

# How Do Living Things Meet Their Needs?



**Focus:** Students will explore how living things meet their needs for food, water, and shelter. In particular, they will explore how humans and other animals, as well as plants, move to meet their needs. Students will predict the movement of a living thing based on its observable physical characteristics.

## Specific Curriculum Outcomes

**Students will be expected to:**

- 37.0 describe different ways plants and animals meet their needs [GCO 1/3]
- 38.0 describe the different ways that humans and other living things move to meet their needs [GCO 1/3]
- 40.0 recognize that living things depend on their environment, and identify personal actions that contribute to a healthy environment [GCO 1/3]
- 10.0 predict based on an observed pattern [GCO 2]
- use observed physical characteristics of an unfamiliar animal to predict how it meets its needs
- describe how living things depend on their environment to meet their needs

## NOTES:

## Performance Indicators

**Students who achieve these outcomes will be able to:**

- describe how the physical characteristics and movements of animals (including humans), and plants, help them to meet their needs

## Attitude Outcome Statements

### Encourage students to:

- be open minded in their explorations [GCO 4]

## Cross-Curricular Connections

### English Language Arts

#### Students will be expected to:

- communicate information and ideas effectively and clearly, and to respond personally and critically [GCO 2]
- interpret, select, and combine information using a variety of strategies, resources, and technologies [GCO 5]

## Getting Organized

| Components                                                                                                                                                                                                                                                                                                               | Materials                                                                                                                                            | Before You Begin                                                                                                                                                                                                                                                             | Vocabulary                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Science Card 7</li> <li>• Science Cards 2 and 3 (optional)</li> </ul> <b>Literacy Place:</b> <ul style="list-style-type: none"> <li>• <i>Move Like the Animals</i> (Shared e-Reading)</li> <li>• <i>Whose Teeth Are These?</i> (Read Aloud–Predicting Strategy Unit)</li> </ul> | <ul style="list-style-type: none"> <li>• cardboard box with a hole cut in it</li> <li>• students' Science Journals</li> <li>• index cards</li> </ul> | <ul style="list-style-type: none"> <li>• Find plant motion videos (see Additional Resources on page 83)</li> <li>• Invite an Elder to talk about traditional ways of using observations of animal movement.</li> <li>• Prepare index cards with names of animals.</li> </ul> | <ul style="list-style-type: none"> <li>• environment</li> </ul> |

## Science Background

- Animals move in different ways to find or capture food, escape from danger, and even build their own shelter. Often the physical characteristics of an animal give clues as to how animals move, where they live, and how they meet their needs in their own environment. Some examples are given below.

| Animal      | Physical characteristic | Significance                                                                                                                                                                            |
|-------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| arctic hare | thick white winter coat | An arctic hare's warm winter coat of fur lets it survive the cold temperatures of its northern habitat. The bright white colour against the snow provides camouflage against predators. |
| hawk        | broad wings             | Broad wings enable a hawk to soar high overhead, conserving energy while searching for prey with sharp eyesight.                                                                        |
| lobster     | large front claws       | A lobster uses its large front claws to grab, crush, and cut prey. (In some species left and right claws have slightly different structures and functions.)                             |
| polar bear  | huge paws               | The huge paws of a polar bear let it walk and run on ice and snow without slipping or sinking.                                                                                          |
| moose       | long legs               | The long legs of a moose let it wade through deep wetlands in search of food.                                                                                                           |
| sea star    | tube feet               | A sea star's tube feet let it attach to surfaces on the ocean floor by suction, grabbing and releasing in order to move. The tube feet are also used to catch prey.                     |

## Possible Misconceptions

- Students may believe that plants do not move. In fact plants do move through various mechanisms, but the movement is often very slow. For example, when a plant is placed such that it is getting sunlight from one direction only, it will grow towards the light. (The cells on the side with no light lengthen, pushing the plant towards the light.) A brief inquiry on plant movement, described below in the Plant Movement activity, will let students observe this phenomenon firsthand. Some plants also exhibit fast movement, however. Consider showing students videos of the following:
  - the mimosa’s response to touch
  - the Venus flytrap’s response to prey

You can also find videos showing time-lapse movement of plants towards light (search on phototropism) or the growth of roots towards Earth and stem away from Earth in response to gravity (search on geotropism).

## ACTIVATE

### What Is an Animal’s Environment?

Write “environment” on chart paper or the IWB. Surrounding the word, add pictures of three animals that live in different environments, such as a beaver (pond), a crab (ocean), and an arctic hare (tundra). For each animal, ask:

- What words can we use to describe this animal’s environment?
- What other living things would be found in this animal’s environment?
- What non-living things would be found in this animal’s environment?

Post students’ suggestions next to the appropriate animal. Add the word “environment” to the Word Wall.



### A Beaver Pond

Continue the discussion of beavers by having students look at the illustration on Science Card 7. Ask:

- What are the beaver’s needs?
- What parts of the environment help the beaver to meet its needs?
- What physical characteristics of the beaver help it to meet its needs?
- What are some other living things in the illustration and what are their needs?
- How do these living things meet their needs?

Through discussion, draw out the ways in which the beavers depend on their environment to meet their needs. Help students relate the observable characteristics of a beaver to the ways in which it meets its needs. Key points about the connection between the beavers’ needs and their environment include the following:

- Beavers need a deep, still body of water to build their lodge and provide habitat for the aquatic plants they eat during warm months.



- To create a pond like this, the beavers need to use trees growing nearby to build a dam across a river.
- In the pond they create, beavers build their lodge, which provides shelter. A hole in the roof provides ventilation to make sure they have enough air to breathe.
- Aquatic plants such as water lilies and cattails grow in the pond, providing food for the beavers.

Key points connecting beavers' physical characteristics with how they meet their needs include the following:

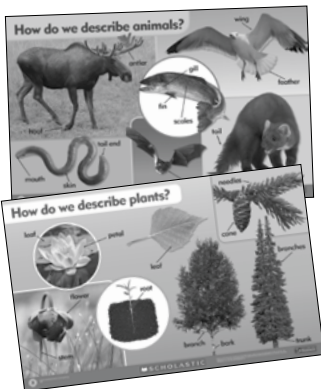
- Beavers' strong front teeth enable them to gnaw through trees and branches to provide building materials. (A beaver's teeth look orange because they are coated with an enamel that contains iron, making them extremely strong. The beaver's teeth grow continuously, so they do not get worn down by constant gnawing.)
- A beaver uses its webbed feet for swimming.
- A beaver's large, flat tail is used for slapping the surface of the water when it detects danger, making a loud noise to alert other beavers. It is also used for steering in the water and stability on land.
- Thick fur protects a beaver from the cold. A beaver's coat has long hairs for waterproofing and short, fine hairs for warmth. In addition, a beaver has a gland-like sac near its tail that secretes (releases) a strong-smelling, oily substance called castoreum. Beavers use castoreum to mark territory but also use their feet to spread it over their body to keep their fur waterproof.

Consider revisiting Science Cards 2 and 3, and having students discuss the needs of the animals and plants shown, and how they meet their needs.

### Animal Movement Role-Play

As a class, have students role-play various animal movements such as trotting, flying, and swimming. Ask:

- **How does this movement help the animal meet its needs?**
- **How do the animal's body parts help it move in this way?**



### Literacy Place Connection:

Revisit or read *Move Like the Animals* by Ray Leoni, and invite students to connect their feelings to the different ways that animals move. View the videos showing how the animals move and have students role-play the movements. Encourage students to think about why the animals move the way they do. Ask:

- **How does the movement of [the animal] help it to meet its needs?**

# CONNECT

## Plant Movement

Choose several plants that are still in good condition after the Plant Needs Inquiry (see page 48). Place them under a box with a hole cut in it. Make sure the hole end is facing the sunlight. Ask students to predict what will happen if the plants are left in the box for several days. Water the plants each day. After several days remove the box and observe and discuss the results as a class.

After completing their investigations with the plants, allow students to take them home to plant indoors or out.

## Observing Animal Movements

Invite an Elder to visit the class and describe how hunters use observations of animal movements when they are hunting game or how the movements of animals were part of their ancestors' daily or annual routines.



## Focus Animal

Allow students time to research how their Focus Animal meets its needs and to add this information to their Science Journals.

# CONSOLIDATE

## Predicting the Needs of an Unfamiliar Animal

Conduct interviews with students. Have them practise the skill of prediction by observing the physical characteristics of an unfamiliar local animal, such as a wolverine, a turr (common murre), a sea cucumber, an anemone, or a sea urchin, and predicting how it meets its needs based on its physical characteristics.



## Literacy Place Connection:

Revisit or read *Whose Teeth Are These?* by Wayne Lynch to the students. Invite students to predict how each animal's teeth helps it to meet its needs.

## Animal Charades

Have students play animal movement charades. Provide a list of animals on index cards. Students take turns to choose a card and act out the movement of the animal on the card. Other students guess which animal they are portraying and give reasons. Animals could include the following:

- bear
- cat
- dog
- duck

- crab
- frog
- giraffe
- hare
- horse
- monkey
- salmon
- snake
- whale

## EXPLORE MORE

### **Imaginary Living Thing**

Have students create a labelled diagram of a living thing of their own invention and describe how it meets its needs. If time permits, students could create models of their imaginary living thing and its environment.

### **Comparing Cod and Minke Whale Tails**

Both cod and minke whales swim under water, and both have tails with fins that help propel them through the ocean. Challenge students to conduct Internet research to find out the important difference between fish tails and whale tails and what this means for the movement of the animal. Answer: Cod tails (like all fish tails) move side to side, while minke whale tails (like all marine mammal tails) move up and down. The up and down motion helps lift the mammals out of the water to breathe air. They also use their tails to communicate by slapping the water. (The two types of tails—fish and mammal—are different due to different evolutionary pathways.)