Build-a-Caribou

(Adapted from a concept developed by Doug Urquhart)

Objectives

Students should be able to:

1. Describe adaptations of caribou to their environment.
2. Describe how adaptations can help caribou survive in their habitat.
3. Build a model caribou with exaggerated body parts, symbolizing the caribou's adaptations.

Method

Students learn about caribou adaptations by building models of caribou, highlighting these adaptations.

Background

Animals are the products of countless adaptations over long periods of time. Adaptations increase the animals' likelihood of surviving in their habitat. When a habitat changes, either slowly or catastrophically, the species of animals with adaptations that allow them many options are the ones most likely to survive. Species that have adapted to a very narrow range of habitat conditions are extremely vulnerable to change and may be more susceptible than other animals to death or extinction. Some animals from Beringia still survive today, for example, yet others have become extinct.

Caribou were living in North America during the last few ice ages (Wisconsin and Illinoian). Caribou have evolved over a million years of glacial influenced climates. Thus, caribou have developed adaptations allowing them to thrive in landscapes covered in snow and climates of cold temperatures.

Caribou can truly be called "chionophiles," a word that means snow-loving animals. Caribou have physical and behavioural characteristics that help them survive cold winter environments. Their shape, for example, plays a role in keeping them warm. Caribou have compact bodies, small tails and short ears. These features reduce surface area and thus the amount of heat that can be lost through the skin. In contrast, snakes have long, skinny bodies to increase their surface area so that they can regulate their body temperature through their skin.

To keep the heat in, caribou have two layers of fur covering their bodies and their ears, noses and muzzles. They have fine, crinkly underfur and a thick coat of guard hairs on top. The guard hairs are hollow. The air cells in this hollow hair act as insulation, keeping in the caribou's body heat. The hollow, buoyant hair and large flexible feet of the caribou also make them excellent swimmers. Many caribou herds cross wide stretches of open or fast-moving water during their migrations.

Age
Grades 3 – 8

Subjects
Science, Art

Skills
Analysis, application, classification, invention

Duration
Two 45-minute class periods

Setting
Indoors

Materials
- Pipe cleaners
- Pop cans
- Empty toilet paper rolls or pieces of cylindrical wood
- Brown or beige felt
- Fake fur
- Art supplies and materials that can be used to create 'symbolic' caribou body parts

Caribou further regulate their body temperature through their short, thick muzzles (the part of the head that includes the nose and mouth). This muzzle acts as a heat exchanger, warming and cooling air to reduce heat and moisture loss as the caribou breathe in and out.

Summer may be the most difficult season of the year for caribou. At this time, they go to alpine snow patches to cool off and to escape the insects that torment them. Barren-ground caribou search out windy areas on the coastal plain for the same reasons.

The hooves of caribou are large and wide. They work in the same way as people's snowshoes to help the caribou travel over the snow with less effort. Caribou have two small toes called "dew claws" and two large, crescent-shaped toes that support most of their weight. In the winter, the fleshy pads on these toes grow longer and form a tough, hornlike rim. Caribou use these large, sharp-edged hooves to dig through the snow and uncover the lichens that sustain them in winter months.

Procedure

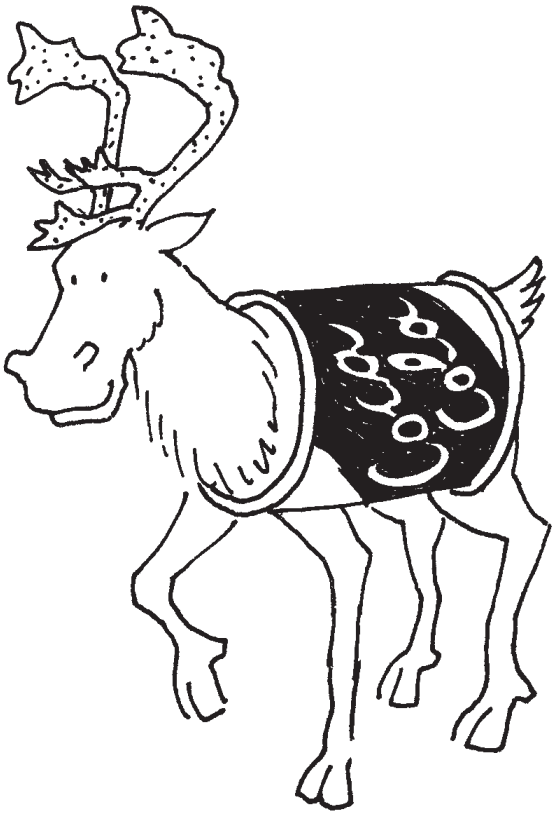
1. Discuss animal adaptations. Use examples such as long necks on giraffes to allow them to reach high vegetation, or large eyes and deep facial disks on owls, allowing them to gather light for hunting in the dark. Have students brainstorm some other animal adaptations and how they help the animal survive in its habitat.
2. Discuss and research caribou adaptations with the class, using the material given above as well as other sources.
3. Break the class into small groups. Have each group brainstorm ways to build their own caribou, using materials that symbolize caribou body parts.
4. Using available materials, have students build their own model caribou. They might use, for example, a pop can or other cylindrical object to symbolize the caribou's round body, adapted to minimize heat loss. They might use branches for antlers. They might use straw to symbolize the caribou's hollow hair. Remind the students to keep caribou adaptations in mind while they are building their caribou.
5. Have each group display their creation and explain it to the class.

Extensions

1. Discuss some other animal adaptations and how they help animals survive in their habitat.
2. Imagine that caribou were suddenly transported to a very different habitat?for example, the desert or the ocean. Draw a picture of what the caribou might look like if it had 'adapted' to its new environment.
3. Invent an animal that would be adapted to live in your neighbourhood. Consider mouth, shape, coloration, food, shelter, reproduction and other characteristics. Draw and describe your animal.

Evaluation

1. Ask students to identify different kinds of adaptations in humans.
2. Ask students to name four ways in which caribou have adapted to their environment.



Adaptations for different ages

Primary: Have students dress each other as though they were caribou, using objects to signify caribou body parts and their adaptations.