaps. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Also available at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG-ppt-Tromso.pdf>. Downloaded on October 10, 2009.
- Derocher, A.E., M. Andersen, and Ø. Wiig. 2005. Sexual dimorphism of polar bears. *Journal of Mammalogy* 86(5):895–901.
- Derocher, A.E., N.J. Lunn, and I. Stirling. 2004. Polar bears in a warming climate. *Integrated Comparative Biology* 44:163–176. On-line. Available on the internet at: <http://icb.oxfordjournals.org/cgi/reprint/44/2/163>.
- Derocher, A.E., Ø. Wiig, and M. Andersen. 2002. Diet composition of polar bears in Svalbard and the western Barents Sea. *Polar Biology* 25:448–452.
- Derocher, A.E., G.W. Garner, N.J. Lunn, and Ø. Wiig (eds.). 1998. Polar bears: Proceedings of the Twelfth Working Meeting of the IUCN/SSC Polar Bear Specialist Group. IUCN, Gland, and Cambridge, UK. V + 159 pp. On-line. Available on the internet at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG12proc.pdf>. Downloaded on October 11, 2009.

- DeWeaver, E. 2007. Uncertainty in climate model projections of Arctic Sea ice decline: An evaluation relevant to polar bears. Administrative Report. U.S. Geological Survey, Reston. 40 pp.
- DFO (Fisheries and Oceans Canada). 2009. Review of aerial survey estimates for ringed seals (*Phoca hispida*) in western Hudson Bay. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2009/004. Centre for Science Advice, Central and Arctic Region, Fisheries and Oceans Canada, Winnipeg, Canada. 5 pp. On-line. Available on the internet at: http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/SAR-AS/2009/2009_004_e.pdf. Downloaded on October 1, 2009.
- Directorate for Nature Management. 2009a. Report on polar bear conservation and implementation of 1973 Polar Bear Agreement. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Directorate for Nature Management. 2009b. Final report: Meeting of the Parties to the 1973 Agreement on the Conservation of Polar Bears: 17–19 March 2009, Tromsø, Norway. Trondheim, Norway. 35 pp. On-line. Available on the internet at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG14proc.pdf>. Downloaded on October 1, 2009.
- Durner, G.M., D.C. Douglas, R.M. Nielson, S.C. Amstrup, and T.L. McDonald. 2007. Predicting the future distribution of polar bear habitat in the Polar Basin for resource selection functions applied to 21st Century general circulation model projections of sea ice. Administrative Report. U.S. Geological Survey, Reston. 55 pp.
- Durner, G.M., K.S. Simac, S.C. Amstrup, D. Douglas, G. York, E.V. Regehr, T.S. Smith, and T. Bentzen. 2010. U.S. Geological Survey Polar Bear Research, 2005–2009. Pp. 199–218 in *Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June–3 July 2009, Copenhagen, Denmark* (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Energy Information Administration. 2004. International Energy Outlook 2004. Energy Information Administration, U.S. Department of Energy, Washington, DC, USA. 244 pages. On-line. Available on the internet at: [http://www.eia.doe.gov/oiaf/archive/ieo04/pdf/0484\(2004\).pdf](http://www.eia.doe.gov/oiaf/archive/ieo04/pdf/0484(2004).pdf).
- Environment Canada. 2009. Polar bears in Canada: Conservation, management and research. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Garshelis, D.L. 2009. Polar bear *Ursus maritimus*. Pp. 496–497 in *Handbook of the Mammals of the World. 1. Carnivores* (Wilson, D.E., and R.A. Mittermeier, eds.). Lynx Editions, Barcelona, Spain.
- Gerland, S. 2009. On reduced sea ice in the polar bear habitat – status and trends. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Gill, V. 2009. ‘Stress’ is shrinking polar bears. BBC News. Available on the internet at: <http://news.bbc.co.uk/2/hi/science/nature/8214673.stm>. Downloaded on October 11, 2009.
- Government of Canada. 2009. Species profile: Polar bear *Ursus maritimus*. Available on the internet at: http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=167. Downloaded on January 29, 2009.
- Government of Greenland. 2008. Temporary ban on exports of polar bear products from Greenland. News Release. On-line. Available on the internet at: http://uk.nanoq.gl/Emner/News/News_from_Government/2008/04/Temporary_ban_on.aspx.

- Government of Nunavut. 2005. News Release: Minister Accepts Decisions of the Nunavut Wildlife Management Board on Polar Bear Management. Iqaluit, Nunavut, Canada, January 7, 2005. On-line. Available on the internet at: [http://www.biggamehunt.net/sections/Nunavut/Minister Accepts Decision on Polar Bear Management 01210509.html](http://www.biggamehunt.net/sections/Nunavut/Minister%20Accepts%20Decision%20on%20Polar%20Bear%20Management%2001210509.html).
- Government of the Russian Federation. 2009. Protection and management of polar bear populations in Russia. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Gunderson, A. 2009. "*Ursus maritimus*" (On-line). Animal Diversity Web. Available on the internet at: [http://animaldiversity.ummz.umich.edu/site/accounts/information/Ursus maritimus.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Ursus_maritimus.html). Downloaded on January 29, 2009.
- Haskett, G. (U.S. Fish and Wildlife Service, Region 7, Anchorage). 2009. Polar bear management in the United States. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Hedrick, P.W., and K. Ritland. 2011. Population genetics of the white-phased "Spirit" black bear of British Columbia. *Evolution* 66(2):305–313. Available online at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1558-5646.2011.01463.x/pdf>; accessed on September 26, 2012.
- Hensel, R.J., and F.E. Sorensen, Jr. 1980. Age determination of live polar bears. *Bears: Their Biology and Management* 4:93–100.
- Hepa, T. (Department of Wildlife Management, North Slope Borough, Barrow, Alaska). 2009. Human-polar bear interactions in northern Alaska. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Hunter, C.M., H. Caswell, M.C. Runge, E.V. Regehr, S.C. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea II: Demography and population growth in relation to sea ice conditions. Administrative Report. U.S. Geological Survey, Reston. 20 pp.
- Hunter, C.M., H. Caswell, M.C. Runge, E.V. Regehr, S.C. Amstrup, and I. Stirling. 2010. Climate change threatens polar bear populations: A stochastic demographic analysis. *Ecology* 91:2883–2897.
- IPCC (Intergovernmental Panel on Climate Change). 2007. Climate change 2007: Synthesis report. Contribution of Working Groups I, II and III to the Fourth Assessment Report on the Intergovernmental Panel on Climate Change. Core Writing Team, Pachauri, R.K., and A. Reisinger (eds.). IPCC, Geneva, Switzerland. 104 pp. On-line. Available on the internet at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf. Downloaded on October 11, 2009.
- IUCN (International Union for the Conservation of Nature and Natural Resources). 1970. Polar Bears: Proceedings of the 2nd Working Meeting of Polar Bear Specialists. IUCN Publication New Series, Supplementary Paper No. 29. Morges, Switzerland. 88 pp. Available online at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG02proc.pdf>; accessed on September 21, 2012.
- IUCN (International Union for the Conservation of Nature and Natural Resources). 1972. Polar Bears: Proceedings of the Third Working Meeting of the Polar Bear Specialist Group. IUCN Publication New Series, Supplementary Paper No. 35. Morges, Switzerland. 97 pp. Available online at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG03proc.pdf>; accessed on September 21, 2012.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 1999. Global status and management of the polar bear. Pp. 255–270 in *Bears: Status survey and conservation action plan*. IUCN/SSC Bear and Polar Bear Specialist Groups (Servheen, C., S. Herrero, and B. Peyton, compilers). IUCN, Gland. 309 pp. Available on the

- internet at: <http://www.carnivoreconservation.org/files/actionplans/bears.pdf>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2005. Resolutions from the 14th Meeting of the Polar Bear Specialist Group, Resolution 1–2005. Seattle, USA, 2005. On-line. Available on the internet at: <http://pbsg.npolar.no/>. Downloaded on 18 November 2006.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009a. Population status reviews. On-line. Available on the internet at: <http://pbsg.npolar.no/en/status/>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009b. Polar bear population map. On-line. Available on the internet at: <http://pbsg.npolar.no/en/status/population-map.html>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009c. Summary of polar bear population status per 2005. On-line. Available on the internet at: <http://pbsg.npolar.no/en/status/status-table.html>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009d. Highlights in the history of the polar bear protection regime. On-line. Available on the internet at: <http://pbsg.npolar.no/en/issues/conservation/historic-overview.html>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009k. National harvest regulations. On-line. Available on the internet at: <http://pbsg.npolar.no/en/issues/harvest/harvest-regulations.html>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2009m. Resolutions from the 15th meeting of the PBSG in Copenhagen, Denmark 2009. On-line. Available on the internet at: <http://pbsg.npolar.no/en/meetings/resolutions/15.html>. Downloaded on October 11, 2009.
- IUCN/SSC PBSG (Polar Bear Specialist Group). 2011. Nunavut to increase harvest in Western Hudson Bay. (Posted on November 12, 2011). Available online at: <http://pbsg.npolar.no/en/news/archive/2011/WH-catch-Nunavut-2011.html>; accessed on September 28, 2012.
- Jensen, S.K., J. Aars, .C. Lydersen, K.M. Kovacs, and K. Åsbakk. 2010. The prevalence of *Toxoplasma gondii* in polar bears and their marine mammal prey: evidence for a marine transmission pathway? *Polar Biology* 33(5):599–606. Available online at: <http://rd.springer.com/journal/300/33/5/page/1>; accessed on September 21, 2012.
- Jessen, A. (Greenland, Ministry of Fisheries, Hunting, and Agriculture). 2009. Polar bear management in Greenland. Presentation at Meeting of the Parties to the Agreement on the Conservation of Polar Bears; Tromsø, Norway, 17 March 2009. Available on the internet at: <http://www.polarbearmeeting.org/content.ap?thisId=500038377>. Downloaded on October 10, 2009.
- Johannessen, O.M. 2008. Decreasing Arctic sea ice mirrors increasing CO₂ and decadal time scale. *Atmospheric and Oceanic Science Letters* 1(1):51–56.
- Kerr, R.A. 2009. Arctic summer sea ice could vanish soon but not suddenly. *Science* 323: 1655.
- Knott, K.K., D. Boyd, G.M. Ylitalo, and T.M. O'Hara. 2011. Concentrations of mercury and polychlorinated biphenyls in blood of Southern Beaufort Sea polar bears (*Ursus maritimus*) during spring: variations with lipids and stable isotope ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$) values. *Canadian Journal of Zoology* 89:999–1012.
- Kolenosky, G.B., B.A. Pond, and K.F. Abraham. 1994. Population characteristics of polar bears in Southern Hudson Bay. *Int. Conf. Bear Res. and manage.* 9(1):301.
- Krause, J., T. Unger, A. Noçon, A.-S. Malaspinas, S.-O. Kolokotronis, M. Stiller, L. Soibelzon, H. Spriggs, P.H. Dear, A.W. Briggs, S.C.E. Bray, S.J. O'Brien, G. Rabeder, P. Matheus, A. Cooper, M. Slatkin, S. Pääbo, and M.

- Hofreiter. 2008. Mitochondrial genomes reveal an explosive radiation of extinct and extant bear near the Miocene-Pliocene boundary. *BMC Evolutionary Biology* 2008, 8:220 (12 pp.).
- Kwok, R., and D.A. Rothrock. 2009. Decline in Arctic sea ice thickness from submarine and ICESat records: 1958–2008. *Geophysical Research Letters* 36, L15501. On-line. Available on the internet at: <http://www.agu.org/pubs/crossref/2009/2009GL039035.shtml>. Downloaded on October 11, 2009.
- Lentfer, J.W., R.J. Hensel, J.R. Gilbert, and F.E. Sorensen, Jr. 1980. Population characteristics of Alaskan polar bears. *Bears: Their Biology and Management* 4:109–115.
- Lunn, N.J., S. Schliebe, and E.W. Born (comps. and eds.). 2002. *Polar Bears: Proceedings of the 13th Working Meeting of the IUCN/SSC Polar Bear Specialist Group*, Nuuk, Greenland. IUCN, Gland, Switzerland and Cambridge, UK. vii + 153pp. On-line. Available on the internet at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG13proc.pdf>. Downloaded on October 11, 2009.
- Lunn, N.J., M. Branigan, L. Carpenter, J. Justus, D. Hedman, D. Larsen, S. Lefort, R. Maraj, M.E. Obbard, E. Peacock, and E. Pokiak. 2010. Polar Bear Research in Canada, 2005–2008. Pp. 87–113 *in* *Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group*, 29 June–3 July 2009, Copenhagen, Denmark (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Macey, A., C.H. Douglas, and M. Gosselin. 1982. *Ursus maritimus*. CITES Identification Manual [Code A-112.002.006.003 1982 (1)]. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Geneva. 2 pp.
- Marine Mammal Commission. 2004. Marine Mammal Commission Annual Report to Congress 2003. Marine Mammal Commission, Bethesda, Maryland, USA. 167 pp. On-line. Available on the internet at: <http://www.mmc.gov/reports/annual/pdf/2003annualreport.pdf>.
- Marques, T.A., M. Andersen, S. Christensen-Dalsgaard, S. Belikov, A. Boltunov, Ø. Wiig, S.T. Buckland, and J. Aars. 2006. The use of global positioning systems to record distances in a helicopter line-transect survey. *Wildlife Society Bulletin* 34(3):759–763.
- Mulvaney, K. 2009. Arctic blast: For a couple of months in Churchill, Manitoba, the polar bears come calling. *The Washington Post Magazine* (September 13, 2009):22–29, 32.
- Nageak, B.P., C.D. Brower, and S.L. Schliebe. 1991. Polar bear management in the southern Beaufort Sea: An agreement between the Inuvialuit Game Council and North Slope Borough Fish and Game Committee. *Transactions of the North American Wildlife and Natural Resources Conference* 56:337–343.
- National Marine Fisheries Service. 1972. Part 216—Regulations governing the taking and importing of marine mammals. *Federal Register* 37(246):28177–28185. [December 21, 1972]
- National Marine Fisheries Service. 1974. Part 216—Regulations governing the taking and importing of marine mammals. *Federal Register* 39(10):1851–1859. [January 15, 1974]
- NatureServe. 2008. NatureServe Explorer: *Ursus maritimus* – Phipps, 1774: Polar bear. NatureServe, Arlington. 12 pp. Available on the internet at: http://www.natureserve.org/explorer/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=102211&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=102211&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=102211. Downloaded on January 27, 2009.
- NSIDC (National Snow and Ice Data Center). 2009. Arctic sea ice extent remains low; 2009 sees third-lowest mark. Press Room. On-line. Available on the internet at: http://nsidc.org/news/press/20091005_minimumpr.html. Downloaded on October 11, 2009.

- NSIDC (National Snow and Ice Data Center). 2012. Arctic Sea Ice New & Analysis; Arctic sea ice extent settles at record seasonal minimum (article dated September 19, 2012). Available online at: <http://nsidc.org/arcticseaicenews/>; accessed on September 19, 2012.
- Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn (comps. and eds.). 2010. Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June-3 July 2009, Copenhagen, Denmark Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Obbard, M.E., T.L. McDonald, E.J. Howe, E.V. Regehr, and E.S. Richardson. 2007. Polar bear population status in Southern Hudson Bay, Canada. Administrative Report. U.S. Geological Survey, Reston. 36 pp.
- Obbard, M.E., A.E. Derocher, N.J. Lunn, E. Peacock, I Stirling, and G.W. Thiemann. 2010. Research on Polar Bears in Canada, 2005–2009. Pp. 115–132 in Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June-3 July 2009, Copenhagen, Denmark (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Ovsyanikov, N. 2010. Polar Bear Research on Wrangel Island and in the Central Arctic Basin. Pp. 171–178 in Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June-3 July 2009, Copenhagen, Denmark (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Peacock, E., and 15 additional authors. 2009. 2009 report on the status of polar bears in Canada; Canadian Polar Bear Technical Committee; February 2009. 31 pp.
- Peacock, E., Derocher, A.E., Thiemann, G.W., Stirling, I. 2011. Conservation and management of Canada's polar bears (*Ursus maritimus*) in a changing Arctic. Canadian Journal of Zoology 89: 371-385.
- Pertoldi, C., C. Sonne, R. Dietz, N.M. Schmidt, and V. Loeschcke. 2009. Craniometric characteristics of polar bear skulls from two periods with contrasting levels of industrial pollution and sea ice extent. Journal of Zoology. Published Online: August 18, 2009. DOI: [10.1111/j.1469-7998.2009.00625.x](https://doi.org/10.1111/j.1469-7998.2009.00625.x). Downloaded on October 11, 2009.
- Polar Bear International. 2009. Conservation through research and education. On-line. Available on the internet at: <http://www.polarbearsinternational.org/>. Downloaded on October 11, 2009. [Distribution and population size map at: <http://www.polarbearsinternational.org/popup.php?img=/rsrc/single255/arcticmaphi.jpg>.]
- Regehr, E.V., N.J. Lunn, S.C. Amstrup, and I. Stirling. 2007. Effects of earlier sea ice breakup on survival and population size of polar bears in western Hudson Bay. Journal of Wildlife Management 71:2673–2683. Available online at: <http://www.jstor.org/stable/pdfplus/4496388.pdf?acceptTC=true>; accessed on September 20, 2012.
- Regehr, E.V., C.M. Hunter, H. Caswell, S.C. Amstrup, and I. Stirling. 2007. Polar bears in the Southern Beaufort Sea I: Survival and breeding in relation to sea ice conditions, 2001–2006. Administrative Report. U.S. Geological Survey, Reston. 45 pp.
- Regehr, E.V., C.M. Hunter, H. Caswell, S.C. Amstrup, and I. Stirling. 2010. Survival and breeding of polar bears in the southern Beaufort Sea in relation to sea ice. Journal of Animal Ecology 79:117–127. Available online at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2656.2009.01603.x/pdf>; accessed on September 20, 2012.
- Rode, K.D., S.C. Amstrup, and E.V. Regehr. 2007. Polar bears in the Southern Beaufort Sea III: Stature, mass, and cub recruitment in relationship to time and sea ice extent between 1982 and 2006. Administrative Report. U.S. Geological Survey, Reston. 28 pp.

- Schliebe, S., Ø. Wiig, A. Derocher, and N. Lunn. 2008. *Ursus maritimus*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Available on the internet at: www.iucnredlist.org. Downloaded on 29 January 2009.
- Schliebe, S., T. Evans, K. Johnson, M. Roy, S. Miller, C. Hamilton, R. Meehan, and S. Jahrsdoerfer. 2006. Range-wide status review of the polar bear (*Ursus maritimus*). U.S. Fish and Wildlife Service, Anchorage. 262 pp. + tables/figures/appendices.
- Service (U.S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife). 1972. Part 18—Marine mammals. Federal Register 37(246):28173–28177. [December 21, 1972]
- Service (U.S. Fish and Wildlife Service). 1994. Conservation plan for the polar bear. U.S. Fish and Wildlife Service, Marine Mammals Management, Anchorage. Available on the internet at: <http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/THEFINALplan.pdf>. Downloaded on January 28, 2009.
- Service (U.S. Fish and Wildlife Service). 2007b. Polar Bear Range States Meeting Summary: 26–28 June 2007 (Sherherdstown, West Virginia, U.S.A.). U.S. Fish and Wildlife Service, Washington. 4 pp.
- Service (U.S. Fish and Wildlife Service). 2008d. Final rule. Federal Register 73(95):28212–28303. [May 15, 2008]
- Service (U.S. Fish and Wildlife Service). 2008e. Interim final rule. Federal Register 73(95):28306–28308. [May 15, 2008]
- Service (U.S. Fish and Wildlife Service). 2011. US Russia Polar Bear Treaty: Implication for harvest. Available on the internet at: <http://alaska.fws.gov/fisheries/mmm/polarbear/pdf/PBearTreatyFactSheetMay2011.pdf>; accessed on September 24, 2012.
- Snyder Sachs, J. 2010. Icon for an endangered ecosystem. National Wildlife (January 15, 2010; magazine). National Wildlife Federation. Available online at: <http://www.nwf.org/News-and-Magazines/National-Wildlife/Animals/Archives/2010/Icon-for-an-Endangered-Ecosystem.aspx>; accessed on September 26, 2012.
- Stirling, I. 1998. Polar Bears. University of Michigan Press, Ann Arbor, Michigan, USA. 220 pp.
- Stirling, I. 2006. Polar bear. Pp. 580–583 in The Princeton Encyclopedia of Mammals (Macdonald, D.W., ed.). Princeton University Press, Princeton, NJ.
- Stirling, I., and A.E. Derocher. 2007. Melting under pressure. The Wildlife Professional (Fall 2007):24–27, 43 (+ references).
- Stirling, I., and A.E. Derocher. 2012. Effects of climate warming on polar bears: A review of the evidence. Global Change Biology 18:2694–2706. Available online at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2486.2012.02753.x/pdf>; accessed on September 20, 2012.
- Stirling, I., T.L. McDonald, E.S. Richardson, and E.V. Regehr. 2007. Polar bear population status in the Northern Beaufort Sea. Administrative Report. U.S. Geological Survey, Reston. 33 pp.
- Stroeve, J., M.M. Holland, W. Meier, T. Scambos, and M. Serreze. 2007. Arctic sea ice decline: Faster than forecast. Geophysical Research Letters 34, 34, L09501, doi: 10.1029/2007GL029703, 2007. Available online at: <http://www.agu.org/journals/gl/gl0709/2007GL029703/2007GL029703.pdf>; accessed on September 20, 2012.
- Taylor, M.K., P.D. McLoughlin, and F. Messier. 2008a. Sex-selective harvesting of polar bears *Ursus maritimus*. Wildlife Biology 14(1):52–60.
- Taylor, M.K., J. Laake. P.D. McLoughlin, H.D. Cluff, E.W. Born, A. Rosing-Asvid, and F. Messier. 2008b. Population parameters and harvest risks for polar bears (*Ursus maritimus*) of Kane Basin, Canada and Greenland. Polar Biology 31(4):491–499.

- Tyrrell, M. 2006. More bears, less bears: Inuit and scientific perceptions of polar bear populations on the west coast of Hudson Bay. *Etudes/Inuit/Studies* 30(2): 191–208. Available on the internet at: <http://www.erudit.org/revue/etudinit/2006/v30/n2/017571ar.pdf>.
- Thiemann, G.W., A.E. Derocher, and I. Stirling. 2008. Polar bear *Ursus maritimus* conservation in Canada: An ecological basis for identifying designatable units. *Oryx* 42(4):504–515.
- Treseder, L., and A. Carpenter. 1989. Polar bear management in the southern Beaufort Sea. *Information North* 15(4):2–4.
- UNEP-WCMC. 2009. *Ursus maritimus*. UNEP-WCMC Species Database: CITES-Listed Species. On the World Wide Web: <http://sea.unep-wcmc.org/isdb/CITES/Taxonomy/tax-species-result.cfm?Genus=Ursus&Species=maritimus&source=animals&displaylanguage=eng&tabname=legal-main>. Downloaded January 29, 2009.
- UNEP-WCMC. 2012. CITES Trade Database: *Ursus maritimus*. Available online at: <http://www.unep-wcmc-apps.org/citestrade/trade.cfm>; accessed on October 4, 2012.
- U.S. Department of the Interior and The University of Alaska. 1966. Proceedings of the First International Scientific Meeting on the Polar Bear. U.S. Department of the Interior (Bureau of Sport Fisheries and Wildlife, Resource Publication 16, and The University of Alaska, International Conference Proceedings Series, No. 1. 72 pp. Available online at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG00proc.pdf>; accessed on September 21, 2012.
- Vongraven, D. 2011. Letter (Re: Written hearing of the Nunavut Wildlife Management Board to consider proposed modification to the 2011–2012 level of total allowable harvest for the Western Hudson Bay polar bear subpopulation in the Nunavut Settlement Area). IUCN/Species Survival Commission, Polar Bear Specialist Group. Letter dated September 29, 2011. Available online at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG-TAH-WH-NWMB-2011-Eng.pdf>; accessed on September 27, 2012.
- Vongraven, D., M. Ekker, Ø. Wiig, and J. Aars. 2010. Management of Polar Bears in Norway, 2005–2009. Pp. 149–155 *in* Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June–3 July 2009, Copenhagen, Denmark (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.
- Wiig, Ø., E.W. Born, and G.W. Garner (eds.). 1995. Polar bears: Proceedings of the Eleventh Working Meeting of the IUCN/SSC Polar Bear Specialist Group. IUCN, Gland, and Cambridge, UK. V + 192 pp. On-line. Available on the internet at: <http://pbsg.npolar.no/export/sites/pbsg/en/docs/PBSG11proc.pdf>. Downloaded on October 11, 2009.
- Wilson, D.E., and D.M. Reeder. 2005. Mammal species of the world: A taxonomic and geographic reference. 3rd volume. The Johns Hopkins University Press, Baltimore.
- Winther Hansen, K. 2010. Polar Bear Management in Greenland, 2005–2009. Pp. 133–134 *in* Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, 29 June–3 July 2009, Copenhagen, Denmark (Obbard, M.E., G.W. Thiemann, E. Peacock, and T.D. DeBruyn, comps. and eds.). Occasional Papers of the IUCN Species Survival Commission No. 43, 235 pp.

Table 1. Population Status Table [Sources IUCN SSC Polar Bear Specialist Group (Obbard et al. 2010)]

Subpopulation (abbreviation; see Figure 1)	Abundance Estimate (individuals)	Year of Estimate	Historical Annual Removals (5-year mean)	Potential Maximum Annual Removals	Status	Current Trend	Estimated Risk of Future Decline (10 years)
Arctic Basin	Unknown	---	N/A	0	Data deficient	Data deficient	Data deficient
Baffin Bay (BB)	2074	1998	212	176	Data deficient	Declining	Very high
Barents Sea (BS)	2650	2004	1	0	Data Deficient	Data deficient	Data deficient
Chukchi Sea(CS)	Unknown	---	37 (+ 100–200)	No quotas	Reduced	Declining	Data deficient
Davis Strait(ds)	2142	2007	60	66	Not reduced	Declining	Very high
East Greenland (EG)	Unknown	---	58	54	Data deficient	Data deficient	Data deficient
Foxe Basin (FB)	2197	1994	101	108	Data deficient	Data deficient	Data deficient
Gulf of Boothia (GB)	1592	2000	60	74	Not reduced	Stable	Very low
Kane Basin (KB)	164	1994–1997	11	13	Data deficient	Declining	Very high
Kara Sea (KS)	Unknown	---	N/A	0	Data deficient	Data deficient	Data deficient
Lancaster Sound (LS)	2541	1998	83	85	Data deficient	Declining	High
Laptev Sea (LV)	800–1200	1993	N/A	0	Data deficient	Data deficient	Data deficient
M'Clintock Channel (MC)	284	2000	2	3	Reduced	Increasing	Very low
Northern Beaufort Sea (NB)	1202	2006	29	65	Not reduced	Stable	Data Deficient
Norwegian Bay (NW)	190	1998	4	4	Data deficient	Declining	Very high
Southern Beaufort Sea (SB)	1526	2006	44	80	Reduced	Declining	Moderate
Southern Hudson Bay (SH)	900–1000	2005	35	61	Not reduced	Stable	Very high
Viscount Melville (VM)	161	1992	5	7	Data deficient	Data deficient	Data deficient
Western Hudson Bay (WH)	935	2004	44	16	Reduced	Declining	Very high
Total	19358–19858 + 4 Unknown		786 (+ 100–200)	812	Data deficient = 11 Reduced = 4 Not reduced = 4	Data deficient = 7 Declining = 8 Stable = 3 Increasing = 1	Data deficient = 9 Very low = 2 Moderate = 1 High = 1 Very high = 6

Table 2. Total population size (range), historical annual removals, potential maximum annual removals, and current trend or status of polar bear populations during 1993—present according to the IUCN SSC Polar Bear Specialist Group (Obbard et al. 2010).

Reference [number of subpopulations characterized]	Total Population Size (individuals)	Historical Annual Removals (5- year mean; individuals)	Potential Maximum Annual Removals (individuals)	Current Trend or Status of Subpopulations			
				Increasing or Possibly Increasing	Stable or Stationary	Decreasing or Possibly Decreasing	Unknown or Data Deficient
PBSG Proc 11 (1993) [15 subpoplns.]	21470–28370	806–826	672–860		13	2	
PBSG Proc 12 (1997) [19 subpoplns.]	22000–27000	750–800	709–837	1	14	1	3
PBSG 13 (2001) [20 subpoplns.]	21500–25000	781	708	2	11	2	5
PBSG 14 (2006) [19 subpoplns.]	20000–25000	809	908	2	5	5	6
PBSG 15 (2010) [19 subpoplns.]	20000–25000	786	812	1	3	8	7

Table 3. Quantity of relatively large polar bear items aggregated by range State. A total number of 6,798 items were reported as gross exports during the period 2001–2010.

Term (relatively large items)	Polar Bear Range States ¹							%
	Canada (CA)	Denmark (DK)	Greenland (GL)	Norway (NO)	Russian Federation (RU)	United States (US)	Total	
Bodies	284	3	1	5		1	294	4.3
Live	5				75	2	82	1.2
Skins	3261	172	578	102	1	1	4114	60.5
Skulls	975	1	247	217			1441	21.2
Trophies	861		1	3		2	867	12.8
Total	5386	176	827	327	76	6	6798	100.0
%	79.2	2.6	12.2	4.8	1.1	0.1	100.0	

¹ Greenland is a dependent territory of Denmark, but CITES trade data are reported separately.

Source: UNEP-WCMC (2012)

Table 4. Quantity of confiscated or seized polar bear items (all Terms, Units, Sources, and Purposes combined; total = approximately 32,000 items reported as gross exports) during the period 2001–2010.

Term	Total (all units)	%
Derivatives	332	62.9
Teeth	71	13.4
Skin pieces	38	7.2
Claws	29	5.5
Hair	20	3.8
Hair products	17	3.2
[all other terms combined]	21	4.0
Total	528	100.0
%	100.0	

Source: UNEP-WCMC (2012)



Figure 1. Polar bear population map
 [Source: Directorate for Nature Management (2009); see table for key to abbreviations]

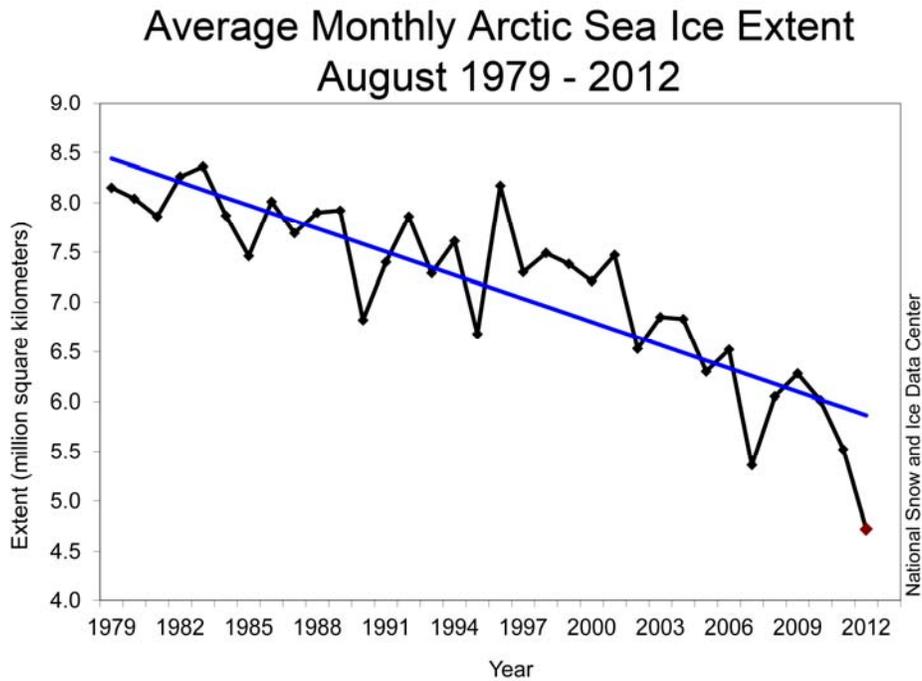


Figure 2. Monthly August ice extent for 1979 to 2012 shows a decline of 10.2% per decade. (Source: NSIDC 2012).

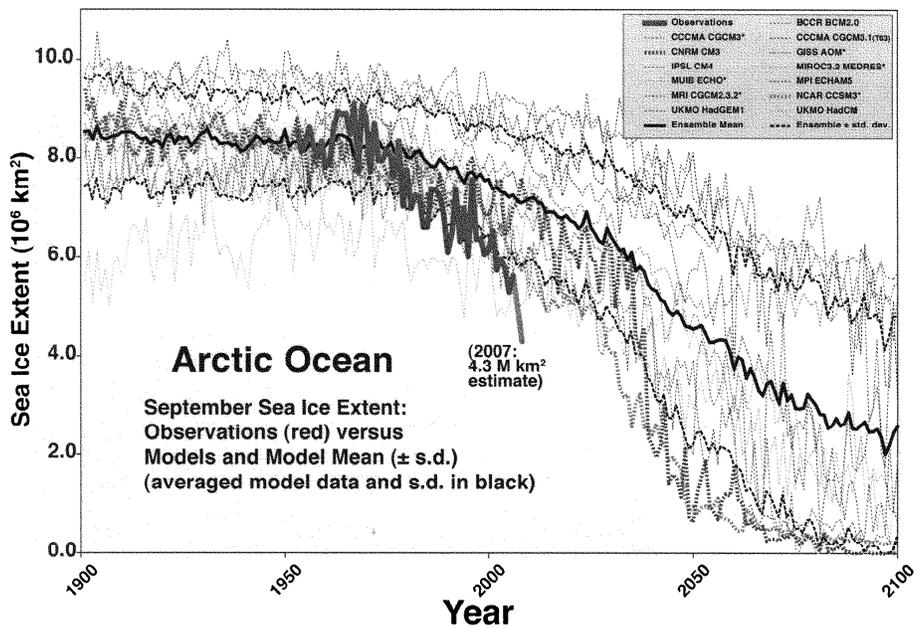


Figure 7. Arctic September sea ice extent. Comparison of observations with results of model runs (updated from Stroeve et al. 2007, pp. 1-5, used with permission).

Figure 3. Arctic September sea-ice extent. Comparison of observations with results of model runs. (Source: Service 2008d:28233; Stroeve et al. 2007).