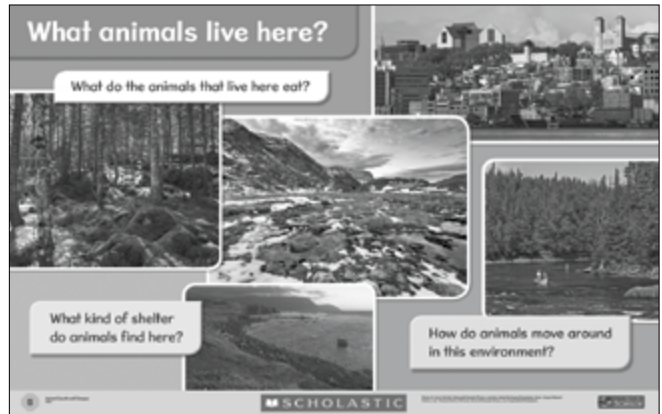


What Do Animals Need From Their Environments?



Focus: Students explore animals in their natural environment and observe how the animals eat, drink, move, and seek shelter. They apply this learning to requirements for human-made habitats.

Specific Curriculum Outcomes

Students will be expected to:

- 42.0 describe features of natural and human-made environments that support the health and growth of some animals [GCO 1/3]

Performance Indicators

Students who achieve these outcomes will be able to:

- describe the features of the natural environment that meet the needs of an animal
- design a human-made environment to meet the needs of an animal, based on the features of its natural environment

NOTES:

Attitude Outcome Statements

Encourage students to:

- appreciate the importance of accuracy [GCO 4]
- be open-minded in their explorations [GCO 4]

Cross-Curricular Connections

Social Studies

Students will be expected to:

- describe how people's interactions with their environment have changed over time [2.4.2]

Art

Students will be expected to:

- create art for a variety of purposes and recognize there are many kinds of visual art [2.3.1]
- demonstrate positive interactive skills through collaborative art making [2.3.3]

English Language Arts

Students will be expected to:

- communicate information and ideas effectively and clearly, and to respond personally and critically [GCO 2]
- use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learnings; and to use their imaginations [GCO 8]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• Science Card 4 • Science Card 5 • IWB Activity 2 • <i>What Is the Inquiry Process?</i> poster Literacy Place: • <i>We Are Wolves</i> (Read Aloud—Analyzing Strategy Unit)	• one large, clear, wide-mouthed jar for each student or small group of students • cheesecloth or paper towel and elastics • students' Science Journals • students' Science Folders • a wide variety of construction materials and tools such as construction paper, cardboard, cardboard boxes, newspaper, crayons, markers, paint, scissors, glue, tape, string, craft sticks, pipe cleaners, cardboard tubes, felt, modelling clay, papier mâché, foam balls, cloth, aluminum trays, paper towel rolls	• Have available the list of local animals generated earlier in the unit. • Arrange for a class visit or visits by a wildlife officer or farmer and/or by an Elder or Indigenous Knowledge Keeper. • Scout a nearby location outdoors where students will be able to find insects and other small animals.	• basic needs • habitat • environment • evidence

Safety

- Remind students to wash their hands after touching animals.

Science Background

- Students have learned about the needs of living things in Science 1. In Science 2 they extend their knowledge and explore the interactions of animals and their environments, focusing on how the environment supports their needs and how human-made environments can support animal needs.
- The basic needs that all living things share are food, water, air, and shelter.

Possible Misconceptions

- Basic survival needs are food, water, air, and shelter, but that is not all animals need if they are to thrive. For example, an animal such as a dog that is given adequate food and water but is kept in a small cage is having all its basic needs met but is not likely to do well. Beyond survival needs, the dog has specific needs that must be met for it to thrive, such as companionship, exercise, and the opportunity to play.

ACTIVATE



River Otters and Their Environment

Show students Science Card 4. Ask:

- **What do you know about river otters?**
- **What do river otters need to survive?**

As students examine the Science Card for clues and provide answers, write each need on the IWB or on chart paper. Otters need the following:

- River otters need food. (They eat up to one-fifth of their body weight each day. They eat aquatic animals such as crayfish, crabs, fish, and frogs.)
- River otters need fresh water to get their food from and to drink.
- River otters need shelter—a place on land to sleep. (They sleep in dens that they make or in sheltered spots that they find.)

In the wild, an animal's habitat must support all its needs. For each need, have students consider the following:

- **How does the habitat of a river otter allow it to meet its needs in the wild?**
- **How could a human-made habitat support the needs of river otters?**
- **What is different about how river otters' needs are met in the wild and in human-made environments? What is the same?**

Write students' ideas for how the otters' needs are met on sticky notes and place the sticky notes with the appropriate category on the board.



Animal Habitats

Write the names of these habitats on the board: Arctic, ocean and coastlines, forest, freshwater, and city or town. Tell students that the habitat of an animal is the place where an animal naturally lives and grows. Show the students Science Card 5 and ask:

- **Can you identify each habitat?**
- **Which animals do you think live in each habitat?**

For example:

Arctic: Arctic fox, Arctic hare, Arctic tern, Arctic wolf, caribou, lemming, snowy owls, vole, wolverine, and a variety of insects including beetle, butterfly, fly, mosquito, moth, and spider

ocean and coastline: Atlantic cod, barnacle, cormorant, crab, conner, dolphin, haddock, halibut, lobster, narwhal, mussel, porpoise, puffin, sandpiper, sculpin, sea anemone, sea star, sea turtle, seagull, seal, shark, walrus, whale

forest: American toad, black bear, chipmunk, coyote, gray jay, great horned owl, little brown bat, lynx, moose, pine marten, red fox, red squirrel, spruce grouse, and a wide variety of insects

freshwater: Arctic char, beaver, common merganser, lake trout, northern green frog, northern pike, river otter, and a wide variety of insects including water strider and dragonfly

city or town: mouse, pigeon, rat, seagull, wide variety of insects — students could also mention pets living in houses and fed by humans (budgie, cat, dog, guinea pig, tropical fish, etc.)

Write students' answers on sticky notes and place them with each habitat. Choose some of the animals and ask for each:

- **What does it find to eat in this habitat?**
- **What shelter does it find here?**
- **How does it move around in its environment?**



Invite students to add any new questions to the I Wonder Wall.



Literacy Place Connection:

Read or revisit *We Are Wolves* by Molly Grooms and Lucia Guarnotta. Ask:

- **How does their habitat support the wolves?**
- **What do you think they eat?**
- **Does the habitat provide them with something to drink?**
- **How do the wolves move? Do you think the habitat provides them with enough room to move?**
- **What shelter do the wolves have?**



Visit a Natural Environment

Visit a local natural environment such as a pond, marsh, bog, forest, or beach or other shoreline. Have students use a T-chart to make two lists: evidence of animals living there (including sightings of the animals themselves), and features of the environment. Before going outside, brainstorm with students some ideas of what they could be looking for as ‘evidence.’

On returning to the classroom, create lists to consolidate students’ observations. For each animal, ask:

- **What does this animal need to survive?**
- **What part or parts of the environment provide what the animal needs?**

Encourage students to ask questions. Add their questions to the I Wonder Wall.

Visit a Human-Made Environment for Animals

Arrange to visit a nature park, farm, insectarium, aquarium, or aquaculture farm that has animals that could also live in the wild. (If a visit is not possible, show students videos of a wildlife sanctuary or zoo.) Prompts for discussion could include:

- **What do these animals need to survive?**
- **How would these animals satisfy these needs in the wild?**
- **How are these animals’ needs satisfied here, in this human-made environment?**



Encourage students to ask questions. Record any questions not answered during the visit and add them to the I Wonder Wall.

CONNECT

Classroom Habitat Drawings

Allow students time to carefully observe the habitat that has been set up in the classroom for the Investigate a Life Cycle activity (see *How Can We Observe a Life Cycle*, pages 16–22). Have each student draw a sketch with labels that shows how the classroom habitat meets the needs of the animals being observed. Ask:

- **How would the needs of these animals be met in the wild?**
- **Are there any needs that we cannot meet in the classroom?**
- **How could we improve the ways we are meeting the animals’ needs?**

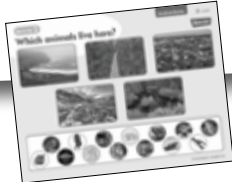
When students have finished their drawings, post them near where the habitat has been set up.

Class Visit

Arrange for a local wildlife officer or farmer to visit the class to talk about the needs of animals in their natural or human-made environments, and how changes to or deficiencies in those environments can endanger the animals. The visiting expert can also talk about how the life cycles of various animals are supported in the environment they are discussing.

IWB Activity:

- Challenge students to
- sort animals into their
- appropriate habitats
- using Activity 2: *Which animals live here?* (see the Teacher's Website).



Invite an Elder or an Indigenous Knowledge Keeper to visit and discuss animals and their relationship to the land, as well as traditional ways to observe, respect, and interact with wild animals and the land. This person could discuss ways of using traditional knowledge about animal habitats and feeding behaviours to hunt or trap the animals.

Where Do I Live?

Around the room, place images of various environments (e.g., forests, oceans, beaches and shorelines, fields, bogs, lakes and rivers) with Velcro spots. Provide cut-out images of various animals (mounted on cardboard with Velcro backing) that would live in those environments. As a group, discuss the needs of each animal in turn and predict its environment. Students can then place the picture of each animal in its environment.

Release or Keep?

Once the class animal or animals have gone through their life cycle (for example, once butterflies have emerged from their chrysalises or frogs have developed from tadpoles), engage the class in a discussion about what to do next. Ask:

- **Should our class take care of these animals for the remainder of their lives?**

If the decision is yes, ask students:

- **What do the animals need to stay healthy?**
- **How can we provide for these needs?**

As a class, come up with a plan and let students participate in the care of the animals and the maintenance of their habitat.

If the decision is to release the animals, ask students:

- **What do the animals need to stay healthy?**
- **Where and when should we release the animals?**

For example, butterflies should be released in warm weather. If the school has a butterfly garden, this would be an ideal place for releasing them. Or, plant a butterfly garden as a class project. (Refer to the Explore More activity on page 31.) Caution: It is best not to release non-native species as they could harm the local environment.

Allow students to participate in the release of the animals. Take pictures of the release and print them. Students can then use them to make a display showing where the animals were released and what features of the environment make it suitable for those animals.

Create a Zoo in a Jar

Give each student or small group of students a wide-mouthed jar and a spoon and explain that you will be making a “zoo in a jar.” Take students outside and have them look for small insects or other animals. After locating and observing one or more animals (e.g., an insect, snail, slug, carpenter ant, centipede,

carpenter, spider, or earthworm), each student should create a habitat in their jar using some of the animal's surrounding environment, such as soil, leaves, twigs, grass, and rocks. Students can use their spoons to collect an animal or animals and put them in the jar. Jars can be covered with cheesecloth or paper towel held over the jar with an elastic band. Before leaving the area, have students take notes and/or pictures to record details about the environment where their animal was found.



Have students bring their jars back to the classroom. There, they can observe the appearance and behaviour of the animals by making notes and sketches and by taking photographs and videos. Have students generate further questions to investigate about their animal and record these in their Science Journals.

The Zoo in a Jar can then be used for the Zoo in a Jar Inquiry activity that follows.

CONSOLIDATE



Zoo in a Jar Inquiry

Explain to students that they will be using the animals they collected to investigate the animals' needs and preferences regarding their environment. Review the stages of the *What Is the Inquiry Process?* poster with the students.

1. Ask a question. Make a plan.

Challenge students to ask questions about the animals that they can answer by using simple experiments that will not harm the animals. For example:

- What kind of food does the animal prefer?
- Does the animal prefer light or dark surfaces?
- What kind of light conditions does the animal prefer? (Dark, bright, or something in between?)
- Does the animal prefer wet, damp, or dry conditions?



Have students record the question they plan to investigate in their Science Journals. (Alternatively, assign each student a question.)

Students should plan how they will carry out their inquiry and make a list of materials they will need. For example, to investigate what light conditions their animal prefers, they could use a toilet paper roll to make a dark place to offer their animal. Each student should describe their plan to you and provide their list of materials. Ensure that the question is focused and that the plan is simple while showing care and respect for the animal.

Discuss with students any safety concerns associated with their plans.

2. Explore. Record your results.

Students should carry out their plan for investigating their question. Students should record their observations using words, sketches, digital cameras, and/or tablets. Students should keep their records in their Science Folders.



3. Think about the results. Make conclusions.

Once the investigation is finished, prompt students to look at the question they asked at the beginning of the investigation. Ask:

- **What did you find out about the needs or preferences of your animal?**
- **Based on your observations, how would you answer your question?**
- **How would you change the setup of your Zoo in a Jar based on what you learned?**

4. Share what you learned.

Have students make posters to show what they learned about their animal. For example, they might make a labelled sketch of an “ideal environment” for their animal. Set up a Gallery Walk so that students can view one another’s results along with their Zoo in a Jar.

After finishing the inquiry, students should return their animals and the other items in the jar to where they found them. Following the investigation, students can conduct additional research to find out more about the animal they observed, and what stage of its life cycle it was in. Encourage students to record any further questions generated on the I Wonder Wall.



A Model Environment

Divide the class into small groups. Assign each group a local animal. Ensure you choose animals from a variety of different habitats. Tell students that they will be building a model of that animal’s environment. Set out a variety of construction materials and tools and allow students to examine the materials before making their plans. The materials might include: construction paper, cardboard, cardboard boxes, newspaper, crayons, markers, paint, scissors, glue, tape, string, craft sticks, pipe cleaners, cardboard tubes, felt, modelling clay, papier mâché, foam balls, cloth, aluminum trays, paper towel rolls.

Provide references to allow students to learn about their animal’s environment. Have students make a sketch of their plan in their Science Journals. Once the plan is ready, they can select their materials and begin. Remind students to compare the model they are building to their sketch and any other references as they work.

When the models are complete, have each group present their model and describe how the different features of the environment support their assigned animal.



EXPLORE MORE

Human-Made Environments in Zoos

Have students generate questions about zoos or other human-made environments and record them in their Science Journals. Students can then use books, magazines, or the Internet to answer their questions. For example, students may research pros and cons of zoos, or describe the techniques zoos use to provide environments for animals that come from different environments all over the world.



Plan (and Plant!) a Pollinator Garden

Challenge students to find out what plants attract and support bees, butterflies, and other pollinators in the various stages of their life cycles. Students should then find out which of these plants are suitable for growing locally, and tour the school grounds to locate a place where a pollinator garden could be planted. Then they can make a plan for planting the garden. If possible, carry out the plan as a class project.