

The World of the Polar Bear

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ADAPTING TO THE ARCTIC

Chapter Ten

While its southern cousins are snoozing the late winter away, the polar bear is at the peak of its activity – with the exception of pregnant females, which must set up dens to prepare for the birth of their cubs. Thanks to its carnivorous disposition, the polar bear spends the winter roaming about on the vast ice pack in search of a steady supply of high-protein meals.

Modern bears, which are the largest of the terrestrial carnivores, have evolved into eight species worldwide: brown, American black, polar, sun, sloth, panda, Asiatic black and spectacled. The last descendant to appear in this long evolutionary line was the polar bear. Piecing together the history of the species from fossilized records, researchers believe that the polar bear came into existence roughly 100,000 years ago, a descendant of brown bears from Siberia that had become stranded in the Arctic by advancing glaciation. (Theories about the close relationship between these two species are supported by the fact that they can crossbreed when in captivity.) Cold though the new habitat may have been, an abundance of high-fat seals and the absence of competition and predation made the transformation possible.

Shaped by thousands of years of natural history, the polar bear is an arctic specialist, uniquely adapted to survive in the perpetually challenging environment of the Far North. Acute senses and agility further distinguish the polar bear’s survival skills on the arctic terrain. Its sense of smell is phenomenal: It can detect young seals hiding in a snow cave

buried under 3 feet (1 meter) of snow nearly a mile (1.6 kilometers) away. Its vision, which tends to be farsighted, allows the bear to scan the endless landscape, while its hearing is comparable to that of humans.

Good insulation provides the first line of defense against the cold, and *Ursus maritimus* wears a warm “coat” of three layers: dense fur (guard hairs and a thick underwool that traps heat), skin and fat. When densely packed together, these hairs form a coat in a range of vanilla, creamy and pale yellow hues. Adding up to 4 inches (10 centimeters) of cold-fighting protection, its coat amply protects the polar bear from fierce blizzards and the icy polar waters in which it swims. Its hollow guard hairs and fat also help keep the bear buoyant in the water – a particularly useful feature, given that scientists recently tracked a tagged bear that swam at least 46 miles (74 kilometers) in just one day.

Evidence of the polar bear’s efficient insulation came to light unexpectedly when a scientist was attempting to take aerial photographs of suspected bear habitats using infrared film. Infrared film is highly sensitive to thermal radiation and is therefore an almost foolproof way to document the movements of warm-blooded animals. Yet the only sign of bears the photographs showed was the thermal imaging of their breath. While the results were disappointing for the polar bear census takers, this exercise inadvertently demonstrated that the hardy carnivore is remarkably well insulated, radiating almost none of its precious body heat.



A polar bear's foot pads are not only rough enough to provide traction but are also thickly furred and immune to frostbite, while its small ears are threaded with a fine network of blood vessels that transport

sufficient thermal energy to the exposed auricles to keep them from freezing. From the soles of its feet to the tips of its ears, the polar bear has evolved to cope with the cold.

Like other northern animals and birds, polar bears allow the snow to drift around them to provide insulation.

