

Overview

Forests provide food and shelter for many types of wildlife, each of which have specific requirements to survive. This class introduces students to the concept of wildlife habitat and the interconnect-edness of wildlife populations and habitat. Students also will learn about ecosystems and the balance between human development and habitat conservation.



Background

Animals, including people, and trees need each other. Animals breathe in oxygen and breathe out carbon dioxide. When trees make food, they take in carbon dioxide and give off oxygen. Forests provide food and shelter for many types of animals and provide the raw material for more than 5,000 products used by people. Squirrels move nuts through the forest and bury them in the ground, where many grow into new trees. Bees carry pollen from plant to plant and help regenerate the forest's flowers and other vegetation. Deer and bear eat low-growing foliage, reducing competition from understory plants.

Foresters have a unique opportunity to help meet the needs of animals and people. With knowledge about the basic concepts of wildlife habitat and its relation to different wildlife species, foresters can implement management techniques to protect and enhance specific wildlife objectives. Humans, in turn, benefit from a healthy forest and wildlife population through the recreation, food, clothing and jobs they provide.

First, it is important to understand that every living thing has a habitat, a place where a plant or animal gets all the things it needs to survive -- food, water, shelter and space. If any of these components is missing or affected significantly, other wildlife and plants are affected as well. Because habitats are shared by plants, animals and people, and because all things in a natural environment are interrelated and interdependent, changes in the habitat impact everyone.

Second, there isn't one perfect habitat for all wildlife. Each species has its own set of specific requirements. For example, deer and elk thrive on the young trees that follow a fire or timber harvest. Other species, such as owls, prefer trees with a

dense canopy for their habitat. These habitat requirements do not remain constant, but change throughout the seasons of the year. The food they eat in the winter may be much different than what they eat in the summer. The cover they need for nesting may be much different than that the cover they need to survive a winter storm.

Third, there is a limit to how many animals can live in a habitat. That limit is called the habitat's carrying capacity. The quantity and quality of food, water, cover and space determines the carrying capacity. If one basic requirement of habitat is in short supply, the carrying capacity is lowered. Without the replacement of this missing ingredient, this loss of habitat and associated carrying capacity becomes the primary reason for species becoming threatened and endangered. Migration of animals, natality and mortality determine how close to the carrying capacity a community is.

Forestry practices can be tailored to help meet the habitat needs of many wildlife species. While the needs of every species cannot be met on every acre, through forest management we can create diverse habitat for a variety of wildlife species.

Vocabulary

- *Carrying Capacity*: The number of healthy wildlife a given area can support.
- *Ecosystem*: A loosely defined area usually consisting of numerous habitats.
- *Emigrate*: To exit.
- *Habitat*: The area that provides an animal or plant with adequate food, water, shelter and living space.
- *Immigrate*: To enter.
- *Limiting Factor*: Any requirement for wildlife survival that is in limited supply.
- *Migrate*: To move from one area to another.

Subjects

Science, math, social studies, physical education

Concepts

Students will be introduced to the concepts of environmental diversity, interrelationships and systems. Environmental diversity is discussed in relation to the diversity of wildlife habitats and species found around the world. The interrelatedness of environmental systems is discussed regarding predator/prey cycles, habitat loss and resulting endangered species, and habitat health and biodiversity.

Objectives

Students will learn: (1) the four components of habitat (food, water, shelter and space); (2) how the integrity, diversity and health of habitats determine the composition, diversity and health of species occupying a particular habitat. Competitive group skills, identifying relationships and patterns, and determining cause and effect are emphasized.

Materials Needed

Sheltered area with seating for introductory part of class
Open field where students can run
Easel, flip chart and markers

Time Needed

Allow 30-40 minutes to introduce the concept of wildlife habitats and the Project Wild activities and 20 minutes to do the activities.

- *Mortality*: Death rate.
- *Natality*: Birth rate.
- *Wildlife*: Any animal that is not domesticated and not dependent on humans for its survival.

Doing the Activity

Habitat Lap Sit

(Western Regional Environmental Education Council, 1985)

1. Ask the students to number off from one to four. All the “ones” should get in a group, all the “twos” in a group, etc. Assign each group a habitat component as follows: ones = food, twos = water, threes = shelter, fours = space.

2. One student from each group forms a circle by standing shoulder to shoulder facing toward the center. Then another student from each group joins the circle, and so on until all the students are in a circle standing shoulder to shoulder facing the center.

3. Ask the students to turn toward their right and take one step toward the center of the circle. They should be standing close together, with each student looking at the back of the head of the student in front of him or her.

4. Have everyone place their hands on the waist of the person in front of them. At the count of three, have the students sit down on the knees of the person behind them, keeping their own knees together to support the person in front of them. You then say, “Food, water, shelter and space in the proper arrangement (represented by the student’s intact, lap-sit circle) are what is needed to have a suitable (good) habitat.

5. The students at this point may either fall or sit down. When their laughter has subsided, talk with them about the necessary components of suitable habitat for people and wildlife.

6. After the students understand the interrelationship of habitat components (that food, water, shelter and space are necessary for any animal’s survival, and in their appropriate arrangement comprise a suitable habitat) let the students try the circle activity again. This time ask them to hold their lap-sit posture. As the students

lap sit -- still representing food, water, shelter and space in their appropriate arrangement -- identify a student who represents water. Then say, “It is a drought year. The water supply is reduced by the drought conditions.” At this point, have the student who was identified as representing water remove himself or herself from the lap-sit circle and watch the circle collapse or at least suffer some disruption in arrangement. You could try this in several ways. Conditions could vary: pollution of water supply, urban sprawl that limits the availability of all components, soil erosion that impacts food and water supplies.

7. Ask the students to talk about what this activity means to them. Ask the students to summarize the main ideas they have learned. They could include: a) food, water, shelter and space, in their appropriate arrangement, can be called habitat; b) humans and other animals depend upon habitat; c) loss of any of these elements of habitat will have an impact on the animals living there; and d) the components of habitat must be in an arrangement suitable to the needs of the individual animals or populations of animals in order for the animals to survive.

Oh Deer!

(Western Regional Environmental Education Council)

1. Ask your students to count off in fours. Have all the ones go to one area; all twos, threes and fours go together to another area. Mark two parallel lines on the ground 10 to 20 yards apart. Have the ones line up behind one line and the rest of the students line up behind the other line.

2. The ones become deer. All deer need good habitat in order to survive. Ask the students what the essential components of habitat are again: food, water, shelter and space in a suitable arrangement. For the purposes of this activity, we will assume that the deer have enough space in which to live. We are emphasizing food, water and shelter. The deer (ones) need to find food, water and shelter in order to survive. When a deer is looking for food, it should clamp its hands

over its stomach. When it is looking for water, it puts its hands over its mouth. When it is looking for shelter, it holds its hands together over its head. A deer can choose to look for any one of its needs during each round or segment of the activity. The deer cannot, however, change what it is looking for when it sees what is available during that round. It can change what it is looking for in the next round, if it survives.

3. The twos, threes and fours are food, water and shelter -- components of the habitat. Each student gets to choose at the beginning of each round which component he or she will be during that round. The students depict which component they are in the same way the deer show what they are looking for; that is, hands on stomach for food, etc.

4. The game starts with all players lined up on their respective lines (deer on one side; habitat components on the other side) and with their backs to the students on the other line.

5. Begin the first round by asking all of the students to make their signs. Each deer decides what it is looking for and each habitat component decides what it is. Give the students a few moments to get their hands in place over their stomachs, mouths or heads. As you look at the two lines of students, you will usually see a lot of variety (some students are water, some food, some shelter). As the game proceeds, the students may confer with each other and all make the same sign. For example, all the students in habitat might decide to be shelter. That could represent a drought year with no available food or water.

6. When you can see that the students are ready, count “one...two...three.” At the count

of three, each deer and each habitat component turn to face the opposite group, continuing to hold their signs clearly.

7. When the deer see the habitat component they need, they are to run to it. Each deer must hold the sign of what it is looking for until getting to the habitat component person with the same sign. Each deer that reaches its necessary habitat component takes the food, water or shelter back to the deer side of the line. This is to represent the deer's successfully meeting its needs and successfully reproducing as a result. Any deer that fail to find food, water or shelter die and become part of the habitat and are available as food, water or shelter to the deer who are still alive.

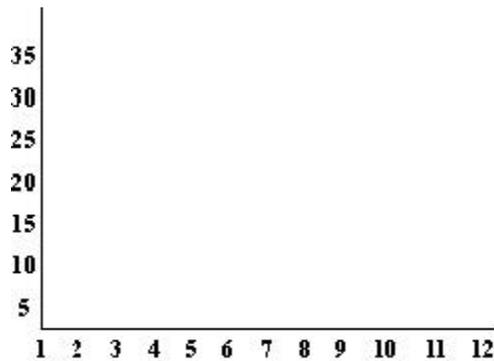
NOTE: When more than one deer reaches a habitat component, the student who gets there first survives. Habitat components stay in place on their line until a deer needs them. If no deer needs a particular habitat component during a round, the habitat component just stays where it is in the habitat. The habitat person can, however, change which component it represents from round to round.

8. Keep track of how many deer there are at the beginning of the game and at the end of each round. Continue the game for approximately 15 rounds. Keep the pace brisk, and the students will thoroughly enjoy it.

9. At the end of the 15 rounds, gather the students together to discuss the activity. Encourage them to talk about what they experienced and saw. For example, they saw a small herd of deer (seven students in a class of 28 students) begin by finding more than enough of its habitat needs. The population of deer expanded over two to three rounds of the game, until the habitat was depleted and there was not sufficient food, water and shelter for all the members of the herd. At that point, deer starved or died of thirst or lack of shelter, and they returned as part of the habitat. Such things happen in nature also.

10. Using a flip chart pad or a chalkboard, post the data recorded during the game. The number of deer at the beginning of the game and at the end of each round represent the number of deer in the population over a 15-year period (if you

play 15 rounds). The beginning of the game is year one, and each round after that is an additional year. Deer can be posted by fives for convenience.



The students will see this visual reminder of what they experienced during the game: the deer population fluctuated over a period of years. This is a natural process, as long as the factors that limit population do not become so excessive that the animals cannot successfully reproduce. Wildlife populations tend to peak, decline and rebuild, peak, decline and rebuild as long as there are good habitat and sufficient numbers of animals to successfully reproduce.

11. In discussion, ask the students to summarize some of the things they have learned from this activity.

What do animals need to survive? What are some of the limiting factors that affect their survival? Are wildlife populations static, or do they tend to fluctuate as part of an overall balance of nature? Is nature ever really in balance or are ecological systems involved in a process of constant change?

Helpful Hints

Involve the students as much as possible in the discussion by asking them questions. It also helps to bring show-and-tell objects such as antlers, skulls, bones, hides or pictures that the students can look at while talking about wildlife. Break up the discussion, if possible, by interjecting an activity every 15-20 minutes to prevent the students from becoming restless.

