

SHRINKING HABITAT – SHARE THE SPACE

Grade 4, Science and Technology

Source: Adapted from *Shrinking Habitat – Share the Space*, Canada's Forest Teaching Kit Series, Canadian Forestry Association

DESCRIPTION

This interactive activity provides an opportunity for students to physically map out a diverse forested area in their classroom, then slowly reduce the space to simulate a loss of habitat and the impact this has on various species. Teachers can then help students consider ecological impacts from human energy needs.

CURRICULUM LINKS – SCIENCE AND TECHNOLOGY, GRADE 4

Understanding Life Systems – Habitats & Communities

Overall Expectations: 1,2,3

Specific Expectations: 1.1, 1.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.3, 3.4, 3.9, 3.10

Understanding Earth & Space Systems – Rocks & Minerals

Overall Expectation: 1

Specific Expectations: 1.1, 1.2

PLANNING NOTES

Materials

- Construction paper
- Tape
- Desks/tables
- Selection of paper (graph, mural, poster, etc.)
- Community Habitat Loss Story* (Appendix 1)

Learning Skills & Work Habits

Collaboration, initiative, critical thinking, inquiry

Recommended Class Time

1-2 periods

Prior Learning

Habitats support the food, water, shelter, and space essential for the survival of all living species. 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. 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!

Habitats constantly undergo 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.

TEACHING/LEARNING STRATEGIES

1. Start with a brief introduction to 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.
2. Break the class into small groups and ask each to produce a list of things that make up a forest, and then produce a full class list at the end. You should also include abiotic things like rocks, logs, minerals, etc., which provide important resources for living organisms.
3. 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?

4. 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 signs 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.
5. 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 means more sunlight to help them grow (a young seedling or shade-intolerant tree, such as poplar or aspen) or 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 need cover to hide from their predators).

6. Once all students have settled into their habitat, read *Community Habitat Loss Story* (Appendix 1) aloud to them. At the conclusion of the story, ask the students what they think the community should do. Generate a few ideas and write them on the board.
7. Let the students know that your classroom is the community you read about! You will be the community planner, and you have decided to remove one-third of the trees and to dam one-third of the river 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.
8. Discuss the following questions:
 - Do you have enough habitat remaining to survive?
 - Can you move to a new habitat?
 - Are you going to have trouble finding food?
 - Will you now be more easily caught by a predator?
 - Have you lost your nesting or birthing area for your young?
 - Has your drinking water supply been lost or damaged?
 - Do you think you could become a species at risk?
 - What happens to all of the people who can't find housing in the community?
 - How does the community continue to provide all the things that make people happy (e.g., soccer pitches, hockey arenas, etc.)?
 - What do you believe would happen if more habitat were removed (e.g., half of the remaining forest ecosystem)?
9. 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.

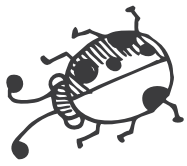
EXTENSION

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

Get Outside: Go outside to the schoolyard or local park and identify the plants and animals that inhabit the area. Ask students to think about who would visit the area at night. Make a list and use it during the creation of the forest ecosystem in the classroom.

APPENDIX

Appendix 1 - *Community Habitat Loss Story*



APPENDIX 1
SHRINKING HABITAT - SHARE THE SPACE
COMMUNITY HABITAT LOSS STORY

Once 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 and a place to generate energy for the homes. 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 and to develop a hydroelectric dam to produce energy for the community.

The community was surrounded by lovely woodlands with a river; however, to satisfy the demand for additional housing, community planners had to clear out one-third of the forest and dam one-third of the river for energy. 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, 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 energy 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?

