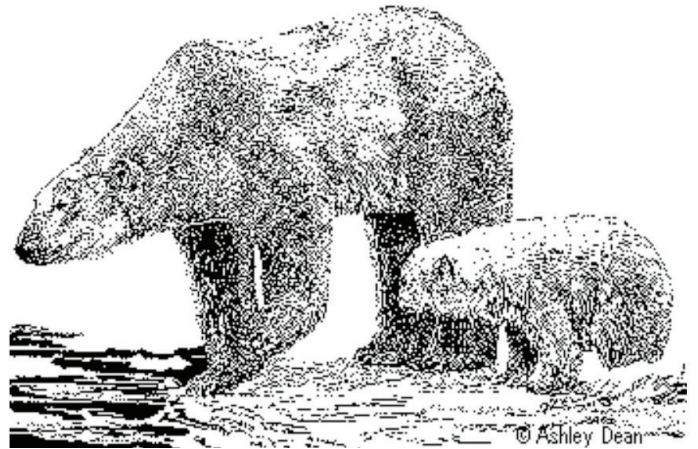




## Polar Bear

**Polar bears** (*Ursus maritimus*) are of special interest because of their large size, white color, and position as the top trophic level carnivore in the remote arctic environment. They occur only in the northern hemisphere, nearly always in association with sea ice.

**General description:** Polar bears evolved from brown bears and are still closely related, as demonstrated by matings and production of fertile offspring in zoos, and hybrids found in the wild. Polar bears are similar in size to large brown bears and have a longer neck and proportionally smaller head than other bears. Adaptions by the polar bear to life on sea ice include a white coat with water repellent guard hairs and dense underfur, short, furred snout, short ears, and teeth specialized for a carnivorous rather than an omnivorous diet. Hair nearly completely covers the bottom of the paddle-like feet that help in swimming and disperse weight when walking on thin ice. Cubs weigh between 1 and 2 pounds (0.5-0.9 kg) at birth. An extremely large adult male may weigh over 1,700 pounds (770 kg). Most mature males weigh between 600 and 1,200 pounds (273-545 kg) and are between 8 and 10 feet (2.4-3.0 m) in length. Mature females weigh 400 to 700 pounds (182-318 kg).



**Life history:** Polar bears, other than family groups of females and young, are solitary most of the year. During the breeding season in late March, April and May, males actively seek out females by following their tracks on the sea ice. Bears are polygamous, and the male remains with a receptive female a relatively short time and then seeks another female. Pregnant females seek out denning areas in late October and November. Denning occurs on land and on sea ice. A denning female excavates a depression in the snow under a bank, on a slope, or near rough ice. She enlarges the denning chamber as drifting snow accumulates in depth. Polar bears go through a specialized winter dormancy that is not the same as a true hibernation exhibited by other bear species. Young are born in the den in December, and a litter of two is the most common. The female and cubs emerge from the den in late March or early April when cubs weigh about 15 pounds (6.8 kg). They make short trips to and from the open den for several days as the cubs become acclimated to temperatures outside the den and then start traveling on the drifting sea ice. Young bears most commonly remain with their mother until they are about 28 months old. Females can breed again at about the same time they separate from their young, so normally they can produce litters every third year. Bears in the wild have been recorded to be as old as 32 years but most probably do not live beyond 25 years.

**Distribution and migration:** Polar bears are most abundant near coastlines and the southern edge of the ice, but they can occur throughout the polar basin. They make extensive movements related to the seasonal position of the ice edge. In winter, bears off Alaska commonly occur as far south as St. Lawrence Island and may even reach St. Matthew Island and the Kuskokwim Delta. During the summer, bears occur near the edge of the pack ice in the Chukchi Sea and Arctic Ocean, mostly between 70° and 72° north latitude. Pregnant females concentrate for winter denning on Wrangel Island and other Russian islands, islands in the Canadian arctic, Greenland, and Spitsbergen. Some denning occurs along the north Alaska coast, especially within the Arctic National Wildlife Refuge and on the adjacent sea ice. Mark and recapture studies indicate that there are several populations of polar bears in the polar basin that have relatively little interchange with one another, and 19 separate populations are currently recognized for management purposes. Off Alaska there are two populations, the Southern Beaufort Sea population that occurs along the North Slope of Alaska and ranges into western Canada, and the Chukchi Sea population that occurs off western Alaska with its range extending to Wrangel Island and eastern Siberia. Movements are not random and appear related to variability in regional ice dynamics. The size of areas used on an annual basis by female bears varies greatly, with a mean of 149,000 km<sup>2</sup> in the Beaufort Sea and 244,463km<sup>2</sup> in the Chukchi Sea.

**Foods:** The main food of polar bears adjacent to Alaska is the ice-inhabiting ringed seal. Bears capture seals by waiting for them at breathing holes and at the edge of leads or cracks in the ice. They also stalk seals resting on top of the ice and catch young seals by breaking into pupping chambers in snow on top of the ice in the spring. Bears prey to a lesser extent on bearded seals, walruses, and beluga whales. They also feed on carrion, including whale, walrus, and seal carcasses they find along the coast. They occasionally eat small mammals, bird eggs, and vegetation when other food is not available. A

keen sense of smell, extremely sharp claws, patience, strength, speed, and the camouflaging white coat aid in procuring food.

**Human uses:** Polar bears occur in areas under the jurisdiction of five nations--Russia, Norway, Denmark, Canada, and the United States--and also on the high seas where jurisdiction is not clearly defined. In Alaska prior to the late 1940s, nearly all polar bear hunting was done by Alaska Natives with dog teams. Sport hunting, sometimes with the use of aircraft, started in the late 1940s and continued through 1972. In 1972 the state of Alaska prohibited the use of aircraft in polar bear hunting. With the passage of the Statehood Act, Alaska began a polar bear management program. State regulations required sealing of skins, provided a preference for subsistence hunters, and protected cubs and females with cubs.

The federal Marine Mammal Protection Act (MMPA) of 1972 transferred management authority from the state to the federal government and placed a moratorium on hunting of marine mammals by people other than Alaska Natives. This resulted in a reduced total harvest, but an increase in the proportion of female bears and cubs harvested. The MMPA includes provisions that allow for waiver of the moratorium or transfer of management authority back to states. At intervals since 1972, the state of Alaska has made efforts at regaining polar bear management. State management could allow a resumption of sport hunting and produce increased economic opportunities in coastal rural communities. For a variety of reasons, efforts to regain state management have been discontinued. Polar bear meat, other than that of males in the rut, is quite palatable when boiled and is a favored subsistence food in some areas. Meat should be cooked thoroughly before eating as polar bears have a high incidence of trichinosis, a round worm which occurs in pork and in other bear species.

Representatives of the five polar bear nations prepared an international agreement on conservation of polar bears in November 1973. The pact was ratified in 1976. It allows bears to be taken only in areas where they have been taken by traditional means in the past and prohibits the use of aircraft and large motorized vessels as an aid to taking. The agreement has created a high seas polar bear sanctuary but does not prohibit recreational hunting from the ground using traditional methods. In Canada, recreational hunting of polar bears currently provides significant economic benefits to Native people.

The two populations of polar bears in Alaska are shared with other nations and national management programs should be coordinated. In 1988, the North Slope Borough Department of Wildlife Management (representing Alaska Natives) and the Inuvialuit Game Council (representing Canadians) signed an agreement to provide for coordinated management of the Beaufort Sea polar bear stock. In 2007, a bilateral agreement between the United States and Russia for the conservation of the Alaska-Chukotka polar bear population was ratified. The agreement establishes a process to maintain the subsistence use of polar bears by the Native peoples of both countries and the conservation of the population.

Degradation to polar bear habitat is currently of more concern than effects of hunting on populations. In particular, declines in the spatial extent and thickness of Arctic Sea ice associated with climatic warming have raised concern about the viability of polar bears. Preliminary results from studies of the southern Beaufort Sea population indicate a decrease in metrics of population status (e.g., survival, recruitment, body condition) with an increase in the duration of the summer ice-free period. Such results are similar to those from the well-studied western Hudson Bay population of polar bears and contributed to the justification for a proposal to list the polar bear as a threatened species under the Endangered Species Act throughout its circumpolar range in 2007. Human activities, especially those associated with oil and gas exploration and extraction, represent an additional threat to polar bear habitat. Oil exploration and drilling activities in denning areas could cause bears to den in less suitable areas. Oil spills from offshore drilling and transportation of oil through ice covered waters could contaminate bears and reduce the insulating value of their fur, or adversely affect animals in the food chain below them. Severe environmental conditions would hinder or prevent containment of a spill, and currents and ice movement could distribute oil over large areas.

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