

## **Background informations: A sunshade for the polar bear -a pedagogical programme on the subject of the climate change (age: 5-7 years)**

**The polar bear** (*Ursus maritimus*) is a bear native to the Arctic Ocean and its surrounding seas. The world's largest predator found on land, an adult male weighs around 400–680 kg (880–1,500 lb), while an adult female is about half that size. Although it is closely related to the brown bear, it has evolved to occupy a narrow ecological niche, with many body characteristics adapted for cold temperatures, for moving across snow, ice, open water and for hunting the seals which make up most of its diet. As it can hunt consistently only from sea ice, the polar bear spends much of the year on the frozen sea, although most polar bears are born on land.

### **Endangerment**

The polar bear is classified as a vulnerable species. Of the 19 recognized polar bear subpopulations, 5 are declining, 5 are stable, 2 are increasing, and 7 have insufficient data. For decades, unrestricted hunting raised international concern for the future of the species; populations have rebounded after controls and quotas began to take effect. For thousands of years, the polar bear has been a key figure in the material, spiritual and cultural life of Arctic indigenous peoples, and the hunting of polar bears remains important in their cultures. The IUCN now lists global warming as the most significant threat to the polar bear, primarily because the melting of its sea ice habitat reduces its ability to find sufficient food. The IUCN states, "If climatic trends continue polar bears may become extirpated from most of their range within 100 years.

### **Living environment**

The polar bear is found throughout the Arctic Ocean and adjacent seas. Due to the absence of human development in its remote habitat, it retains more of its original range than any other extant large carnivore. While they are rare north of 88°, there is evidence that they range all the way across the Arctic, and as far south as James Bay in Canada. They can occasionally drift widely with the sea ice, and there have been anecdotal sightings as far south as Berlevåg on the Norwegian mainland and the Kuril Islands in the Sea of Okhotsk. It is difficult to estimate a global population of polar bears as much of the range has been poorly studied, however biologists use a working estimate of about 20,000-25,000 polar bears worldwide.

Annual ice contains areas of water that appear and disappear throughout the year as the weather changes. Seals migrate in response to these changes, and polar bears must follow their prey. In Hudson Bay, James Bay, and some other areas, the ice melts completely each summer (an event often referred to as "ice-floe breakup"), forcing polar bears to go onto land and wait through the months until the next freeze-up. In the Chukchi and Beaufort seas, polar bears retreat each summer to the ice further north that remains frozen year-round.

### **Characteristics**

The 42 teeth of a polar bear reflect its highly carnivorous diet. The cheek teeth are smaller and more jagged than in the brown bear, and the canines are larger and sharper. The white coat usually yellows with age. When kept in captivity in warm, humid conditions, it is not unknown for the fur to turn a pale shade of green due to algae growing inside the guard hairs. Males have significantly longer hairs on their forelegs, that increase in length until the bear reaches 14 years of age. The male's ornamental foreleg hair is thought to attract females, serving a similar function to the lion's mane.

The polar bear has an extremely well-developed sense of smell, being able to detect seals nearly 1 mi (1.6 km) away and buried under 3 ft (0.91 m) of snow. Its hearing is about as acute as that of a human, and its vision is also good at long distances.

The polar bear is an excellent swimmer and individuals have been seen in open Arctic waters as far as 200 mi (320 km) from land. With its body fat providing buoyancy, it swims in a dog-paddle fashion using its large forepaws for propulsion. Polar bears can swim 6 miles/hour. When walking, the polar bear tends to have a lumbering gait and maintains an average speed of around 5.5 km/h

### **Hibernation and fasting**

With the exception of pregnant females, polar bears are active year-round, although they have a vestigial hibernation induction trigger in their blood. Unlike brown and black bears, polar bears are capable of fasting for up to several months during late summer and early fall, when they cannot hunt for seals because the sea is unfrozen.

### **Hunting and diet**

The long muzzle and neck of the polar bear help it to search in deep holes for seals, while powerful hindquarters enable it to drag massive prey.

The polar bear is the most carnivorous member of the bear family, and most of its diet consists of Ringed and Bearded Seals. The Arctic is home to millions of seals, which become prey when they surface in holes in the ice in order to breathe, or when they haul out on the ice to rest. Polar bears hunt primarily at the interface between ice, water, and air; they only rarely catch seals on land or in open water.

The polar bear's most common hunting method is called still-hunting: The bear uses its excellent sense of smell to locate a seal breathing hole, and crouches nearby in silence for a seal to appear. When the seal exhales, the bear smells its breath, reaches into the hole with a forepaw, and drags it out onto the ice. The polar bear kills the seal by biting its head to crush its skull. The polar bear also hunts by stalking seals resting on the ice: Upon spotting a seal, it walks to within 100 yd (91 m), and then crouches. If the seal does not notice, the bear creeps to within 30 to 40 feet (9.1 to 12 m) of the seal and then suddenly rushes forth to attack. A third hunting method is to raid the birth lairs that female seals create in the snow. When sea ice is unavailable during summer and early autumn, some populations live off fat reserves for months at a time. Polar bears have also been observed to eat a wide variety of other wild foods, including muskox, reindeer, birds, eggs, rodents, shellfish, crabs, and other polar bears. They may also eat plants, including berries, roots, and kelp, however none of these are a significant part of their diet. The polar bear's biology is specialized to require large amounts of fat from marine mammals, and it cannot derive sufficient caloric intake from terrestrial food.

Being both curious animals and scavengers, polar bears investigate and consume garbage where they come into contact with humans. This was documented at the dump in Churchill, Manitoba before its closure. Polar bears may attempt to consume almost anything they can find, including hazardous substances such as styrofoam, plastic, car batteries, ethylene glycol, hydraulic fluid, and motor oil.

### **Behavior**

Unlike grizzly bears, polar bears are not territorial. Although stereotyped as being voraciously aggressive, they are normally cautious in confrontations, and often choose to escape rather than fight. Fat polar bears rarely attack humans unless severely provoked, whereas hungry polar bears are extremely unpredictable and are known to kill and sometimes eat humans.

(from [www.wikipedia.de](http://www.wikipedia.de))