

NatureHoods | Kindergarten

Bear Necessities: What Plants and Animals Need to Survive

► Objective:

To understand what plants and animals need to survive; to understand the interdependent relationships among animals, their needs, and their habitats; to understand the impact that humans have on the environment; and to practice making observations and drawing conclusions

► Next Generation Science Standards:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Lesson 1: What Do Living Things Need To Survive?

Objective: K-LS1-1. Understand the difference between “living” and “non-living” things; understand what living things need to survive, including plants, animals, and humans; act out a model of an animal trying to meet all 4 of their basic needs.

Materials: Colored bandanas (red, blue, green, yellow), cones, living and non-living photos, photo examples of basic needs (4)

Terms: living, non-living, shelter, space, food, water

Part 1: In-Class Discussion (20 min)

Pose the questions to the class: what does it mean to be “living”? Call on students to share their ideas of what it means to be living. To be living (by scientific definition), means to breathe (exchange gases), to grow, to need food/water, and to reproduce.

On a white board, create two columns titled, “Living” and “Nonliving.” Introduce individual photos of living vs. nonliving things and call on students to come up and place the photo in the column that they think it belongs. Explain that **all living and nonliving things are connected**, and all play important key roles in the ecosystem.

Nonliving examples: fire, sun, rock, water, air, clouds/vapor, sand, dirt

Living examples: humans, brown bear, woodpecker, lady bug, sunflower, mushroom, lichen, pine tree, algae

NOTE: Not all cultures and peoples categorize Earth's elements and beings as "living" or "nonliving." Many Indigenous tribes instead view connectedness, energy, and life in all of Earth's bounties. Be aware of this, and you may decide to explain this to students in respect to these cultures and other ways of thinking.

Then, direct the attention to the living things. What do all these living things need to survive? Call on students to share ideas and write down ideas on white board.

BASIC NEEDS

Food: Food is energy. Energy may be produced or consumed. Plants are producers that make their own food via photosynthesis using the sun. Animals are consumers and must consume plants, animals, or other living things to get energy.

Water: Water makes up most of plant and animal cells, tissues, organs, and systems and is essential for all life to function and form.

Shelter: A shelter is a safe space to rest, raise young, and provide protection from the elements, predators, and other dangers. Shelter could be a nest, burrow, hive, cave, underground, in a fallen tree, under leaves, tall grass, tree cavity, rock pile, etc. Many plants may also need some sort of shelter.

Space: All life needs adequate space to grow, reproduce, and find food, shelter, and water. If there are too many plants/animals living in the same space, there may not be enough food, water, and shelter for all to survive.

Part 2: Oh, Deer! Game (30 min)

In this game, students will be deer searching for all of their basic needs. In each round, some students will play the "basic needs" and some will be "deer."

"Basic need" players will represent **water** (blue), **food** (green), and **shelter** (red), holding colored bandanas to represent that need. "Space" is provided in the form of the boundary zone, this basic need is a given. "Basic needs" will be spread out within the boundary zone and cannot move.

Deer wear a yellow bandana and will run out within the boundary zone to try to collect all 3 basic needs. Once a deer collects all 3, they will run back to the home base. The deer that collect all 3 bandanas survive well, and deer that do not collect all 3 are not surviving well. Play until every student has the chance to be a deer.

Round 1:

- A. Pass out bandanas to students in **even** numbers, counting off by 4, so that you know all deer will get all 3 flags and survive well. Deer will wear around their wrists to mark that they are deer. Basic needs will hold a bandana in hand.

Deer = **yellow** bandana

Water = **blue** bandana

Food = **green** bandana

Shelter = **red** bandana

- B. Establish a home base and boundary zone. Deer line up on the "home base" line, "basic needs" spread out within the boundary zone and freeze. Bandanas must be visible.
- C. On your signal, deer run to collect all 3 flags (only one of each color) and return to home base when all 3 are in hand.
- D. When a basic need bandana is taken, that student sits down (helps show what is left for deer).
- E. When all deer return, re-group the class at home base. Invite deer to stand in front of the class and announce that all deer got all 3 basic needs and survived well.

Rounds 2-4:

- A. Pass out bandanas to students in **uneven** numbers, so that not all deer will get all 3 flags, some will survive less well. Fluctuate the number and deer and basic needs. There may be excess food, but little water. Or plenty of water, but limited safe shelter. Again, deer only collect one of each color.
- B. Explain various scenarios of limited resources: drought (less water), not enough plant growth (less food), not enough tall grass/cover (less shelter), population surge (more deer).
- C. Deer will return to home base if they collect all 3 bandanas. End the round when remaining deer have collected all that they can. Ask the deer who did not survive well what basic need they are missing?
- D. Play until all students have been a deer.

Wrap Up:

- Discuss: When an animal does not get a basic need, then the animal will be affected. Even if there is plenty of water, but no food, then the deer cannot survive.
- What was something challenging about this game?
- What was a strategy that you used as a deer?

Lesson 2: Where Do Animals Live?

Objective: K-ESS3-1. Learn about the diversity of habitats in Central Oregon and the local animals that live there. Understand the importance of a habitat for an animal to meet its basic needs.

Materials: Central Oregon habitat Photos (5) and stakes; animal photos (25)

Terms: habitat, forest, wetland, grassland, rocky outcrop, alpine, high desert

Part 1: In-Class Discussion (20 min)

Ask the class if they are familiar with the word “habitat.” What does it mean? A **habitat** is the natural home where a plant or animal lives. Habitats are very important to an animal’s survival and provide the basic needs that all animals need.

There is a vast diversity of habitats all over the world. A habitat may be as big as the Pacific Ocean or as small as a puddle. A habitat may be a vast forest or a single fallen tree. For a blue whale, the largest animal on earth, an entire ocean may be its habitat. For a bark beetle, a single tree may be its habitat where it lives underneath the bark.

What are some other habitats?

Brainstorm habitats from around the world.

What are the 4 basic needs that an animal needs in its habitat?

Food, water, shelter, and space. If an animal cannot find these things in a habitat, then it may not be able to survive there.

Can animals live in ANY habitat in the world?

Would you see an elephant living in the Arctic? A polar bear in the rainforest? An otter in the desert? Why not? Because if the habitat doesn’t have the basic needs that the animal needs to survive (adapted over time), then they can’t live there. Also, their specialized adaptations must be appropriate for their habitat. A giraffe won’t have green, leafy food to

eat in the Arctic and may get too cold. A polar bear can't find plump seals they like to eat in the rainforest and may overheat.

Introduce 5 main habitats found within the High Desert of Central Oregon: (with photos)
These are by no means the *only* types of habitat in Central Oregon, but some of the most general.

What do you notice about each habitat?

1. **Forest** is dominated by trees and abundant, layered plant life, providing lots of shelter and food opportunities.
2. **Wetland/Rivers/Lakes** has abundant plant life and lots of water access.
3. **Grassland/Shrub** is dry and open with only low-growing plants (shelter opportunities are few or underground).
4. **Alpine** is a high elevation mountain with extreme seasons, limited plant life, and snow may be present all year.
5. **Rocky outcrop** provides many shelter spots, limited plant life and lots of rock (common nesting and hunting sites).

In which habitat would this animal live?

Call on students to come up and match an animal to the correct habitat.

1. River otter (Wetland)
2. Douglas Squirrel (Forest)
3. Mountain Goat (Alpine)
4. Western Fence Lizard (Rocky Outcrop)
5. Western Meadowlark (Grassland)

Part 2: Habitat in the Schoolyard (5-10 min)

What kinds of animals have you seen in your schoolyard? Walk the class to an animal "habitat" in the schoolyard (trees, rockpile, etc). What animals could live here? Where could they find food, water, and shelter? Would they have enough space here?

Optional: have students explore the schoolyard or within a boundary zone to find another space that could be an animal habitat. Re-group and have students share their ideas.

Tree + Bird:

Water: Where would a bird get water? River, stream, rain puddles

Food: What would a bird eat? Seeds, insects, berries, worms

Shelter: Where would a bird find shelter? Nest, tree

Space: Does the bird have space to grow? Forest, Grassland, Town

Part 3: Habitat Match (15 min outside)

Head outside to match some “mystery” animals to the habitat that they would live, while incorporating movement. Students will see some familiar animals and be introduced to some unfamiliar animals.

- A. Place 5 photos of habitats on stakes in the ground, spread out enough to run to each one.
- B. Students will line up shoulder-to-shoulder along a “home base” line, which they will return to after each animal.
- C. Walk along the line of students, showing a photo of a “mystery” animal. In which habitat would this animal live? Don’t identify it and don’t let them say their answer out loud. They will keep their thoughts in their head. Encourage students to make their best guess, to not follow the group, and to think for themselves.
- D. On your signal, students will run to the habitat where they think the animal would live. Reveal which habitat was correct, then have all students run to the correct habitat.
- E. Quickly share a fun fact about the animal and how its needs are being met in this habitat (food, water, shelter).

Alpine: Mountain goat, American Pika, Mountain lion

Forest: Gray Jay, American Marten, Snowshoe hare, Black bear, Douglas Squirrel, Mule Deer, Woodpecker, Steller’s Jay, Chipmunk, Millipede

Grassland: Black-tailed jackrabbit, Pronghorn, Western Meadowlark, Burrowing owl, Golden eagle, Western sage grouse, American Badger, Mule deer

Wetland: River Otter, Beaver, Muskrat, Trout, Red-winged blackbird, Yellow-headed blackbird, Cinnamon teal, Oregon Swallowtail, Kingfisher, Cascades frog, Osprey

Rocky Outcrop: Western rattlesnake, Western fence lizard, Bobcat, Turkey vulture, Raven, Yellow-bellied marmot

Lesson 3: Changing the Environment

Objective: K-ESS2-2. To understand how plants, animals, and humans can change the environment to meet their needs, considering both a positive and negative impact.

Materials: Photos of plant, animal and human change, photos of beaver dam and lodge, beaver skull and tracks (if available), stream tables (4-5, [reserve from Resource Co-op](#)), buckets (2-3), natural materials for dam building (sticks, twigs, rocks, moss, pine needles, clay, dirt)

Terms: habitat, environment, impact, beaver, dam, lodge, shelter

Part 1: In Class Discussion (20 min)

Refresh the class about the definition of a habitat and the 4 basic needs of survival, or call on students to test their knowledge.

What is the environment?

The environment refers to the natural world (in whole or in part) and all of the living and nonliving things that occur there. Sometimes, plants, animals, and humans can change parts of a habitat to better meet their needs.

Plants and animals can change the environment in different ways. Plants' roots can break through rock while growing. Animals can build impressive shelters, like huge termite mounds, ant hills, elaborate nests, tunnels underneath the snow, and large hives.

How have humans changed the environment?

Humans have built roads, cities, farms, ranches, and houses to meet our ever-growing needs.

Can you think of another animal that can change its environment?

Beavers are second behind humans in their ability to change their environment. Beavers are large rodents that live along rivers, lakes, and ponds. They are adapted to living on land and the water. They have thick, waterproof fur, webbed feet, a wide flat tail, and ever-growing teeth. All special traits to help them live around water and build their dams. They are herbivores, eating leaves, bark, twigs, roots, and aquatic plants. They use their powerful teeth to cut down branches and trunks of trees for food and to build their homes. They are master builders of their habitat and very busy workers. They build a lodge (shelter) out of logs, branches, sticks, and mud with an underwater entrance. They live in large families inside the lodge and stay in the lodge during winter.

A beaver's favorite habitat is a pond, and if there isn't one already there, they may have to make it! Beavers make ponds by felling trees and using logs, branches, and mud to construct a dam. Dams change the flow of a river by slowing it down or stopping the flow.

This may flood lots of land and create a smooth pond. This new wetland provides habitat for many other animals.

Dams Impact on an Ecosystem:

- Create and maintain wetlands
- Prevent erosion
- Raises the water table and helps to purify the water (silt breaks down toxins)
- New water source attracts many animals
- Meadows appear

Part 2: Build a Beaver Dam! (30-40 min)

Explain to students that they will attempt to build a beaver dam outside. **The goal is to slow or stop the flow of water.** Break the class into 4-5 small groups, based on how many stream tables you have. Each group will work together to try to build a dam within a stream table to slow or stop water flow. Direct groups to build dams in the middle of the stream table. Allow students to be creative and work through trial and error. Guide students to the right direction, but allow them time to make mistakes in their designs and fix it. Instead offer questions, how could you build this tighter? What could you change?

- Set up stream tables outside on slightly slanted ground, so the water will run down. Provide communal bins of natural materials to build with (sticks, twigs, rocks, moss, clay, pine needles). Warn students that some may be pokey.
- Students may grab only 1 small handful of materials at a time, to prevent groups from hogging materials. Monitor the materials.
- Ensure groups leave space at the top and bottom of the stream table to allow water to flow.
- Students may not throw, poke, or hit each other with materials.
- Bring empty jugs/buckets to fill with water at school.
- When a group is ready to test water, have them raise their hands, and pour a little water onto the head of the stream table. Maintain control of the water, do not allow students to pour. Observe the results, look for slowing or pooling of water, and ask questions on how they can improve their design.

Wrap Up: Share Designs and Strategy

- Did the dam you built work to slow or stop the water?
- Did the water slow down a little bit, a lot, or stop completely?
- What worked best? What did not work well?

Lesson 4: Human Impact On The Environment

Objective: K-ESS3-3. Discuss the impact of humans on the environment, how this affects animal habitat, and communicate solutions that can reduce this impact.

Materials: Photos of human impact (20), hula hoops (10), photos of solutions (28)

Terms: environment, habitat, impact

Part 1: In Class Discussion (10 min)

Remind students about the definition of the environment and how humans can change the environment to meet their needs. While these changes can be helpful to humans, it can also negatively affect the environment and other living things.

Human Impact: 4 photos of each category

Pass out a photo of human impact on the environment to each student within categories:

1. Trash
2. Roads
3. Building/construction
4. Lights/light pollution
5. Deforestation

Going by category, ask students to raise their hand if their photo shows __ (trash) __. Ask among those students how they think this change has impacted the environment.

Why does the environment need our help?

Over the years, the human population has grown and grown. This has had a huge impact on the environment.

Everything living on the Earth has basic needs. Humans have caused so many changes that many living things cannot get what they need. Remind the class about the importance of a habitat for meeting the basic needs of animals (food, water, shelter, and space).

When a habitat is destroyed, damaged, disturbed, or polluted, all living things that live there will be affected.

Humans get our own basic needs from the planet. What things do we get from Earth?

- Oxygen to breathe from the air
- Water from snow and rain that fills our rivers, lakes, creeks and reservoirs
- Food from the plants and animals

- Shelter built from the trees and other materials that we take from Earth

Part 2: Disappearing Habitat Game (20-30 min)

In this game, students will be animals living within their habitat, but will slowly experience habitat destruction and fragmentation.

- A. All students start out as a given animal. Allow students to decide which animal they are or pass out the “habitat animal photos” from Lesson 2 to wear around their necks.
- B. Lay out hula hoops in a large circular pattern. The hula hoops represent safe habitat space where the animal can find adequate food, water, and shelter.
- C. Similar to musical chairs, the “animals” will walk in a circle on the outside of the hula hoops. When you call out “HABITAT” the animals must find a hula hoop to stand in. Up to two students may be in one hula hoop.
- D. Start out with as many hula hoops as possible (10) so ideally all animals survive the first round.
- E. Gradually remove one hula hoop at a time and explain the reason for removing it: pollution, building roads, houses, shopping centers or stores, cutting down forest for lumber, or plowing land for farm land or cattle.
- F. Play until only 2 animals survive. Ask the class, why did this happen?
- G. Repeat the game if time permits.

Wrap Up:

- Why did only 2 animals survive out of 20?
- How does human development impact animals and their habitats?

Part 3: Communicating Solutions (10 min)

Re-group the class either inside or outside. Explain that people have worked out ways that we can help our environment, and we are already starting to make a difference! We all need to do our part to help the environment, the planet, and ourselves.

How can YOU help the environment? Kindergarteners can help out too!

Pass out a photo to each student exhibiting ways to help out the environment. There are 4 photo examples of each of the categories listed below. Explain to students that they each have a photo of a way that they can help the environment, and there are 3 other photos of the same solution. Give a few minutes for students to try to match up and form their groups of 4.

1. Conserve water
2. Conserve power

3. Donate items to be reused (clothes/toys/books)
4. Recycle
5. Pick up litter/trash and don't leave litter/trash
6. Grow a garden (insect, bird, and pollinator habitat and can provide food)
7. Put out bird seed, bird baths, and birdhouses to aid "urban" birds and stopover sights for migratory birds.

After grouping up, go around to each group and have them share with the class their solution to help the environment.

- **Who** or what is it helping?
- **How** is it helping?