NEEDS OF ANIMALS

GRADE Grade 3

TOPICS Wildlife, bears, habitats, adaptations

CURRICULAR CONNECTIONS
Grade 3 Science
  Topic E – Animal Life Cycles
   3-10: Describe the appearances and life cycles of some common animals, and identify their adaptations to different environments
   - Classify a variety of animals, based on observable characteristics; e.g., limbs, teeth, body covering, overall shape, backbone.
   - Demonstrate awareness that animals require different habitats in order to meet their basic needs of food, water, shelter and space.
   - Identify examples of environmental conditions that may threaten animal survival, and identify examples of extinct animals.

OVERVIEW
Students will learn all about the unique adaptations that make bears and other mammals so well suited to life in the Canadian Rockies. With the help of the artifacts contained within the Bear EduKit, students will understand the needs of these creatures and how humans play a role in helping them to meet these needs. While this lesson focuses on the needs of bears and some of the challenges that they face in a landscape that is shared with so many people, it can be adapted for any other local species.

OBJECTIVES
- Students will understand the basic needs and habitat requirements of wildlife in the Canadian Rockies
- Students will learn how the anatomy of wildlife contributes to their ability to meet their needs
- Students will understand that human pressures in the Bow Valley may compromise the ability of bears and other wildlife to meet their needs

KEY TERMS
- **Adaptations** – a way that an animal is (or becomes) well suited to the environment in which it lives
- **Anatomy** – the study of the structure of living things
- **Carnivore** – an animal that feeds on meat
- **Habitat** – the place where a plant or animal grows or lives in nature
- **Herbivore** – an animal that feeds on plants
- **Omnivore** – an animal that feeds on both plants and meat

BACKGROUND ESSAY
The goal of all animals is to thrive and survive, whether they walk on two legs or four, have sharp teeth or flat ones. In order to do so, animals have to meet four basic needs: **food**, **water**, **shelter** and **space**. The tools that animals have to get the job done will influence how successful they are in surviving and eventually producing young.

What are the daily jobs that you have to do? Homework, doing the dishes, or playing sports perhaps? Think about the different tools that we are equipped with to accomplish these jobs. Why is it important that we have the right tool for the job? Now think about the daily jobs of animals in the Canadian Rockies. What tools do they have to perform these tasks?

Just as humans have specific tools that help them meet their needs, animals are well adapted to survive in the Canadian Rockies. When we look closely at parts of different animals we can understand how anatomy contributes to lifestyle and survival. We can think of adaptations as tools to get a job done.

ACTIVITY – RIGHT TOOL FOR THE JOB

Students will brainstorm how humans and animals both have different tools to complete different jobs.

1. Start by having students create a chart with two columns. In the left column write "Task" and in the right column write "Tool". Have students fill in the columns with different tasks that they have to complete in a regular day and the tools that they use to accomplish them.

2. Follow up by asking students why they think it is important to have the right tool for the job.

3. Create a second chart with the same headings, this time for an animal that lives in the Canadian Rockies. Remind students of the four basic needs that all animals have.

Task	Tool
Finding food	Well-developed sense of smell
Eating berries	Claws, teeth (molars)
Digging a den	Long claws, powerful shoulders
Traveling from valley to valley	Heavy bones

4. Lead a discussion about the consequences for their chosen animal if their environment suddenly changes. Are they still equipped with the right tools? How quickly can bears adapt to changes in their environment?

BACKGROUND ESSAY

SKULL: Studying the skulls of animals can tell us a lot about them. When we look at the skull of a bear for example, one of the first things to notice are the eye sockets. On a bear – as with other meat eaters – the eye sockets face forward. This gives them improved vision for hunting and attacking prey. When both eyes can focus on the same thing their vision is better. This is called binocular vision. Compare these features to a species that eats plants, such as a deer. Typically these species will have eyes on the sides of their skulls, which helps them detect danger that is coming from behind.

JAW: The shape of an animal's teeth can help us predict the kind of food that the animal eats. An animal that eats both meat and plants is called an **omnivore**. In the front of their mouth, they have pointed canine teeth. These sharp teeth are used for penetrating and tearing flesh. At the back of the mouth are broad, flat molars, designed for crushing, grinding and tearing plants.

An animal that eats only meat (**carnivore**) or only plants (**herbivore**) will have mostly one type of teeth or the other. Plant eaters use flat molars for grinding plants, and have long jaws which concentrate the strength along the back of the jaw where they are chewing. Meat

eaters have teeth with sharp points and serrated edges like steak knives. These are ideal for cutting flesh. They have shorter, curved jaw bones and large jaw muscles to allow them to bite and chew with a great deal of pressure.

These are just a few of the ways that different species have adapted to their natural environment. Can you think of some other adaptations that animals in the Rocky Mountains have that make them well suited to their environment?

ACTIVITY – BEAR INVESTIGATION BOOKLET

Students will investigate the unique adaptations of bears and other mammals that live in the Canadian Rockies using artifacts from the Biosphere Institute's Bear EduKit. While this booklet and activity focuses on bears, it can be adapted for any other species to contrast the differences between carnivores, herbivores and omnivores. Teachers can borrow bear bison, cougar, elk and wolf EduKits from the Biosphere Institute.

This booklet is available in English and French ("Ours Livret" with courtesy from Karine Pharand, Grade 2 teacher, École Notre-Dame-des-Monts)

1. Set up activity stations around the room ahead of time. Stations correspond to the pages of the booklets. The stations are claws; skulls; tracks; scat; pelts; differences; languages; WildSmart practices.

2. As students work through the booklet, encourage them to speculate on the function and behaviour related to different adaptations. Some probing questions to have students consider:
   a. What is the job of __ (e.g. long claws vs. short claws) __?
   b. Is this adaptation effective for the job that needs to be done?
   c. What happens to an animal when their environment suddenly changes? Are they still equipped with the right tools?
   d. What are some of the changes in environment that face wildlife in the Bow Valley? How can we prevent sudden changes in habitat for animals?

BACKGROUND ESSAY

Different animals have different capacity to deal with change. What would happen if you suddenly found yourself on a desert island tomorrow? Would you be prepared to deal with that change? Do the diets of omnivorous bears make them more or less well adapted to change compared with a plant-eater that eats only one type of plant?

Habitat is the natural home or environment of an animal that can provide some or all of the needs of that animal. In order for animals to

DURATION 40-60 minutes

MATERIALS
- Biosphere Institute Bear EduKit (includes claws, scat, skulls, tracks, pelts, and graphics)
- Bear investigation booklets

meet their basic needs and to be resilient to changing conditions, they must be able to move freely around and between habitats. The survival of the animal may be threatened once the habitat of an animal shrinks significantly. Reasons for this include not enough food, increased competition between animals seeking the same food sources, and fewer possible mates.

Wildlife in the Bow Valley live in one of the most developed landscapes in North America. This can present a significant obstacle for wildlife to meet their needs. In the valley bottoms where large carnivores like bears, wolves and cougars spend the majority of their time searching for food, there are networks of roads, fences, settlements, railway tracks and recreational trails that are used by humans.

Each time that an animal is disturbed by a human, it represents time that it cannot spend feeding, caring for young or searching for a mate. This is just one reason why it is important to respect closures within the protected areas. These closures are often put in place to allow animals the time and space that they need to feed undisturbed, until they are ready to move on to other areas.

You can help wildlife by checking the trail advisories before you go out hiking with your friends and family. Plan your hike in areas that do not have closures in effect. If you see bears munching dandelions or buffaloberries along the side of the road, avoid the temptation to stop your vehicle to take a picture. It is much safer for you and the animal to slow down but to keep driving.

ACTIVITY – BEARS OF THE BOW VALLEY SURVIVAL GAME

Once students have been introduced to the four needs of animals, they will transform into bears themselves to understand some of the challenges that wildlife in the Bow Valley face.

1. Mark the playing area using pylons or natural features. Randomly distribute cards facedown throughout the playing area; you can make the game more challenging by hiding the cards.

2. Remind students of the basic needs of all living things (food, water, shelter, space). Tell the students that they are going to transform into grizzly bears. Their task will be to meet their needs and to avoid hazards presented by humans.

3. *Round 1 (3 minutes)*: In order to stay alive, every bear needs to try to find one type of each of the four needs. If the bear picks up a card that they already have, they must put it back. After three minutes, call the bears back to the starting point with their cards and discuss how it went. Was it easy to meet their needs? What is an additional need that the bears will have to find in order to continue to thrive (*mate*)?

4. *Round 2 (3 minutes)*: Have helpers redistribute the cards around the playing area. In order to stay alive this round, every bear needs to find all four need cards, as well as a mate card (there should be significantly fewer mate cards than basic need cards). After three minutes, have the bears come back to the starting point with their cards and discuss how it went. Was it easier or more difficult to meet all their needs? How many bears survived this round compared with the first round? What other factors influence the survival of bears in the Bow Valley? What other challenges do they face on a daily basis (*humans, highways, trains*)?

5. *Round 3 (3 minutes)*: Have helpers redistribute the cards around the playing area. The bears need to find all need cards and a mate. Designate three people to represent the humans, highways and trains. As the bear are trying to meet their needs, these people will be trying hit the bears (gently, below the waist only) with balls. If the bears are hit by a ball, they must give up one card of their choosing which the throwers can keep or redistribute around the playing area.

6. Wrap up with a discussion of how we can protect bears to give them the highest chance of surviving.

SHELTER

SPACE

WATER

FOOD

MATE