Activities

Life in the Arctic Tundra

Grades: PreK–K, 1–2, 3–5, 6–8

Overview
A series of activities reinforce the learning content: padded gloves insulate like fur, folk tales give new meaning to the long Arctic night, and pipe cleaner models of trees show how strong winds affect a tall tree with shallow roots.

Getting Started
Before you begin your Arctic studies, gather articles and photos and props such as toy animals, furry earmuffs, mittens, ski goggles, maps, and a globe. Invite students to record their questions and discoveries in "Arctic Field Journals," decorated with their own drawings of tundra animals. You can also create a quick and easy KWL chart by having students add sticky notes to an Arctic map.

Wolf Packs and Fox Kits
Arctic wolves and Arctic foxes share many traits. Both live in groups (either packs or kits), and have an important part to play in the Arctic ecosystem. But wolves are much larger and hunt large mammals, such as caribou.

Activity: Encourage students to find out how each of these animals lives and survives. What are its habits, life cycle, and adaptations to the harsh cold? What is the sound of its call? As each team
presents their new knowledge to the class, have students create Venn diagrams (labeled "wolves," "foxes," "both") with words or illustrations.

**Bundled in Fur**
Many Arctic animals, such as musk oxen, wolves, and foxes, grow two layers of fur to help insulate their bodies in subzero winter temperatures. The animals shed this extra layer each spring, when temperatures rise and the extra layer is no longer needed.

**Activity:** To demonstrate how extra fur benefits animals, fill the bottom of a cooler or tank with ice. Invite students to take turns putting on a pair of cotton garden gloves, which represent a single coat of fur. On one hand, slide a large leather glove over the cotton glove to represent an animal´s additional coat of fur. Then have the student hold both hands above the ice for a minute or two. Which hand stays the warmest? Why?

**Shallow Roots in the Soil**
Only the top few inches of tundra soil thaw in the summer because the ground beneath it is permafrost. Since roots can´t penetrate or thrive in frozen soil, they grow horizontally instead of vertically. This is a key reason why tundra trees are short-shallow roots don´t anchor tall trees very well!

**Activity:** Invite students to try growing their own plants with shallow roots. Have small groups of students each put an inch of soil in a clear container and add fast-growing seeds. As students care for the plants, ask them to observe how long the seedlings thrive in shallow soil, which way the roots grow, and whether or not the plants sprout.

**Willows in the (Arctic) Wind**
Tundra willow trees grow to only about 6" tall and hug the ground to escape the fierce Arctic winds, which would topple taller trees. In the winter, snow blankets these little trees and protects them from sharp tundra ice crystals.

**Activity:** Invite students to create models to demonstrate the effect of wind on trees of different sizes. Have them twist two pipe cleaners together to create a tree trunk, leaving about 1" loose at one end to
represent the roots. Have them attach and shape pipe-cleaner branches that extend in several directions. Then ask students to shape another pair of pipe cleaners into a tiny, short tree with long, low limbs and roots. "Plant" both trees in a mound of clay "soil" and press firmly onto a tabletop. Ask students to blow on the trees as hard as they can. How do the two trees respond? What happens when tall trees are exposed to strong, sustained wind?

The Dark Days of Winter
Arctic residents experience a unique phenomenon each year. For a few months every winter, the only source of light is the moon’s reflection on the snow, leaving darkness both night and day. But for most of the summer, the sun stays above the horizon, making it bright and sunny throughout both day and night.

**Activity:** Invite students to compare and contrast the facts and myths surrounding this Arctic phenomenon with an imaginative writing activity. First, talk with students about the Inuit, the indigenous people of the Arctic region. Their communities would endure the long winter months of cold and darkness with singing, drumming, games, and story telling, especially of myths and legends. Share with students the Inuit myth of "Crow Brings Daylight. (Attachment). Then invite them to write their own legends or stories about Arctic darkness using gel pens on black construction paper.

*(Option)* Once students have shared their stories, they can learn more from the website [http://www.athropolis.com/links/arctic.htm](http://www.athropolis.com/links/arctic.htm) which has a wonderful collection of illustrations and animated links.

Compact and Comfortable
Arctic animals typically have large, thick bodies (such as musk oxen, caribou, or polar bears) or small, compact ones (such as Arctic hares or Arctic foxes), and most also have short limbs, ears, and noses. This means less surface area of their bodies is exposed to the tundra’s freezing temperatures.

**Activity:** Students can learn how Arctic animals’ bodies retain body heat with this easy experiment. Fill a tall, plastic soda bottle with water at room temperature. Pour the same amount of water into a short plastic tub with a larger diameter. Refrigerate both containers for about 20 minutes. Then have
students measure the temperature of each container and compare. Ask: Did the temperature of the bottle’s water drop faster than that of the tub’s? Why?

The Tundra Comes to Life
Some Arctic animals and birds have adapted to survive the harsh winters, while others live there only in the summer. These creatures arrive in spring to raise their young and eat the abundant food. In the winter, they migrate southward to warmer climates. Every tundra animal, bird, and plant plays a crucial role in a food chain.
Activity: Ask students to each pick an animal that lives on the tundra and research more about its life cycle. Ask students: When does your animal live on the tundra? How does it fit into an Arctic food chain? Then ask them to illustrate this chain on a large sheet of paper, with a speech bubble drawn beside each animal or plant. Inside the bubbles, have students write a sentence from each organism’s perspective describing how the organism contributes to the chain of life. For example, in a chain of a poppy flower, an Arctic hare, and an Arctic fox, the hare’s speech bubble could say, "I eat poppies. Sometimes I become food for foxes."

- Subjects:
  Habits and Ecosystems, Antarctica and Arctic Regions, Plants, Cultures and Peoples, Heat and Insulation
ANIMALS OF THE ARCTIC TUNDRA

Directions:
1. Cut out each animal, then cut out the top edge. Fold on the solid lines and hold in a top interlocked clip. Draw eyes and mouth with a black marker.
2. To use the spinner, move the wheel top edge as that moves along in the window guide. Facts about each Arctiic animal will come through the bottom wheel on paper and out. Draw a ring around each fact that is true about the animal.

The Caribou or Reindeer is an Arctic mammal. It eats mostly grass. It weighs about 300 pounds. It has hooves and it's warm, thick fur. It lives with a migrating herd.

The Polar Bear is an Arctic mammal with a white pelt. It travels hundreds of miles to find seals and whales to eat. It can weigh half a ton!

The Arctic Fox is a small mammal. It is brown and white. It is white in the winter. It is about 20 inches long. It is the only Arctic fox in the world.
A long time ago when the world was first born, it was always dark in the north where the Inuit people lived. They thought it was dark all over the world until an old crow told them about daylight and how he had seen it on his long journeys. The more they heard about daylight, the more the people wanted it. "We could hunt further and for longer," they said. "We could see the polar bears coming and run before they attack us." The people begged the crow to go and bring them daylight, but he didn't want to. "It's a long way and I'm too old to fly that far," he said. But the people begged until he finally agreed to go.

He flapped his wings and launched into the dark sky, towards the east. He flew for a long time until his wings were tired. He was about to turn back when he saw the dim glow of daylight in the distance. "At last, there is daylight," said the tired crow. As he flew towards the dim light it became brighter and brighter until the whole sky was bright and he could see for miles. The exhausted bird landed in a tree near a village, wanting to rest. It was very cold.

A daughter of the chief came to the nearby river. As she dipped her bucket in the icy water, Crow turned himself into a speck of dust and drifted down onto her fur cloak. When she walked back to her father's snowlodge, she carried him with her.
Inside the snowlodge it was warm and bright. The girl took off her cloak and the speck of dust drifted towards the chief’s grandson, who was playing on the lodge floor. It floated into the child’s ear and he started to cry.

“What’s wrong? Why are you crying?” asked the chief, who was sitting at the fire. “Tell him you want to play with a ball of daylight,” whispered the dust.

The chief wanted his favorite grandson to be happy, and told his daughter to fetch the box of daylight balls. When she opened it for him, he took out a small ball, wrapped a string around it and gave it to his grandson.

The speck of dust scratched the child’s ear again, making him cry. “What’s wrong, child?” asked the chief. “Tell him you want to play outside” whispered Crow. The child did so, and the chief and his daughter took him out into the snow.

As soon as they left the snowlodge, the speck of dust turned back into Crow again. He put out his claws, grasped the string on the ball of daylight and flew into the sky, heading west.

Finally he reached the land of the Inuit again and when he let go of the string, the ball dropped to the ground and shattered into tiny pieces. Light went into every home and the darkness left the sky.

All the people came from their houses. “We can see for miles! Look how blue the sky is, and the mountains in the distance! We couldn’t see them before.” They thanked Crow for bringing daylight to their land.

He shook his beak. “I could only carry one small ball of daylight, and it’ll need to gain its strength from time to time. So you’ll only have daylight for half the year.”

The people said “But we’re happy to have daylight for half the year! Before you brought the ball to us it was dark all the time!”

And so that is why, in the land of the Inuit in the far north, it is dark for one half of the year and light the other. The people never forgot it was Crow who brought them the gift of daylight and they take care never to hurt him - in case he decides to take it back.

The End