



This is the print version of the [Skeptical Science](http://sks.to/bear) article '[Polar bear numbers are increasing](http://sks.to/bear)', which can be found at <http://sks.to/bear>.

How will global warming affect polar bears?

What The Science Says:

Polar bears are in danger of extinction as well as many other species.

Climate Myth: Polar bear numbers are increasing

"A leading Canadian authority on polar bears, Mitch Taylor, said: 'We're seeing an increase in bears that's really unprecedented, and in places where we're seeing a decrease in the population it's from hunting, not from climate change.'" ([Scotsman.com](http://scotsman.com))

At a glance

Ursus maritimus. The Latin name for the world's largest bear hints at its high dependence on the seas around the Arctic. Polar bears are an apex predator that depend on seals for their food. Because of that dependence they mostly live and hunt out on the sea-ice. Excellent swimmers, they are equipped with the means to swim in the frigid Arctic waters. Thick body fat and a heavy, water-repellent coat make such a lifestyle feasible.

Polar bears live in 19 distinct groups around the Arctic. We don't have great data on eight of the groups. Arctic fieldwork is fraught with logistical problems, especially out on the sea-ice. Regarding the other groups, as of 2017, five are regarded as stable. Two are increasing whereas four are declining. Therefore, it's a mixed picture.

The reason why the picture is mixed lies in the four distinct eco-regions making up the Arctic. Let's look at these. Firstly there is the Seasonal Ice Ecoregion off Canada. Here, the ice has always melted in the summer. The bears hunt voraciously before that happens and then go through a seasonal fast on land. Unfortunately, because the ice-melt is beginning earlier and ending later, the fast period is getting longer, causing malnutrition and cub mortality. This bear population is the one that is definitely declining.

Stretching from Alaska to Svalbard is the Divergent Ice Ecoregion. Here, the ocean currents constantly move the sea-ice offshore as it forms. In summer, new ice does not form and a wide gap of open water exists between sea-ice and the land. Offshore, the sea ice is over the depths of the Arctic ocean - an area of relatively low food productivity. The seals remain near land, in the more productive shallows. Again, the problem facing the bears is the increased length of the ice-free season, for the same reasons as above. Bears living in this region are particularly vulnerable.

In the Convergent Ice Ecoregion, from the North Barents Sea around to Eastern Greenland, ice collects along the shore. The bears living in this region therefore have constant access to ice over shallow productive seas. Finally, there is the Archipelago Ecoregion, around the islands of the Canadian Arctic. Here too, the polar bears have been able to remain on the ice all year round. Both Ecoregions are therefore a known or potential stronghold for them.

The primary threat to all of these regions is obviously sea-ice loss due to climate change. As the sea-ice retreats, the bears have to spend more time on land. This can bring them into contact with human populations and such encounters tend not to end well.

Polar bears belong on the sea-ice. The long term trend for sea-ice extent is downward. Even if some populations are stable or even increasing, it's an uneven picture due to the differing characteristics of the regions they inhabit. Rapid Arctic climate change - Arctic Amplification as it's known - is real. Concern for this magnificent creature is entirely justified.

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Further details

Polar bears are found in the Arctic circle and surrounding land masses. There are 19 recognised subpopulations, and estimates place their numbers at about 20,000 to 25,000. Polar bears are [classified as vulnerable by the World Conservation Union \(IUCN\)](#) and listed as a threatened species under the US Endangered Species Act. Yet some claim that polar bear numbers have increased since the 1950s and are now stable. So what is the situation for this species?

First of all, a few points need to be made about polar bear numbers:

- Nobody really knows how many bears there were in the 1950s and 1960s. Estimates then were based on anecdotal evidence provided by hunters or explorers and not by scientific surveys.
- Polar bears are affected by several factors on top of climate change, including hunting, pollution and oil extraction. The introduction of snowmobiles, aeroplanes and ice breakers and the increased hunting that followed led to a decline in certain populations.
- On the other hand, the International Agreement on the Conservation of Polar Bears was introduced in 1973. That restricted or even banned hunting in some circumstances, resulting in a recovery of polar bear numbers.
- Not all subpopulations are affected to the same degree by climate change. While some subpopulations are well studied, others are data-poor. That means there is insufficient information to make specific statements about current and past numbers.

With this caveat in mind, what do the figures actually say? According to a 2019 report by the [World Wildlife Fund](#), of the 19 recognised subpopulations of polar bears, four are in decline, two are increasing, five are stable and eight don't have enough data to draw any conclusions (fig. 1).

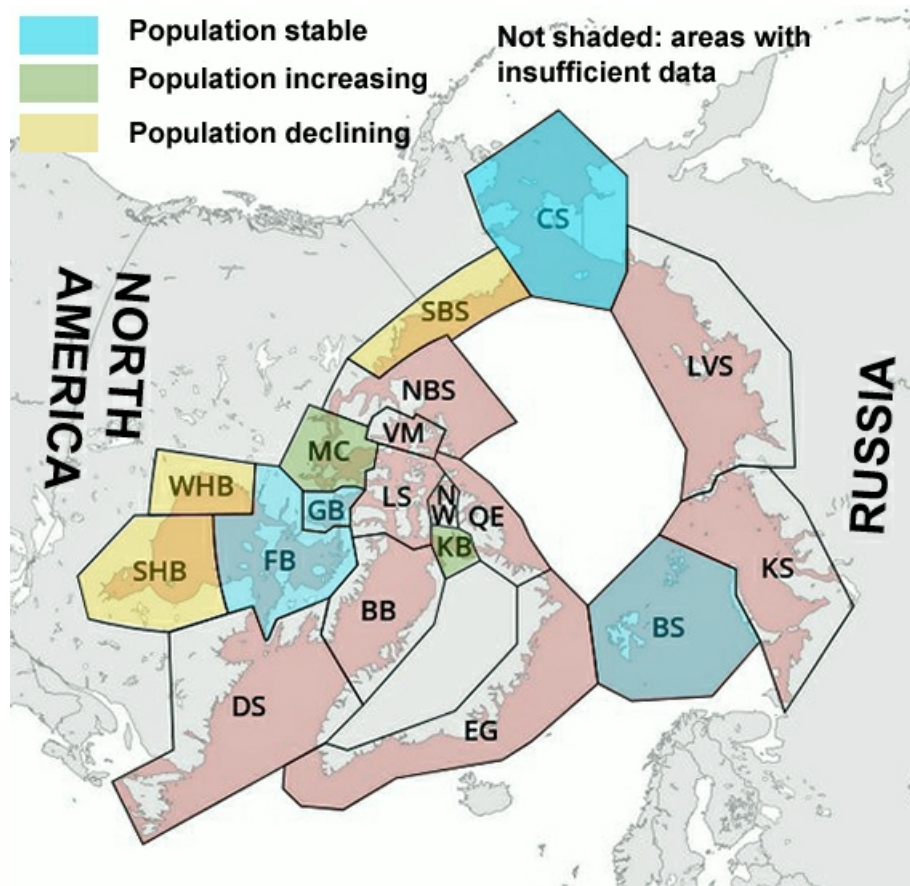


Figure 1: Population status of polar bears around the Arctic as of 2021. Data: [Arctic Portal](#). Map: [Wikipedia](#).

Key to eco-regions, clockwise from bottom: EG = East Greenland; DS = Davis Strait; BB = Baffin Bay; KB = Kane Bay; SHB = Southern Hudson Bay; WHB = Western Hudson Bay; FB = Foxe Basin; GB = Gulf of Boothia; QE = Queen Elizabeth; NW = Norwegian Bay; LS = Lancaster Sound; VM = Viscount Melville Sound; MC = M'Clintock Channel; NBS = Northern Beaufort Sea; SBS = Southern Beaufort Sea; CS = Chukchi Sea; LVS = Laptev Sea; KS = Kara Sea; BS = Barents Sea.

Both habitat degradation and over-harvesting are responsible for the decline in some populations. To understand why the IUCN and US Endangered Species Act consider polar bears to be at risk, it is important to look at how rising temperatures are likely to affect their habitat in the future. Polar bears are highly specialised mammals which rely heavily on sea ice for food and other aspects of their life cycle. Satellite data show that Arctic sea ice has been decreasing for the past 30 years. Projections show that this trend will only continue as temperatures carry on rising. The changes in sea ice affect polar bears in several ways:

- The early retreat of summer sea ice means that bears have less time to hunt and therefore less time to build up fat reserves.
- The fragmentation and reduction in sea ice has several impacts. It forces the bears to swim longer distances, using up some of their fat reserves. It also reduces the number of seals, which are the bears' main source of food, and impedes travelling and den making. And it also forces the bears to spend more time on land, with increased interactions with humans potentially leading to higher mortality.

To get an idea of the potential impacts of future climate change on polar bears, we can look at subpopulations found at the bears' southern range, where habitat changes have been most noticeable so far. A good example is the western Hudson Bay subpopulation, which is one of the best studied. Here, ice floe break-up is taking place earlier than 30 years ago, effectively reducing the feeding period by about three weeks. As a result, the average weight of female polar bears dropped by about 21% between 1980 and 2004, and the population declined by 22% between 1987 and 2004. In Alaska, there is evidence of increased cub mortality caused by a decline in sea ice.

In conclusion, the reason polar bears have been classed as threatened comes from the impacts of future climate change on the bears' habitat. You can read about these habitats, or 'Ecoregions', in the 2021 status report (PDF) issued by the IUCN/SSC Polar Bear Specialist Group. Ecoregions are based on the different ways in which the sea-ice behaves around the Arctic. Current analysis of subpopulations where data is sufficient clearly shows some are in decline, although some areas are too data-deficient to draw a conclusion so far. Further habitat degradation will, however, do nothing but increase the mounting threats to polar bears.



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