



# Polar Animals Background Information

## EXTREME POLAR PLACES

At opposite “ends” of the Earth, the North and South Poles are regions of cold, forbidding landscapes. Always at oblique angles to the sun, the poles have a yearly net heat loss causing some ice to remain year round—remnants of an ice age that ended only a few million years ago.

Scientists often define polar regions by 66 ½ degrees north and south latitude, the Arctic and Antarctic circles respectively. The extreme angle of sun's rays to the Earth at these high latitudes result in dramatic differences in daylight hours. In December, some days may be 24 hours dark or twilight, with the sun just barely rising above the horizon in the Arctic, while in Antarctica, there will be 24 hours of daylight with the sun barely setting. In June the situation is reversed. The length of daylight hours and heat absorbed by the Earth sets the pace for plant growth and animal activity.



In the Antarctic, temperatures may drop to 80°C (-112°F) and winds can reach 320 kph (200 mph).

For all its ice and snow, the poles receive very little new precipitation (rainfall). The continent of Antarctica averages only 6 cm (2 in.) of rainfall a year, less than some desert regions. When strong winds blow and blizzards occur, the snow is usually picked up from the ground, not falling from the sky. In Antarctica, winds can reach 320 kph (200 mph).

Though similar in some respects, the polar regions also differ greatly. The Arctic is an ocean ringed with land masses while the Antarctic is a continent surrounded by the Southern Ocean. The Arctic's lower altitude and great water masses result in less severe winter temperatures -70°C (-94°F) than the Antarctic -80°C (-112°F) and the land supports extensive plant life. Large land predators such as polar bears, wolves, and foxes live on the tundra. The largest land animal in the Antarctic is a tiny insect, a wingless mosquito.

Only about 4 percent of the Antarctic land mass supports life; small animals such as microbes, protozoans, rotifers, spiders, insects, mosses, fungi, algae and lichens. No true terrestrial vertebrate or ferns live in Antarctica. In the treeless tundra, no amphibians or reptiles survive.

## **POLES PLAY CRITICAL ROLE IN GLOBAL HEALTH**

Polar concentrations of ice and snow profoundly affect over global weather patterns. Air circulation in the atmosphere is caused by a air temperature difference. Warm, moist air moves toward the poles, while cool, dry air flows to the tropics. Oceans play roles too. Water transports heat, and differences in water temperature can help move the air flowing above it.

During the past 15 years, many scientists have become concerned with the phenomena of a global “greenhouse” warming effect and the presence of an “ozone hole”, both conditions accentuated in polar environments. In fact, in August 2000 a tourist cruise touring the Arctic arrived at the north pole to find not ice but water lapping the bow. An oceanographer from Harvard University aboard the boat as a lecturer recorded the incident--a mile-wide ice-free patch of water at 90 degrees north... presumably a site never before seen by humankind before.



Killer whales cruise along the coastline of Alaska. These warm-blooded mammals have a thick layer of blubber (fat) that helps retain body heat.

## **ANIMALS ADAPT TO COLD**

Warm-blooded animals calling the polar regions home have acquired a number of adaptations to combat cold. Some, like whales and seals, have a thick layer of fat or blubber under their skin to conserve body heat. Arctic land animals like foxes, musk ox, and caribou have dense coats of fur. Birds grow extra feathers on their heads, legs and feet. Penguins have stubby, stiff feathers that overlap to trap an insulative layer of air. Some animals migrate out of cold winter weather. The arctic tern flies from pole to pole (a round-trip of 36,000 km (22,370 mi.)), never experiencing a winter in its lifetime.