

# POLAR BEAR

URSUS MARITIMUS

The polar bear is the world's largest bear. It has a circumpolar distribution and is a top predator in the arctic ecosystem. It has also become an important public symbol of arctic wilderness – the "King of the Arctic". The polar bear spends most of its life on, or in close proximity to, sea ice and depends on this habitat for its survival.



The polar bear is highly adapted to living in severe cold. The thick, white fur and its sub-dermal fat deposits provide it with ample insulation. The polar bear's most important prey species are ice-associated seals, especially the ringed seal. Its white fur provides excellent camouflage for sneaking up on seals on the ice. Polar bears will eat a wide variety of other food types if seals are in short supply including all sorts of carrion, walrus, sea birds and even eggs, reindeer calves and whales if they are accessible. But, all of these alternatives are usually only minor components of the diet of polar bears, most of their energy comes from seals.

## Polar bear and climate

The polar bear is an "ice bear". It is on the sea ice that the polar bear finds most of its prey and the ice also provides a solid substrate – basically a highway – for moving between hunting areas. Female bears must also have reliable transport routes between their spring and fall hunting areas and places where they have their dens. This is especially important in the spring, when mothers have been starving for many months and are travelling with tiny cubs. Climate change has already reduced the ice-covered areas in the Arctic substantially and the IUCN's international Polar Bear Specialists Group fears that poor ice conditions will have significant negative impacts on polar bear populations in the near future. Some populations are already showing signs of stress. The world's polar bear population could be reduced by two thirds by the year 2050 if climatologists are correct about the extent that sea ice will change in the coming decades.

## Polar bears and pollution

Studies have shown remarkably high levels of persistent organic pollutants (POPs; including PCB and DDT, DDE etc.) in polar bears in some areas. Predators on top of the arctic food chain tend to accumulate substances that "stick" to fat molecules (so-called "lipophilic" substances such as POPs). These chemicals build-up through the food web, increasing with each step towards the top predators.

Polar bears in the European Arctic show particularly high levels of long-distance transported fat-soluble POPs. POPs have been shown to affect hormone levels and the immune system of polar bears. High levels of POPs - combined with a reduced food supply in a warmer Arctic – might represent a dangerous combination for polar bears in the future. POPs accumulated in the blubber are released during starvation when the fat is mobilized to meet the bear's energy demands. Female polar bears do not eat during their time in den, prior to the birth of the cubs or during the first months of nursing. Polar bear milk is rich in lipids, and consequently the cubs are exposed to high concentrations of POPs.

Increased human activity in the Arctic also poses a threat to this species. As the ice retreats, new areas will become accessible for tourism and transport, and also for oil and gas exploitation.

## Polar bear hunting

Since 1973, hunting of polar bears has been illegal in Svalbard. In Canada, Alaska and Greenland, around 700 polar bears are shot every year in total. In much of the Russian Arctic hunting of polar bears is illegal, but there are plans to recommence hunting in the North East. Currently, the number of bears taken annually in Russia is not known. From time to time, polar bears are shot in self-defence in Svalbard, and elsewhere.

## Polar bear management

Norway endorsed the Agreement on the Conservation of Polar Bears in 1973, along with Canada, Denmark (Greenland), the USA and Russia. These countries have committed to protecting polar bear habitat(s) in this agreement. In 2007, the countries met to discuss management of the world's polar bear populations, in light of the major threats facing this species due to global warming.

In Svalbard, the most important denning areas are found on Kongsøya, Svenskøya, Edgeøya, Nordaustlandet and Hopen. Strong restrictions apply to ship and air traffic and other human activity near or within the denning areas, as well as in some other important living areas.

## Polar bear research

Polar bear research has been carried out many places in the Arctic during recent decades. Scientists at the Norwegian Polar Institute (NPI) are responsible for monitoring and research efforts on behalf of the Ministry of the Environment within the Norwegian Arctic, and hence often serve as a co-ordinating body for polar bear research in the Barents Region, with a number of other institutes participating in the ongoing research programmes. In Svalbard, top research priorities include monitoring contaminant levels and effects, monitoring polar bear health including disease(s) status and introductions, and studying population demography. Of course, the effects of climate-change on Svalbard's polar bears is a major research theme. Yearly, 50-100 polar bears are marked (or recaptured and registered and resampled), providing tissue samples and other information for a wide variety of different studies. Some bears are equipped with satellite tracking devices, which transmit information regarding their movement patterns and other aspects of their behaviour throughout the year. In the coming years there will be special focus placed on determining how ice conditions are affecting the number of reproductive females and survival of polar bears of different ages.



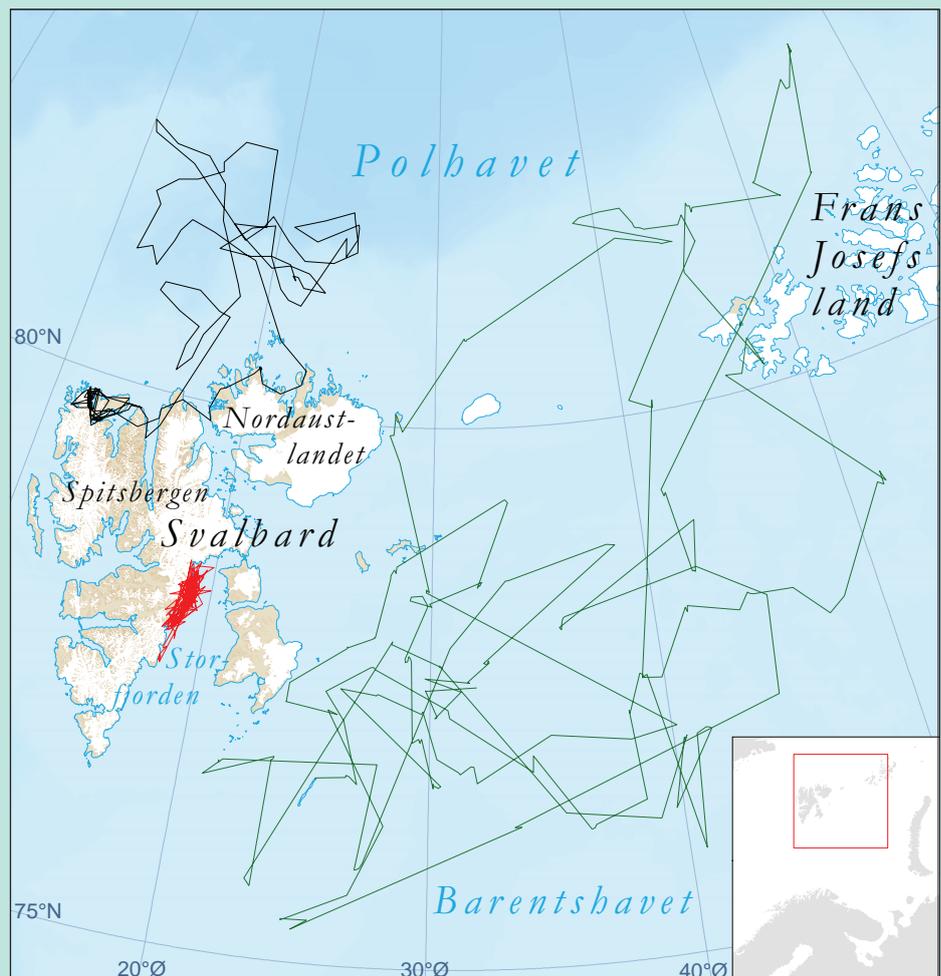
## Facts

- Adult males weigh approximately 300-600 kg. They can reach up to 800 kg and 285 cm. Females weigh about half as much as males
- Classified as being marine mammal because most of their life is spent in the marine environment (on sea ice). They are also very competent swimmers
- Can survive without food (fasting) for more than 6 months (if they start out with enough body-fat and can rest a lot)
- Have high POPs levels in many areas — far from the origin of these substances into the environment. POPs may alter the hormone system and the ability of bears to fend off diseases or recover from them
- Females have their first litter at the age of 5-6, normally two cubs. Polar bear cubs are usually born in December or January and weigh approximately half a kilo at birth
- Birthing dens are built in the autumn in snow, usually on land, but sometimes in areas of multiyear-ice. Can migrate several thousand kilometres in a year or stay within a small area for months
- Polar bears can live to be over 30 years old
- Polar bears are widespread in Svalbard, Russia, East Greenland and North America
- In the Norwegian and Russian Arctic hunting of polar bear is illegal whereas hunting is regulated by quotas in other areas
- The world's polar bear population is estimated to be 20-25 000 animals. The Barents Sea population numbers between 1900 - 3600 animals (Norway and North-western Russia)
- Norway endorsed the Agreement on the Conservation of Polar Bears in 1973. The rationale behind the agreement is protection of the polar bear and its habitat

## The Norwegian Polar Institute

The Norwegian Polar Institute is a Directorate within the Ministry of the Environment. It is Norway's central research, management and environmental monitoring and mapping authority for Polar Regions. It provides management advice on polar issues and is a creator of new knowledge about polar ecosystems (both physical and biological components), including studies of the King of the Arctic – the polar bear.

Read more at [www.npolar.no](http://www.npolar.no)



Migration of three polar bear females in Svalbard during half a year (black line), three years (green line) and four years (red line). Satellite tracking devices currently deployed on the bears provide geographic positions for the bears every 6th day. Migration patterns and behaviour vary greatly between individuals.