

# Shrinking Habitat – Share the Space



## Lesson Three

### Summary

An interactive activity where students will physically map out a diverse forested area in their classroom, then slowly reduce the space to simulate a loss of habitat and the impact on various species.

### Activity Information

**Level:** Grades 4 and 6 (elementary cycles 2 and 3)

**Subjects:** Habitats and Communities, Diversity of Life, Science, Geography, Language Arts, Drama

**Estimated Duration:** One 60-minute class period to act out the scenario.

**Materials:** markers, construction paper, string.

### Learning Outcomes

#### Habitats and Communities

Predict how removing a plant or animal population affects the rest of the community.

Relate habitat loss to the endangerment or extinction of plants and animals.

Demonstrate that specific terminology is used in science and technology context (use appropriate terminology such as habitat, food chain, etc.).

#### Diversity of Life

Describe the possible impact when humans use natural resources in a region (e.g., identify the possible impact on the local deer population).

### Teacher Background

This lesson includes a brief story about a community that has to make a decision about development versus conservation. Please select a species that lives in a forest from your province or territory. You will use that species in Step 3 of the learning activity, and also in the short story. You can refer to the Hinterland Who's Who Web site to choose your species: [www.hww.ca](http://www.hww.ca). For additional information on food webs and habitats, and communities in wetland ecosystems see lesson plans available at [www.ducks.ca/edu/resource.html](http://www.ducks.ca/edu/resource.html)

Habitat supports the food, water, shelter and space essential for the survival of all living species. And every species – plants, humans, fishes, you name it – has its own specialized habitat, or ecological niche. There are biotic (living) and abiotic (non-living) elements within an ecosystem.

Often species can share habitat. Owls and Hawks can both live in a woodland or forested area and hunt the same kinds of prey (moles, voles, mice, etc.) The Owl hunts at night; the Hawk hunts in the morning – so they can survive in the same setting.

In Canada, forests provide habitat for many species. When we consider a forest habitat, we need to look beyond the trees. It's not just the trees that make a forest diverse; it is the soils, water, mosses, beetles, shrubs, birds, squirrels, Hawks... *it's everything!*

Habitat constantly undergoes change. Sometimes change revitalizes habitat making it even more productive, and sometimes it is degraded. While this can be the result of catastrophic natural events – such as wildfire, flooding, drought, hurricanes or ice storms – it is often due to human impacts. Urban and suburban developments eat up large tracts of land, large-scale agricultural practices remove forests, wetlands and fields from the natural setting, and invasive species can push out original inhabitants. About 80% of species that are designated at risk by COSEWIC are affected by habitat loss or degradation.

### Procedure

**1** **Start with a brief introduction about the vast variety of life in forest ecosystems.** Ask your students to think about a forest near them and describe its ecosystem – the things found in the forest – and list them on the board. Remind them that forests are made up of trees, shrubs, ferns, soils, water, insects, mammals, birds, slugs, mushrooms, ants and many more species that we cannot even see with the human eye.

**Note:** You might want to break the class into small groups and ask each to produce a list of things that make up a forest, and then produce a class list at the end. You should also include abiotic things like rocks, logs, minerals, etc., which provide important resources for living organisms.

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For a more detailed look at the implication of habitat loss, see *Shrinking Habitat* (p. 289; ISBN 1-55029-082-7).

For more information about this publication, various wildlife education programs, or to register for a Project WILD workshop in your province, contact:

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**2 Ask your students what they think might happen when part of a forest ecosystem is removed.** For example, if the trees were removed, what would happen to the plants and animals living in the forest? This would increase the light penetration onto the forest floor, radically altering the air and soil temperature, soil moisture, runoff and erosion. It would remove wildlife shelter and result in the loss of habitat for a significant number of species. Some species might move to a bordering area if their habitat is altered or lost. Other species might begin to colonize this new disturbed area. Ask your students what they think might happen to the mammals, insects, soils and water?

**3 Explain to students that you are going to turn the classroom into a forest community** so that they can explore the effects of the loss of a forest habitat on the species living there. Use pieces of construction paper or cardboard to create signs listing some of the things they identified earlier as part of a forest ecosystem, such as tree, shrub, fern, mole, mouse, coyote and other wildlife species and abiotic features. Tape the signs onto desks and tables around the classroom where they most expect these species to live. Move these around the room to better represent a forest filled with a variety of trees, plants, soils, waterways and wetlands, and other ecosystem components.

Then ask the students to decide what role they wish to play in this forest ecosystem. They need to select their species and then determine where that species would most likely live. They can choose to be a plant or an animal, but it must be something that would live in that particular forest community.

**4 Next, have students select a location in the classroom that they believe would provide ideal habitat for their species.** If they choose to live near the window, that would mean more sunlight for them to grow (a young seedling or shade intolerant tree, such as poplar or aspen) or to gain body heat (a snake). If they choose to live under the desk, they might need shade that the forest canopy provides (shade tolerant seedlings such as sugar maple or red oak) or cover (deer, mice and other prey species would need cover to hide from their predators).

**5 Once all students have settled into their habitat, read the short story on the following page aloud to them.**

**6 At the conclusion of the story, ask the students what they think the community should do.** Generate a few ideas, write those ideas on the board, and then proceed with the rest of the activity.

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**O**NCE UPON A TIME, THERE WAS A COMMUNITY IN [name your province or territory]. This community was an active, growing community with a vital population of young people and adults. There were plenty of soccer pitches and baseball diamonds, a hockey arena, curling club, and all the things that make people happy.

The community was growing! As its numbers grew, so did the need for more places to live. Soon, there was not enough living space for all the people who wanted to live in the community. So, the community leaders proposed to expand and build a new housing development.

The community was surrounded by lovely woodlands, however in order to satisfy the demand for additional housing, community planners had to clear out 10 hectares of the 30-hectare mixed forest. Many wildlife species used the woodland for their habitat, including red oak, sugar maple, white and red pine, ferns, mosses, red squirrels, rabbits, Hawks, Wood Ducks, Woodpeckers and Owls, small birds, mice, coyotes, porcupines, raccoons, deer, and many others.

A meeting was called in the Community Centre so that everyone interested in the development could present their opinion. The developer and some of the community leaders felt that it was a good idea because it would provide more housing and also generate more tax dollars for community improvements.

Ecologists and conservationists were concerned about the loss of green space and the potential impact on wildlife and their habitat. What steps should be taken to make the right decisions about the development and conservation issues, and how will the community meet its growing demand for housing?

Let the students know that your classroom is the community that you read about! You will be the community planner, and you have decided to remove one-third of the trees to allow for the growth of the community. Draw an imaginary line in the room to simulate the removal of trees and consequently, the loss of habitat. Ask each student/species what has happened to their habitat, and what they will do in order to survive. You can ask them questions such as:

- Q: Do you have enough habitat remaining to survive?
- Q: Can you move to a new habitat?
- Q: Are you going to have trouble finding food?
- Q: Will you now be more easily caught by a predator?
- Q: Have you lost your nesting or birthing area for your young?
- Q: Has your drinking water supply been lost or damaged?
- Q: Do you think you could become a species at risk?
- Q: What happens to all of the people who can't find housing in the community?
- Q: How does the community continue to provide all the things that make people happy (e.g., soccer pitches, hockey arenas, etc.)?
- Q: What do you believe would happen if more habitat were removed (e.g., half of the remaining forest ecosystem)?

**7** Ask each student to graphically represent what happened to their species (cartoon, graph, mural, poster) showing the effects of habitat loss – before, during and after.

### Extensions

Ask students to write their own story of habitat loss from the perspective of their species.