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# Ursis Maritimus

## Module 7 - Akshayuk Pass Expedition

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### A DAY IN THE PARK

Every visitor to the Auyuittuq National Park must have a park orientation. So a few days ago, just prior to heading into the Park, Ray and the team piled into the Parks Canada Office in Qikiqtarjuaq for the orientation. In addition to the very practical safety information provided by the friendly staff, a series of videos were shown to the team that largely consisted of polar bears mauling people and other animals. This video had a bit of a sobering effect on the team, particularly those members that had never before been to the north.

The polar bear is not only the biggest bear, but also the largest land carnivore in the world. Male bears can grow up to almost 1,500 lbs and 10 feet in length, a formidable foe to encounter on the tundra. What is the likelihood of the i2P team meeting a polar bear?

Did You Know?

The largest polar bear ever recorded was a male weighing 1,002 kg (2,209 lbs.) and measuring 3.7 m (12 ft.) long.

Polar bears, although native to Baffin Island are not plentiful in the park. They spend a majority of their time traveling and hunting on sea ice pursuing sea mammals like seals. Thus their principle range of habitat is along the Arctic seacoast, and they rarely move very far from the ocean. As such it is unusual to see bears in Akshayuk Pass, except in the fall when they might venture inland tempted by berries.

According to Billy Etooangat of Parks Canada in Pangnirtung, polar bears are more plentiful on the northern side of the Akshayuk Pass near Qikiqtarjuaq. That is why on the day the i2P team set out from Qikiqtarjuaq they purposefully pushed far inland to avoid possible bear encounters. Billy recalls a few bear attacks over the years, but principally involving solo trekkers. “One fellow was dragged around inside his tent when a bear tried to bite him through the tent wall. He survived”. In fact polar bear attacks are very rare, and usually involve sick or hungry bears. In Churchill Manitoba, the so-called ‘polar bear capital of the world’, there have only been two people killed by polar bears in the past 300 years. When provided these statistics the i2P team was also reassured, particularly when Ray added that the reason Bob Cox was invited on the expedition is because he is a slow runner.

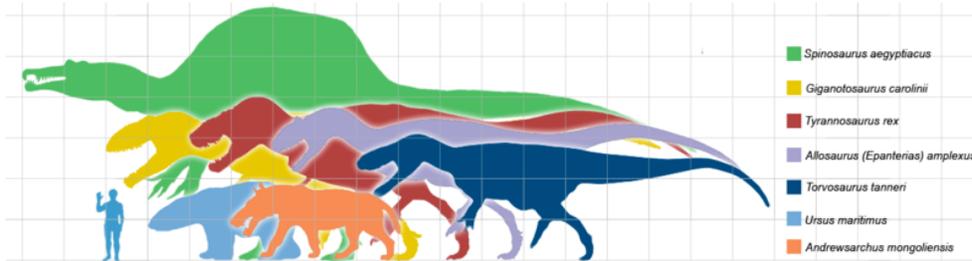


Figure 1: Size comparison of several giant terrestrial predators from various periods of geologic time. The Polar Bear is in light blue (source: Dinoguy2)

POLAR BEAR HABITAT

Polar bears are exclusively found in the northern hemisphere (there would be a great number of frightened penguins if they lived in Antarctica). A significant majority of the polar bear population is located in Northern Canada, although they are also found in Alaska, Greenland, Norway and Russia. Polar bears are unique in that, unlike other bears, they do not hibernate.

Video Link:

Polar Bear Attacking a Walrus:

[Polar Bear meets Walrus](#)

TO HIBERNATE OR NOT TO HIBERNATE

Hibernation occurs when an animal goes into a prolonged sleep state that involves a slowing of its metabolic rate, and lowering of its body temperature and breathing rate. Curiously, although most polar bears do

not hibernate, studies of one of the most southerly polar bear population in Churchill, Manitoba demonstrate that local polar bears can enter into a virtual, or 'walking hibernation' when deprived of access to seals - their main source of food. By comparison other polar bears that scavenged at the local garbage dump, and had a source of food, did not enter into this 'walking hibernation' state. This observation seems to indicate that the polar bear has the capacity to 'turn on' a state of hibernation, and lends credence to the theory that hibernation is an adaptation employed to conserve energy.

#### Did You Know?

Although polar bear fur appears white the individual hairs are in fact translucent or see-through.

While other species of bear hibernate during the winter months in a den, only pregnant female polar bears enter dens, to give birth. The expectant mothers dig a den in a snow bank in the fall, give birth to their cubs in November or December, and spend much of their time sleeping with their offspring until they emerge in March or April.



Photo: Ansgar Walk

Male bears on the other hand never return to a den for the remainder of their lives. Rather they spend the majority of their time engaged in the two main activities of the polar bear, searching for food and sleeping. In the cold winter months polar bears will dig out a shallow pit to curl up in, keeping their backs to the cold wind as they sleep. Polar bears, much like humans sleep on average about seven and a half hours a night. When a storm hits they frequently sleep for the duration of the inclement weather, often awakening from under a blanket of snow.

Polar bears are remarkably well adapted for extreme cold, boasting two layers of fur and a layer of adipose up to 4.5 inches (11.5 centimeters) thick. In fact they are so well insulated that they cannot run far without risking overheating. Consequently they usually walk slowly or swim for great distances seeking out promising ice sheets that they require to hunt their favorite prey, the seal.

#### CLIMATE CHANGE

Polar bears are truly remarkable and beautiful creatures that have evolved to survive and flourish in a very harsh environment. Unfortunately many bear experts are making dire predictions about the threat to the welfare of polar bears by climate change. Although the polar bear is not classified as an endangered species, the International Union of the Conservation of Nature (IUCN) Polar Bear Group has placed it on the threatened list (see: [Polar Bear Classification](#)).

There are currently an estimated 25,000 polar bears worldwide. As we have learned polar bears main source of nutrition is seal, which they capture while traveling on sea ice. In other words the sea ice is the principle platform that allows polar bears to hunt and nourish themselves. When sea ice disappears in the summer months this forces bears to retreat to land where food is scarce and

#### Video Link:

Lovely Film about Polar Bears & Climate Change

[Polar Bears in a Changing Climate](#)

they live off their fat stores. What will occur if the sea ice begins to disappear?



Figure 2: Range of the polar bear in red – Ursus Maritimus (Source: Zoologist)

There has been much talk in the media about the loss of Arctic sea ice. Is Arctic Sea ice actually declining? According to the National Snow and Ice Data Center in Boulder Colorado the Arctic Sea Ice is declining by about 10 percent per decade since satellite records started being kept in 1979. Inuit across the north provide compelling anecdotal evidence that the ice is indeed melting earlier and forming later than it had generations before. How is this loss of sea ice affecting polar bears? Very simply is it limiting their ability to hunt for their principal source of food, the seal.

According to the U.S. Geological Survey the future reduction of sea ice in the Arctic could result in a loss of 2/3 of the world's polar bear population within 50 years. At the same time there are anecdotes from northerners that there appear to be more polar bears than there used to be. One proposed explanation for this increased sighting of polar bears is that they are hungrier than usual from decreased access to seals and are thus seeking out alternate sources of food like the garbage dumps in human settlements.

Melissa McKinney and her supervisor Robert Letcher at the National Wildlife Center in Ottawa have developed a novel approach to investigating the impact of sea ice decline on polar bears. They are tracing the levels of certain chemicals found in common household items such as non-stick pots, furniture and computers as well as pesticides and industrial chemicals and seeing how much end up in polar bear tissue. They have established that contaminants found in polar bears near Chur-

**Did You Know?**  
Polar bears are great swimmers. They have been tracked swimming up to 60 miles (100 kilometers) at a time, and at up to 6 miles per hour

chill may be increasing in quantity with the decline in sea ice coverage. This occurs because polar bears that inhabit regions where the sea ice is melting early may be obliged to change their diets, in this case to foods that carry more contaminants. Consequently with the changes wrought by climate change it appears that polar bears are being exposed to more harmful chemicals.

By developing knowledge on this process of delivery of chemical contaminants by changes in diet as related to sea ice change, Melissa and her colleagues will be in a better position to advise regulators on which chemicals are a threat to arctic ecosystems. The information generated will also be a useful baseline to study the long-term consequences of warming of the arctic and reduced summer ice.



Profile: Melissa McKinney: Polar Bear Contaminants Research

Melissa is completing her doctorate at the National Wildlife Research Centre, located on the campus of Carleton University in Ottawa. A chemist by training, Melissa specializes in the analytical and environmental chemistry and toxicology of organic contaminants (such as PCBs and brominated flame retardant chemicals), particularly in Arctic wildlife. Currently, she is investigating in circumpolar polar bear populations how diet and body condition differences and changes over time, influence the bears' contaminant burdens. A recent paper by Melissa and co-workers in the journal *Environmental Science and Technology* demonstrated that changing diets significantly impact polar bear contaminant burdens. This research also linked diet change to changes in sea ice cover. These findings demonstrate the need to better understand the interrelationships between different environmental stressors facing northern wildlife. In her previous M.Sc. work, Melissa studied what kinds of metabolites are formed by beluga whales after exposure to organic contaminants, and the enzyme systems involved in these biotransformations. To learn more about chemical contaminants in Arctic Wildlife, take a look at:

<http://amap.no>

or

<http://www.ainc-inac.gc.ca/nth/ct/ncp/>



Figure 3: The Nunavut license plate