

Summary

This lesson focuses on habitat loss and habitat fragmentation. Students will predict the impacts on a particular species and its habitat as a result of some form of human influence.

Activity Info



Level: Grades 6 and 7

Subject: Life Science, Diversity of Life, Interactions Within Ecosystems

Estimated Duration: 30 minutes discussion, 30 minutes small group work, 50 minutes presentations, 10 minutes wrap-up

Materials: paper and pencils or pens

Learning Outcomes

Students will:

- Understand the interactions in an ecosystem and identify human factors that affect the balance among the components of an ecosystem focusing on one species.
- Understand ways in which natural communities within ecosystems can change, and explain how such changes can affect animal and plant populations.
- Demonstrate an understanding of the effects of human activities and technological innovations.

Teacher Background

All species have their own requirements for survival (food, water, space and shelter). Areas that provide these requirements are called habitat.

Engage your students in a discussion about their habitat. What is it? Where is it? No doubt it includes the grocery store where they buy their favourite food and drink, their homes, and enough space to live.

The thing that makes human habitat different from animal habitat is that we don't go out into the environment to find our habitat. We change the environment by building our habitat on a very large scale. Our cities, our schools, our highways and our shopping malls, are all human habitat that has been built in places that were once forests, and wetlands and prairies. When we build our habitat, we take habitat away from the plants and animals living there. This is habitat loss.

Habitat fragmentation, also caused by human activities, involves the breaking of natural habitat into small, disconnected pieces. We fragment habitat when we build a highway through a wetland, or install a pipeline across the tundra, or run an electric power line through a forest. Although the entire habitat has not been lost, we have drawn a line through it that can create problems for some species. Animals that get hit by cars on our highways are only trying to get from one part of their fragmented habitat to another.

Some examples of activities causing habitat loss or fragmentation are:

- Housing developments and urbanization have increased urban sprawl in many areas across Canada. This development continues to consume important habitat and natural areas at a tremendous rate.
- Roads, pipelines and electrical power lines open up previously difficult-to-access areas. Pipeline development has had an impact on caribou migration.
- The conversion of prairie and forest areas to intensive agriculture removes nesting cover and habitat for many prairie bird species.
- Tree harvesting and regeneration can change the pattern of habitat distribution on a landscape.
- Aggregate extraction (gravel pits) changes the landscape and can permanently alter the habitat of a wide variety of plant and animal species.

- New golf courses and other large recreational developments can cause habitat loss and fragmentation. Excavating equipment changes the shape of the original landscape, removing all of the natural plant species, perhaps leaving a few trees. Pesticides and herbicides are often used to eliminate undesirable plants and bugs. The heavy watering of fairways can alter the local water table.

the habitat changes resulting from housing developments in a wetland ecosystem:

- Loss of wetland tree species (affecting the habitat for song birds and small mammals).
- Dredging and filling wetlands removes habitat for cattails (and therefore red-winged blackbirds and turtles).
- Loss of water removes habitat for aquatic species such as salamander, tadpoles and crayfish.

Procedure

Step 1

As a class, review ecosystems and the essential components of habitat (food, water, shelter, space).

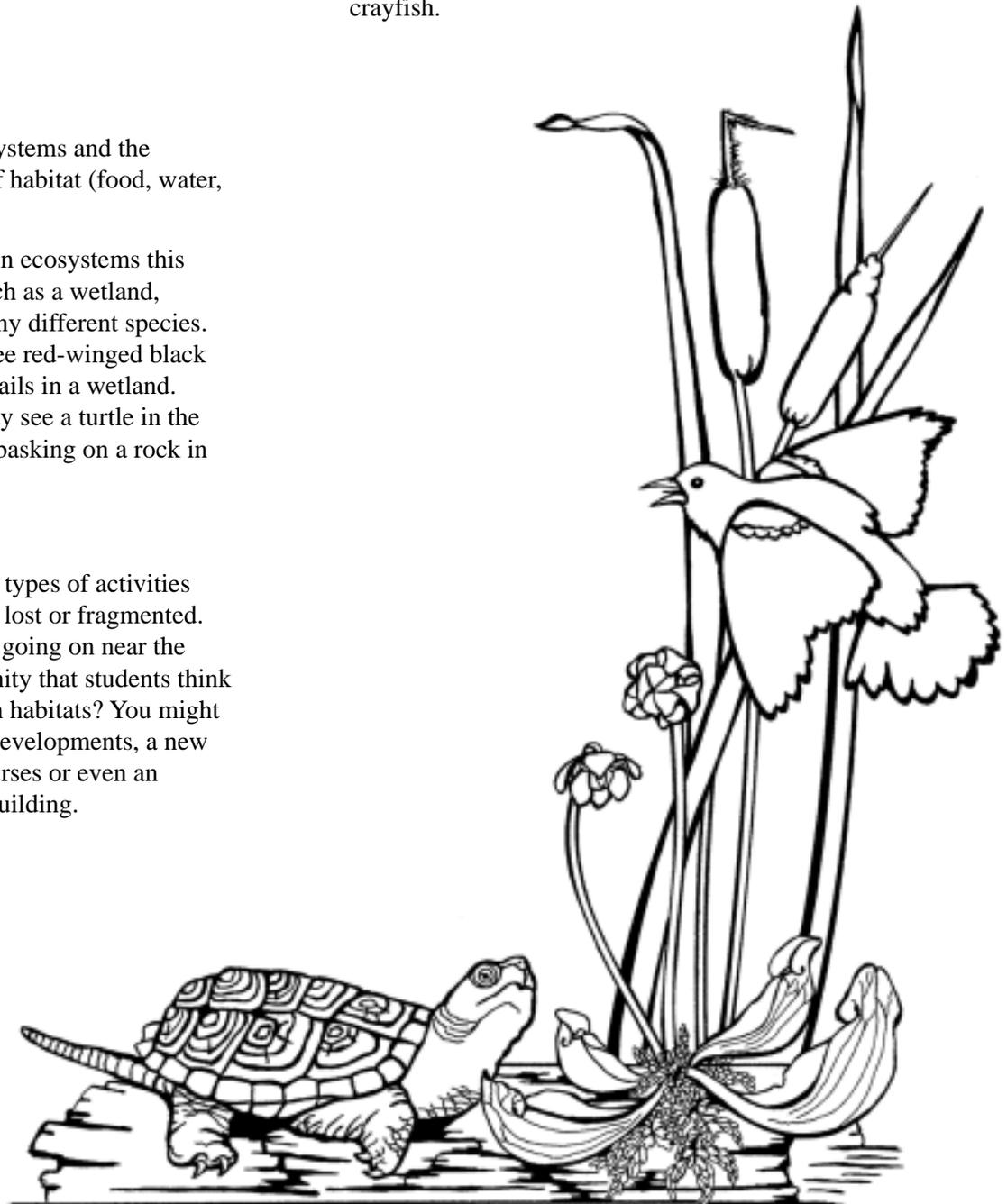
You may want to explain ecosystems this way: An ecosystem, such as a wetland, provides habitat for many different species. For example you will see red-winged black birds on the tops of cattails in a wetland. Look down and you may see a turtle in the weeds, in the water, or basking on a rock in the sun.

Step 2

Ask your students what types of activities may cause habitat to be lost or fragmented. Are there any activities going on near the school or local community that students think are having an impact on habitats? You might consider new housing developments, a new gravel pit, new golf courses or even an addition to the school building.

Step 3

Select one of the above examples and have a brief discussion with your class about potential environmental impacts. For example, some of



Step 4

Create a chart on the board with three categories:

What If?	Ecosystem	Species

Begin by asking students to think of potential habitat-damaging activities in any ecosystem. List their suggestions in the what-if column. Some examples might be the construction of a pipeline, shopping mall, golf course or new highway.

Step 5

Continue by having the students provide suggestions for different ecosystems in the *Ecosystem* column. Examples might include a wetland, hardwood forest, prairie, tundra or field.

Step 6

Complete the chart by asking the students to suggest several plants and animals that might inhabit their ecosystem examples. Some examples include a duck, tree, raccoon or salamander.

Step 7

Divide the class into four or five working groups. Ask each group to choose one item from each category. Check them off as they are selected so there is no duplication.

Step 8

In their small groups, ask the students to discuss the ecosystem and habitat needs of

the species they have selected. Ask them to prepare the story of what happens to their plant or animal if the what-if actually happens. They can prepare their story using rough note outlines. Then they will prepare a presentation of that story to share with the rest of the class. They can present a skit, a poster, a public service announcement, a slide show on the computer, or any other creative presentation technique they decide.

Step 9

Have each group then present the results of their small group discussions and deliver their presentation.



Extension

- Propose and defend a course of action students could take to protect the local habitat of the species they selected or another species of their choice.
- Ask your students to research a local issue (such as a new highway bypass) and prepare a formal letter to local council giving their perspectives on whether or not the planned activity should take place.