

- a. Geographical regions
- b. Animal physical characteristics
- c. Diet and food consumption
- d. Behavior
- e. Breeding and population
- f. Habitats and needs
- g. Environment protection

**This week students will learn:**

1. To increase knowledge and awareness the impact of species due to loss of habitat.
2. To learn about different polar bear habitats and what are some of the different impacts facing these animals.
3. To encourage students to look at the links between human choices and environmental consequences.
4. Look at animal behaviors and characteristics.
5. Look at ways to mitigate species extinction.

**Learning outcomes****Year 3**

English ACELY1675, ACELA1479, ACELY1676, ACELY1682, ACELY1683, ACELY1684, ACELY1685

Geography ACHGS020, ACHGS021, ACHGS022, ACHGS024

Mathematics ACMSP068, ACMSP069

Digital Technologies ACTDIK007, ACTDIK008

**Year 4**

English ACELY1688, ACELY1695, ACELA1793, ACELY1698, ACELY1692, ACELY1694, ACELY1695, ACELY1696, ACELY1697

Geography ACHGK022, ACHGS027, ACHGS029, ACHGS031, ACHGS032

Science ACSIS068

Mathematics ACMSP095, ACMSP096

Digital Technologies ACTDIK007, ACTDIK008

**Year 5**

English ACELY1709, ACELA1522, ACELA1523, ACELY1712, ACELY1714, ACELY1716, ACELY1717

Geography ACHGK034, ACHGS035

Science ACSIS093

**Year 6**

English ACELA1522, ACELA1523, ACELY1716, ACELY1717

Geography ACHGS042, ACHGS044, ACHGS045

Science ACSSU094, ACSIS107, ACSIS110

Mathematics ACMSP147

**The Game**

Students ideally would login daily to take consistent care of their adopted polar bear and their environment with the length determined by the teacher.

**Activities:**

1. Research polar bears and their environment.
2. Write a short story about your bear using your research. What are some of the environmental issues your polar bear faces? What is the bear's most unique characteristics? Does your bear get into mischief?
3. Conduct your own survey:  
The polar bear was the most popular animal surveyed by kids. This is why the Habitat the Game team created the bear. Conduct your own survey. What other endangered animals do other students like? Where do these animals live? What are some of the challenges they face? Create a classroom display of the results using a picture or column graph.
5. Map the areas where polar bears live today. Study the United States Geological Survey and redraw the map to show where their habitat is predicted to be by 2050. [https://www.youtube.com/watch?v=1xJ8wSBTU\\_4](https://www.youtube.com/watch?v=1xJ8wSBTU_4)
6. What are some of the ways we can help protect the polar bear from facing extinction?

## Week 2 — Endangered species — The Polar Bear

- a. Geographical regions
- b. Animal physical characteristics
- c. Diet and food consumption
- d. Behavior
- e. Breeding and population
- f. Habitats and needs
- g. Environment protection

### Polar Bears

The polar bear is an icon of the Arctic wilderness and a symbol of the catastrophic impact that global warming is having on the world. The long term survival of polar bears in the wild is now literally 'on thin ice'.

There are approximately 20,000-25,000 polar bears in the wild today, with the majority in Canada (13 out of 19 subpopulations). Six of these subpopulations are declining or showing critical signs of decline.

Both male and female polar bears can live for 25-30 years, primarily preying on ringed and bearded seals. The seasonal movements of polar bears depends on the availability of sea ice. Sea ice is essential for polar bear survival because it acts as a platform for hunting, mating and resting, and reproduction. During spring and early summer, polar bears feed intensively on seals to build up their energy for the long, dark Arctic winter.

Polar bears often travel huge distances throughout the year and the greatest threat to their survival is the loss of their sea ice habitat due to climate change. With increases in air temperatures over the Arctic of up to 5oC in the last 100 years, the fundamental habitat of this top predator is rapidly disappearing. Between 1979 and 2006, Arctic sea ice decreased by 21%, an area roughly the size of Alaska. In May 2008, the United States Fish & Wildlife Service recognised the future threat from predicted habitat loss, and listed the polar bear as a threatened species on the US Endangered Species Act, due to the probability that "all or a significant proportion of the global population will become endangered in the foreseeable future".

Polar bears are also threatened by the offshore expansion of industrial activities like oil and gas development and commercial shipping, unsustainable harvest, and the loss of their prey base, seals, as a result of sea ice loss.

### The Impact of Climate Change

A recent study by the United States Geological Survey projected that at current levels of sea ice reduction, 42% of summer polar bear habitat will be lost by the middle of the 21st century. The most severe impacts will be in spring and summer, which are the most crucial times for polar bears to secure food and mate in advance of the long winter. Approximately two-thirds of the world's remaining polar bears could be lost based on these projections of changes in sea ice. Unless drastic steps are taken now to reduce greenhouse gas emissions and ease the impact of warming worldwide, the polar bear could be gone in 75 years.

One of the major impacts of global warming in the Arctic is the thinning and early break up of sea ice. In the Hudson and Baffin Bay areas of

Canada, sea ice is breaking up three weeks earlier than in 1979. This gives both male

and female polar bears less time in spring to build up their body weight by hunting and feeding. The average body weight of lone adult females fell from 290kg in 1980 to 230kg in 2004. The critical weight at which females appear to no longer be able to reproduce is 189kg. If the reduction in body weight continues at the same rate, females will be unable to reproduce by 2012.

Polar bear cub survival is also negatively affected by the earlier break up of sea ice. With changes in sea ice, important denning areas for pregnant females may no longer be available. Changes in rainfall patterns may cause the roofs of dens to fall in before females and cubs have departed, exposing them to the elements and predators. Denning and feeding areas for females may be separated, with vulnerable cubs unable to survive in the freezing water that divides them.

Like polar bears, the life cycle of their main prey species, seals, is heavily dependent on sea ice. As sea ice levels fall, ringed seals will find it harder to reproduce and their populations will almost certainly diminish. Fewer seals means less food for polar bears, and in the Arctic, there are no similarly abundant sources of high calorie prey.

Polar bears are highly specialised and have adapted to their polar environment, making them extremely vulnerable to changes in climate and habitat loss. With dramatic loss of habitat and the effect this has on their physical condition and ability to reproduce, some populations are already declining and more are predicted to follow over time.

### What can be done?

Governments, corporations, communities, and individuals have a huge role to play in saving the polar bear from extinction by reducing greenhouse gas emissions while working to reduce all the other threats to polar bears and their Arctic habitat. Polar bears are not simply an Arctic icon, but they truly integrate and represent the health of this critical ecosystem. As a key regulator of the global climate, a living Arctic is important not only to polar bears, but to people worldwide. The plight of this majestic creature is an early warning and call to action for the changes that await us all if we fail to act now in reducing greenhouse gases and creating sustainable communities. (WWF Climate Change and species, author Dr Tammy Matson)