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ABSTRACT

This instructional guide (accompanied by a video) teaches children from ages 6 to 12 about wildlife habitats. The instructional guide is divided into four parts and consists of supplementary activities to enhance the video. Each section of the guide provides an overview, objectives, story summary, key words in the video, discussion questions, ideas for follow-up activities, a coloring page illustrating the featured wild animal, and Project WILD activities designed to reinforce material presented in the video. The featured wild animals include a robin, rabbit, and a barn owl. The major character is a bald eagle named Pearl. The children are introduced to Pearl at a wildlife rehabilitation center where she is recovering from wounds. The children learn about wildlife habitats by attempting to find the wild home that is best for Pearl. Appendices include evaluation exercises that measure program impact on student attitudes and knowledge concerning wildlife. Information is provided about Project WILD, sponsored by the U.S. Fish and Wildlife Service and the project state coordinators. The regional offices of the U.S. Fish and Wildlife Service are also listed. This guide contains numerous pictures and photographs. (LP)

A Home for Pearl

Instructional Guide

A HOME FOR PEARL is recommended for viewing by:
National Education Association
National Association of Elementary School Principals
American Federation of Teachers
Council of Great City Schools

A Home for Pearl

Instructional Guide

A videotape series about wildlife habitat for elementary students

Co-produced by

U.S. Department of the Interior, Fish & Wildlife Service

The National Fish & Wildlife Foundation

Colorado Division of Wildlife

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Dear Educator:

Any one who has read or seen "The Wizard of Oz" knows that, for Dorthy and Toto, there's no place like home. The same is true for wildlife. Each type of animal on earth has a special home called its habitat. A HOME FOR PEARL is an educational video that teaches young people from ages six to twelve about wildlife habitats.

If you're a classroom teacher, museum educator, club leader, naturalist, or parent, this guide will help you use the video to teach lessons about the habitat requirements of wild animals.

Four familiar animals, a robin, rabbit, barn owl, and bald eagle, are featured in A HOME FOR PEARL. We chose these four specific animals because they are the most popular wildlife species among elementary school students, according to the national survey we conducted with the publishers of *Weekly Reader*.

The popularity of these animals draws children into the drama of A HOME FOR PEARL as they learn new facts and concepts about wildlife habitat.

The "star" of A HOME FOR PEARL is a bald eagle, named Pearl because of her pearl-white head. The children in the video are introduced to her at a wildlife rehabilitation center where she is recovering from wounds. When she heals, she'll be released back into the wild. Not just any home will do, though. The challenge the children take on themselves is finding the wild home that's best for a bald eagle—not an easy task!

This guide provides lots of ideas to make teaching about wildlife habitat easy and fun. By viewing the video and then participating in the activities suggested here, children will learn about the richness of wildlife that exists in their everyday lives. They may be surprised to discover there are plenty of wildlife habitats all around them—even if they live in a big city!

Please write me about your experiences with A HOME FOR PEARL (U.S. Fish and Wildlife Service, 18th and C Streets, N.W., Washington, D.C. 20240, 703-358-1730). This video and guide represent a pioneering effort in wildlife education and we are anxious to learn about its effectiveness in your particular teaching situation.

Miriam Olivia Westervelt
Project Leader, A HOME FOR PEARL

Contents

About the Video

A HOME FOR PEARL is a video about wildlife, and is especially suitable for educators in an urban or suburban setting. It's divided into four parts: two 15-minute segments and two 20-minute segments. The segments are designed so that each part of the video can be viewed as a separate unit, with supplementary activities provided in this guide to enhance the video's educational value. Taking the time to introduce and follow up on each part before going on to the next will help to reinforce the learning of the concepts presented. The total viewing time plus teaching time for each part should be about 45 minutes to an hour.

About the Guide

Like the video, this guide is divided into four parts. In each section you will find:

- **Overview**—Identifies the major points presented in the video. It lists the most important facts and concepts.
- **Objectives**—Establish what each child should be able to do after watching the video and completing the lesson.
- **Story Summary**—Provides a synopsis of what happens in the video.
- **Key Words**—Defines the vocabulary that's highlighted in the video.
- **For Discussion**—Questions you may use to reinforce the children's understandings of the information presented in the video.
- **Extensions**—Ideas for follow-up activities that you may want to try or adapt to the age level of your group.
- **Coloring Page**—Describes and illustrates the wild animal that's featured in the video.
- **Project WILD Activities**—Follow-up activities that supplement and reinforce the facts and concepts presented in the video.

At the end of the guide, you'll find an appendix for digging deeper. For example, you can use the section titled "Evaluation Exercises" to determine the impact of the video on your children's attitudes and knowledge about wildlife. There are also lists of resources for finding even more wildlife information.

Getting Started

If you decide you want to evaluate the impact of the video on your students, do the Evaluation Exercises on page 39 *before* you view Part 1. Tell them you will read some sentences about wildlife that they might agree with or disagree with and some facts they may or may not know. Ask these questions again after they have viewed all four parts of the video and discuss any changes in their responses. (See page 39.)

The educational value of A HOME FOR PEARL will be enhanced by preparing all young viewers beforehand. Use the overview and the story summary for Part 1 (page 3) to briefly describe what they'll see in the first part. List the key words on a blackboard or a large sheet of paper. Explain that these words will appear on the screen as they're introduced. You may want to go over the words and their definitions before presenting the video.

Show Part 1 of A HOME FOR PEARL. Then discuss what happened in Part 1, using the questions provided under "For Discussion" on page 3. The extensions provided on page 4 suggest ways to extend the lesson even further.

The children might enjoy their own copies of the coloring page (page 5). Before handing these out, you may want to have the group discuss what they remember about robins from the video. For example, they could describe what robins look like, what their nests look like, what they eat, where they live, and so on. Then hand out the coloring page and review the information on the sheet. Have the children color the picture of the robin.

Next try one or both of the Project WILD activities on pages 7-10, depending on the age level of the children you work with.

Now follow the same procedure for Parts 2, 3, and 4 of A HOME FOR PEARL. Don't forget to do the Evaluation Exercises on page 39 after viewing all four parts if you want to further evaluate the impact of the video on the wildlife attitudes and knowledge of your viewers.

PART 1:

The Robin

Overview

Many types of animals make their homes near people. But they are not pets or domesticated animals; they're wild. If they happen to live in cities, they're called urban wildlife. Regardless of where a wildlife species lives, it requires a particular kind of home, or habitat. Each animal's habitat must provide four things: food, water, shelter, and space.

Objectives

Students will be able to:

- Describe the difference between wildlife and domesticated animals.
- Name several examples of urban wildlife.
- Define habitat and list the 4 things that a habitat must provide for the animals that live in it.

Key Words

wildlife—animals that live free and take care of themselves. Robins, rabbits, owls, bald eagles, deer, earthworms, and trout are some examples of wildlife.

domesticated—tamed, not wild. Animals that people keep for their use or enjoyment, such as horses, dogs, cats, cows, or sheep, are domesticated animals.

imprinted—when the behavior patterns of a role model are learned by a young animal. For example, a bird raised by a person instead of an adult bird will become imprinted on—and prefer to associate with—people rather than others of its kind.

urban wildlife—wild animals living in cities. Robins, squirrels, crows, mallards, and raccoons can be examples of urban wildlife.

habitat—the place where an animal lives. A animal's habitat provides food, water, shelter, and space.

predator—an animal that kills and eats other animals. Owls, eagles, snakes, and spiders are predators.

For Discussion

1. What were the children in the story told to do with the baby bird that they found? List the steps they were told to follow and explain the reason for each one.

Find the nest and put the bird back in; the baby may have fallen from the nest before it was ready to fly. Watch from a distance so the parents can safely return. If the parents don't return within a couple of hours, the baby is probably orphaned and can be taken to the wildlife rehabilitation center to be cared for. (**Note:** Impress upon your students that, as a rule, people should not handle wild animals. In this case, Heather first contacted a wildlife specialist, who then instructed her to put the bird back in its nest.)

2. Why would it have been a bad idea for Tammy to keep the baby robin as a pet?

Robins are wild animals and can take care of themselves; they do not make suitable pets. If Tammy tried to raise the baby robin, she would have had to feed it every 20 minutes from sunup to sundown. Then

Story Summary

While walking home from school, two sisters, Tammy and Heather, find a helpless baby robin on the ground in a park. Once it's clear that the bird is orphaned, the girls and their friend, Winston, take the bird to a wildlife rehabilitation center to be cared for.

Dr. Bobbi Simpson, a veterinarian, introduces the children to some of the injured and orphaned animals at the center. The animals are being cared for at the center because they're unable to survive on their own. They learn about the different types of wild animals that live in urban areas, and what they need to survive. They meet Pearl, a bald eagle recovering from gunshot wounds.

she would have had to teach it how to find worms. Also if Tammy raised the robin from a baby, the bird could become imprinted on people. It might not learn how to take care of itself or how to recognize other robins.

3. Why won't the baby robin become imprinted on Dr. Simpson?

After Dr. Simpson watches the baby long enough to make sure it doesn't have any diseases, she will put it in with older robins that can't fly anymore. These robins will raise the baby and teach it how to survive on its own.

4. How are wild animals different from domesticated animals? Name several examples of each type of animal.

Wild animals take care of themselves. Some examples are robins, bears, deer, and so on. Domesticated animals are tame animals that live in captivity and depend on people to take care of them. Some examples are cows, pigs, sheep, and so on. (**Note:** Sometimes domesticated animals escape from captivity and survive on their own. These once-tame animals that become wild are called feral animals.)

5. What four things do all animals need in their habitat? Explain each one.

The right kind of food to eat, water to drink, shelter from bad weather and danger, and enough space in which to find food and raise young.

6. Do you live in an urban environment? If so, what are some examples of urban wildlife in your area?

Answers will vary. Some examples may be robins, rabbits, raccoons, skunks, crickets, pigeons, and so on.

7. Is a lion in a city zoo an example of urban wildlife? Explain your answer.

No. Most zoo animals are wild animals. They live in captivity and depend on people to take care of them.

Extensions

Animals, Animals: Have the children look through magazines and cut out pictures of animals. Then have them make two collages: one of wildlife and one of domesticated animals. They may also want to make a collage specifically of urban wildlife.

Human Habitats: Like animals, people need food, water, shelter, and space. Ask the children to think about their own home, or "habitat." They can draw pictures of their houses and label the places where they can get food, water, shelter, and space. They could also find out about an animal's home range (the area in which an animal will travel to find food, shelter, and a mate) and territory (an area that an animal will defend against other animals of its kind). Now have the children draw maps that show their "home range" and that include all of their normal, everyday activities. Ask if anyone has a "territory."

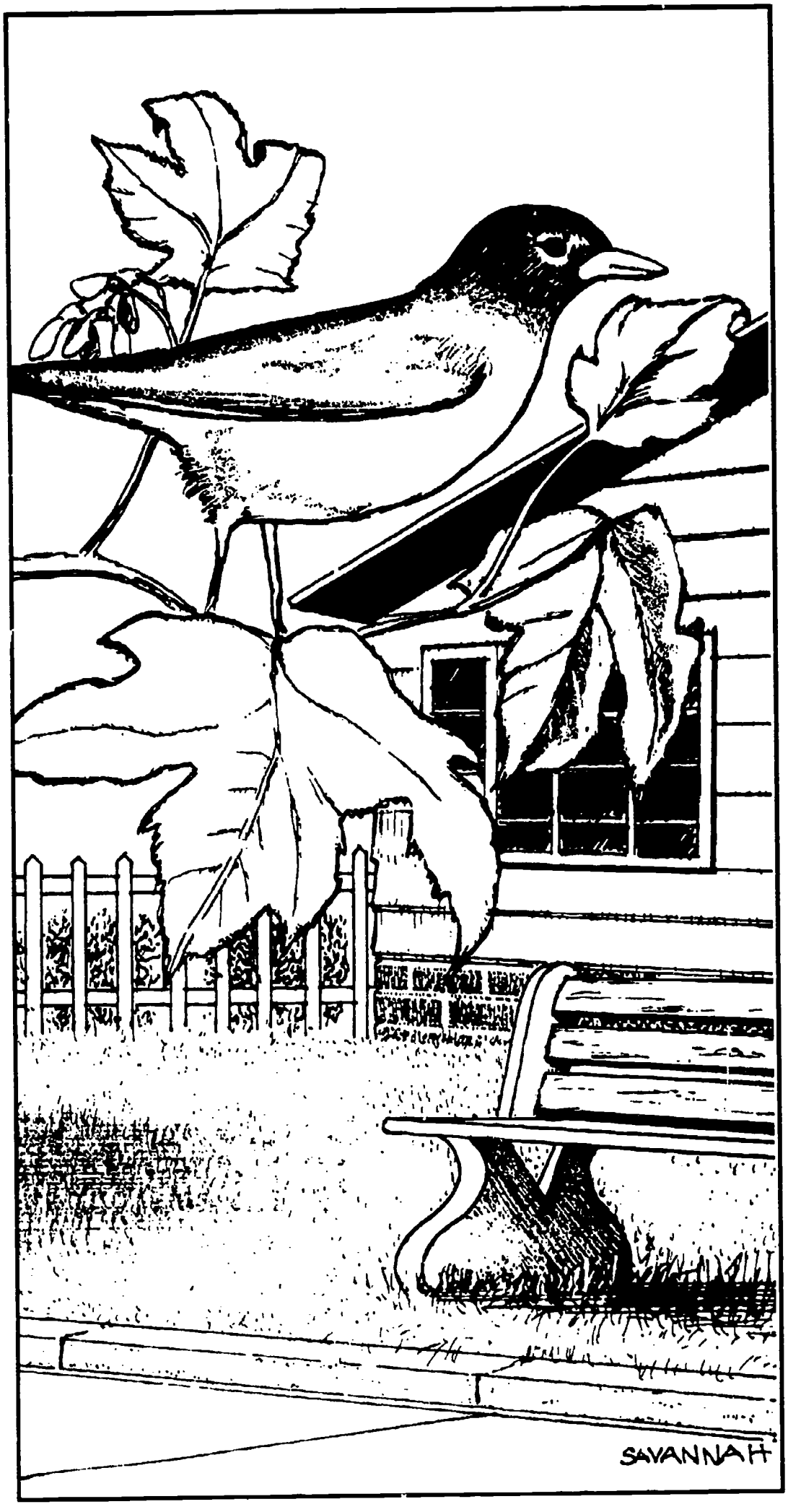
Visit a Wildlife Rehabilitation Center: The children in A HOME FOR PEARL live near a center where injured and orphaned wild animals are rehabilitated, or cared for until they can care for themselves. Find out if there's a wildlife rehabilitation center in your area that you can visit. A field trip can give your group a first-hand look at one way people are helping wildlife. You can write the National Wildlife Rehabilitators Association at RR1, Box 125E, Brighton, IL 62012 (or phone 612-437-9194) to locate a wildlife rehabilitator near you.

The **American robin**—with its grayish-brown body, dark head and tail, and orange-red breast—is probably the most familiar bird in North America. Robins are often recognized as one of the first signs of spring by people who live in areas with cold winters. Some robins live year around in places where the winters aren't too harsh.

Robins are very common in suburban parks, in wooded areas and on lawns, where they hunt for earthworms and sometimes insects.

During the months from April to July, robins build their nests with small twigs and roots, grass, and mud. They attach the nests to tree branches, in shrubs, and even on buildings. The female lays 3 to 6 turquoise-colored eggs which hatch in about two weeks. The baby robins (fledglings) will leave the nest at about 13 days of age.

Robins can live up to twelve years in the wild.



EVERYBODY NEEDS A HOME

Objective

Students will be able to generalize that people and other animals share a basic need to have a home.

Method

Students draw pictures of homes and compare their needs with those of other animals.

Background

Humans and other animals—including pets, farm animals, and wildlife—have some of the same basic needs. Every animal needs a home. But that home is not just a "house" like people live in. Home, for many animals, is a much bigger place—and it's outdoors. The scientific term for an animal's home is "habitat." An animal's habitat includes **food, water, shelter** or cover, and **space.** Because animals need the food, water, shelter, and space to be available in a way that is suitable to the animals' needs, we say that these things must be available in a suitable **arrangement.**

The major purpose of this activity is for students to generalize that animals need a home. Homes are not just houses. A house may be considered shelter. People build houses, apartments, trailers, houseboats, and other kinds of shelter in which to live. Animals don't need a home that looks like a house—but they do need some kind of shelter. The shelter might be underground, in a bush, in the bark of a tree, or in some rocks.

Everybody needs a home! And "home" is bigger than a "house." Home is more like a "neighborhood" that has everything in it that is needed for survival.

Age: Grades K—3
Subjects: Science, Language Arts, Art
Skills: analysis, comparing similarities and differences, discussion, drawing, generalization, visualization
Duration: 30 minutes or longer
Group Size: any; however, no more than 25 students is recommended
Setting: indoors or outdoors
Conceptual Framework Reference: I.A., I.A.4., I.C.1., I.C.2.
Key Vocabulary: differences, similarities, survival needs, habitat

Materials

drawing paper, crayons or chalk

Procedure

1. Ask each student to draw a picture of where he or she lives—or to draw a picture of the place where a person they know lives. Ask the students to include pictures in their drawing of the things they need to live where they do; for example, a place to cook and keep food, a place to sleep, a neighborhood.
2. Once the drawings are finished, have a discussion with the students about what they drew. Ask the students to point out the things they need to live that they included in their drawings.
3. Make a "gallery of homes" out of the drawings. Point out to the students that everyone has a home.
4. Ask the students to close their eyes and imagine: a bird's home, an ant's home, a beaver's home, the President's home, their home. OPTIONAL: Show the students pictures of different places that animals live.
5. Discuss the differences and similarities among the different homes with the students. Talk about the things every animal needs in its home: food, water, shelter, and space in which to live, arranged in a way that the animal can survive. Summarize the discussion by emphasizing that although the homes are different, every animal—people, pets, farm animals, and wildlife—needs a home. Talk about the idea that a home is actually bigger than a house. In some ways, it is more like a neighborhood. For animals, we can call that neighborhood where all the survival needs are met a "habitat." People go outside their homes to get food at a store, for example. Birds, ants, beavers, and other animals have to go out of their "houses" (places of shelter) to get the things they need to live.

Extensions

1. Draw animal homes. Compare them to places where people live.
2. Go outside and look for animal homes. Be sure not to bother the animals—or the homes—in the process!

Evaluation

Name three reasons why people need homes, and three reasons why animals need homes.

HABITAT LAP SIT

Objectives
Students will be able to: 1) identify the components of habitat; 2) recognize how humans and other animals depend upon habitat; and 3) interpret the significance of loss or change in habitat in terms of people and wildlife.

Method
Students physically form an interconnected circle to demonstrate components of habitat.

Background
See "The Beautiful Basics," "Everybody Needs A Home," "What's That, Habitat?," "Habitracks," and "Habitat Rummy" for activities with similar purposes.

People and other animals share some basic needs. Every animal needs a place in which to live. The environment in which an animal lives is called "habitat." An animal's habitat includes **food, water, shelter,** and **adequate space** in an **arrangement** appropriate to the animal's needs.

If any of these components of habitat are missing or are affected significantly so that the arrangement for the individual animal or population of animals is no longer suitable, there will be an impact. The impact will not necessarily be catastrophic, but can be. There are a great many additional limiting factors beyond those of suitable food, water, shelter, and space. For example, disease, predation, pollution, accidents, and climatic conditions are among other factors which can have impact.

All things are interrelated. When we look at a biological community, we find interrelationships and interdependencies between plants and plants, plants and animals, as well as animals and animals. These interrelationships and interdependencies are important.

The major purpose of this activity is for students to become familiar with the **components of habitat**, and to recognize that it is not sufficient for there to be **food, water, shelter,** and **space** in order for animals to survive—those components of habitat must be in a suitable **arrangement.**

NOTE: This activity was inspired by a "New Game," and adapted to teach concepts related to wildlife.

Materials
none needed

Procedure
1. This activity takes very little time—but has a lot of impact! Ask the students to number off from "one" to "four." All the "ones" go to one corner of the room, the "twos" to another, etc.
2. As the students move to their corners, clear a space in the center of the room. Better still, go outside to a clear, grassy area. The "ones" should sit or stand together, "twos" together, etc.
3. Assign each group a concept as follows: "ones" = food, "twos" = water, "threes" = shelter, "fours" = space.
4. Now, it's time to form a circle! This is done by building the circle in chains of food, water, shelter, and space. A student from each of the four groups walks toward the cleared area. The four students stand next to each other, facing in toward what will be the center of the circle. Four more students—one from each group—join the circle. Keep adding to the circle in sets of four until all the students are in the circle.
5. All students should now be standing shoulder to shoulder, facing the center of the circle.
6. Ask the students to turn toward their **right,** at the same time taking 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.
7. Don't panic—this **will** work! **Ask everyone to listen carefully.** Everyone should place their hands on the waist of the person in front of them. At the count of three, you want the students to **sit down . . . on the knees of the person behind them,** keeping their own knees together to support the person in front of them.

Age: Grades 4—9 (also younger and older)
Subjects: Science, Physical Education
Skills: discussion, generalization, kinesthetic concept development, small group work
Duration: 20 minutes
Group Size: 15 to 45 students
Setting: outdoors preferred; indoors possible
Conceptual Framework Reference: I.A., I.A.2., I.A.4., I.C., I.C.1., I.C.2., I.C.3., I.C.4., I.D., III.B.
Key Vocabulary: habitat, food, water, shelter, space, arrangement

You then say, "Food, water, shelter, and space—in the proper **arrangement** (represented by the students' intact, "lap-sit" circle)—are what is needed to have a suitable (good) habitat."

8. 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.

9. After the students understand the major point—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—removing one or more students from the circle. Conditions could vary: pollution of water supply, urban sprawl limiting availability of all components, soil erosion impacting food and water supplies, etc. Since animals' habitat needs depend upon food, water, shelter, and space, in their appropriate arrangement, "removal" of any will have an impact.

10. 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 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.

Variation

Have students form a circle, holding hands. Walk around the circle, first naming one student as an animal of a particular ecosystem. Name the next four students in the circle as food, water, shelter, and space for that animal. Repeat the process until all the students are involved. Any "extras" can be identified as elements of habitat, e.g., resulting from a particularly good year for habitat needs for the last animal named. When all of the students have been designated as an animal or as components of an animal's habitat, comment on the fact that they are holding hands. This represents the idea that all things in an ecosystem are interrelated. Briefly discuss the idea of interrelationships. Then move the students into position to do the "lap sit" described in the Procedure above. Remind the students that they noticed all elements of the ecosystem were interrelated when they were holding hands. Now they are going to find out that they all are dependent upon one another as well. Do the "lap sit." Discuss interrelationships and interdependencies in ecological systems.

Evaluation

What are the five essential components of habitat?

Explain how the arrangement of food, water, shelter, and space is important to humans and other animals.

What would probably have the greater long-term impact on the wildlife living on a farm in Iowa? A severe winter which killed many animals or the development of part of the farm into a commercial shopping center?

PART 2:

Habitat Diversity

Overview

Different kinds of animals have different habitat requirements. In general, the more diverse, or complex, a habitat is, the more wildlife will live there. The type and number of different species in a habitat is regulated by a variety of limiting factors.

Objectives

Students will be able to:

- Compare two habitats in terms of how much habitat diversity each has.
- List several limiting factors affecting urban wildlife.

Key Words

habitat—the place where an animal lives. An animal's habitat provides food, water, shelter, and space.

limiting factor—something that limits the existence, growth, or number of a type of animal within a habitat. Predators, disease, hunting, climate, and pollution are examples of limiting factors.

habitat diversity—the variety of plants, animals, and physical features that exist in a particular habitat.

nocturnal—active at night. Owls and earthworms are nocturnal animals.

castings—tiny mounds of soil deposited on the ground's surface by earthworms.

For Discussion

1. Describe what the robin needs in its habitat.

Earthworms and insects for food, a pond or stream for water to drink; trees for shelter; an area to move around safely, find food, and raise young.

2. What are some limiting factors that affect urban wildlife such as robins and deer?

Collisions with cars; predators, such as cats; pesticides; and so on.

3. Which animal needs more diversity in its habitat, a robin or a rabbit? Explain your answer.

Rabbit. Robins eat mainly one type of food and can fly away from danger. Rabbits prefer to eat a variety of plants, and they also need tall grasses and shrubs in which to hide. The various plants that the rabbits prefer also attract other types of animals, such as insects, which in turn attract even more animals, such as insect-eating birds.

4. Which habitat probably has the most diversity, a lawn, a meadow, or the edge of a forest? The least diversity? Explain your answers.

A forest edge would have the most diversity because it's where two habitats meet. At a forest edge, you might find species that prefer the forest, species that prefer the open, and species that prefer the area in between. A lawn has the least diversity because it's very simple and uniform.

5. What are some nocturnal animals?

Earthworms, owls, bats, moths, crickets, raccoons, and skunks are some examples.

Story Summary

Heather, Tammy, and Winston return to the wildlife rehabilitation center and see that the baby robin they found has grown. They discuss what the robin will need in its habitat when it is released and learn that different kinds of animals have different habitat requirements. They learn about some of the dangers that animals face living near people.

On their own initiative, the children locate the best habitat in which to release the robin, after carefully considering all of its requirements.

6. How did the children in the video find a place with lots of earthworms in the daytime if worms are nocturnal?

They found lots of castings on the surface of the soil, evidence that earthworms lived there.

Extensions

Worm Watchin': Have the group find out more about earthworms, the plowers of soil. They can find out how worms live, how they grow, how they move, and how they help the soil. Like the children in A HOME FOR PEARL, the children can try to find where earthworms live by looking for their castings. They may want to dig up a handful and watch how they "farm" the soil. Here's how: Put alternating layers of sand and soil in a glass container so that you can see the layers against the side of the glass. Put a layer of dead leaves on the surface and add some worms. Keep the surface moist and watch the container over a period of days. Watch for any signs of change in the leaves and soil and explain what you see.

Wild Habitat Ads: Use a classified ad format to advertise habitats for sale and have the children guess the type of wildlife that might be interested in responding to the ads. For example: FRESH GARDEN PLOT AVAILABLE— Several vacancies open in cubic foot of damp garden soil in high-density community (lots of neighbors). Organic matter abundant most all year around. Call now if you're willing to do some plowing in exchange for free food supply. (answer: earthworm) You may want to have each child choose a wild animal, find out what the animal needs in its habitat, and then make up his or her own "habit-ad" for the other children in the group to guess.

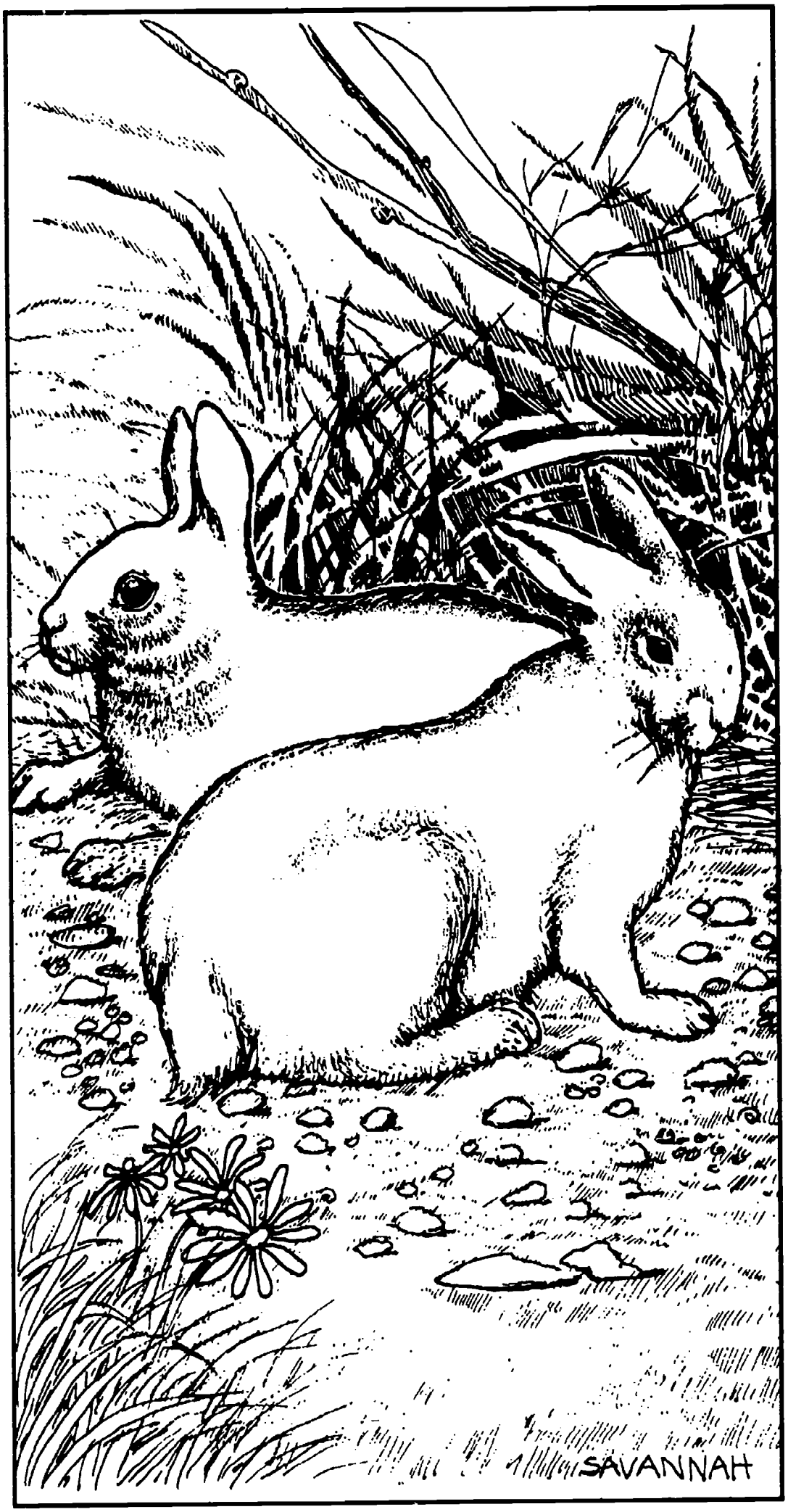
Tom Thumb Jungle: Have children investigate wildlife habitats in small groups outside. Give each group a yard-long piece of string tied in a circle and have each group pick a spot to lay down their string. Then have the children pretend to shrink down to Tom Thumb size and go on a wildlife hunt inside their string circles. They may want to use hand lenses for a close-up look. Have the groups record information about their habitats, including the physical features, plants, and animals or animal signs they find. They could draw maps of their habitats too. Based on what they find, they should think about what "giant" animals might visit the mini-habitats. If possible, have different groups investigate different habitat types, such as a grassy yard, a meadow, a brushy spot, under a tree, and so on. Have the groups compare their mini-habitats. Which one had the most diversity? The least?

There are several different types of **cottontail rabbits** that live in the United States. The most common and most widespread is the eastern cottontail. Cottontails live in hab' ts with diversity such as fields, woods, and brushy thickets. They eat the buds, leaves, berries, twigs, and bark of a variety of plants, and they are preyed on by different types of predators, such as hawks, foxes or owls.

Cottontails have soft fur that's brownish on top and white underneath. A frightened rabbit can flash its distinctive white "cottontail" as a warning signal to other rabbits.

Cottontail rabbits make a nest in a hidden spot. The female lines the nest with soft fur from her underside, and soft leaves and grasses. She usually has three to five babies, several times during the breeding season. The breeding season lasts from January in the south to March in the north.

Some female cottontails produce as many as thirty babies every year!



WILDLIFE IS EVERYWHERE!

Objectives Students will be able to: 1) state that humans and wildlife share environments; and 2) generalize that wildlife is present in areas all over the earth.

Method Students search their environment for evidence of wildlife.

Background People often think of wildlife only as large animals like those they see in pictures of Africa, with lions and elephants. They might think of creatures of the North American forests that they have seen themselves, like deer and elk. But wildlife includes all animals that have not been domesticated by people.

Domesticated animals are those which have been tamed, made captive and bred for special purposes. Farm animals and pets are considered domesticated animals. (See "What's Wild?" and "Animal Charades.")

Wild animals are all the rest. What may be surprising is that wildlife includes the smallest animal organisms—even those that can be seen only through a microscope. Spiders, insects, reptiles, worms, and most species of fish, birds, and mammals may be considered wildlife. Wildlife occurs in a tremendous variety of forms and colors. And wildlife can be found all around us. Even when we think we can see or hear no animals at all—they exist somewhere around us—maybe even under our feet! There are even tens of thousands of life forms on our skin, in our hair, and inside our bodies! In fact, each of us would die if all the organisms that inhabit our bodies were to disappear. People are never truly alone in an environment. Some form of wildlife is near.

The major purpose of this activity is for students to understand that people and wildlife share environments. By investigating microenvironments or microhabitats, the students should be encouraged to generalize from the information they acquire to the entire planet, coming to the understanding that wildlife exists in some form in all areas of the planet. In the deserts of the southern hemisphere; the oceans, tropical jungles, and cities of the earth; from the Antarctic snow fields to the glaciers of the Arctic region, wildlife exists in a variety of forms.

Materials string (optional)

Age: Grades K-3 (and older)
Subjects: Science, Language Arts
Skills: analysis, discussion, generalization, observation
Duration: 30 to 45 minutes
Group Size: any
Setting: indoors and outdoors
Conceptual Framework Reference: I.B., I.B.1, I.B.3.
Key Vocabulary: wildlife, wild, domesticated, environment, evidence

Procedure

CAUTION: Ask students to observe but not touch or disturb animals they see.

1. Invite your students to explore the classroom, looking for signs of wildlife. Even in the most cleanly-swept classrooms, you can usually find some signs of life—either past or present. It might be a spider web, dead insects near lights, or insect holes along baseboards and behind books. After the search and a discussion with the students about what—if anything—they found, introduce the idea that people and other animals share environments. Sometimes we don't even notice that we are sharing our environment with other living things, but we are.

2. Expand the search for other animals to the out-of-doors. Take the students on the school grounds and give everyone, working in pairs, five minutes to find an animal or some sign that an animal had been there. Look for indirect evidence, such as tracks, webs, droppings, feathers, and nests. (Be sure not to harm or seriously disturb anything.) After five minutes, sit down and talk about what everyone found.

Or, in advance, create a wildlife trail for your students to follow—looking for signs of animals along the way—by placing a long piece of string around an area of the school grounds and "salting" the path along the string with evidence of animals: bones, feathers, etc. The students can explore the trail in a "follow the leader" fashion. The students should remain quiet, observing to themselves. At the end of the trail, everyone should sit and discuss what they saw.

3. Talk with the children about what they learned. Emphasize that they have seen that people and wildlife share environments. They have seen evidence of wildlife at their school. Ask the children to guess whether they think different kinds of animals are found all over the earth—in the deserts, oceans, mountains, and cities. They may harvest their own experiences and talk about places they have been and have seen animals. Encourage the students to make the generalization that wildlife is present all over the earth.

Extensions

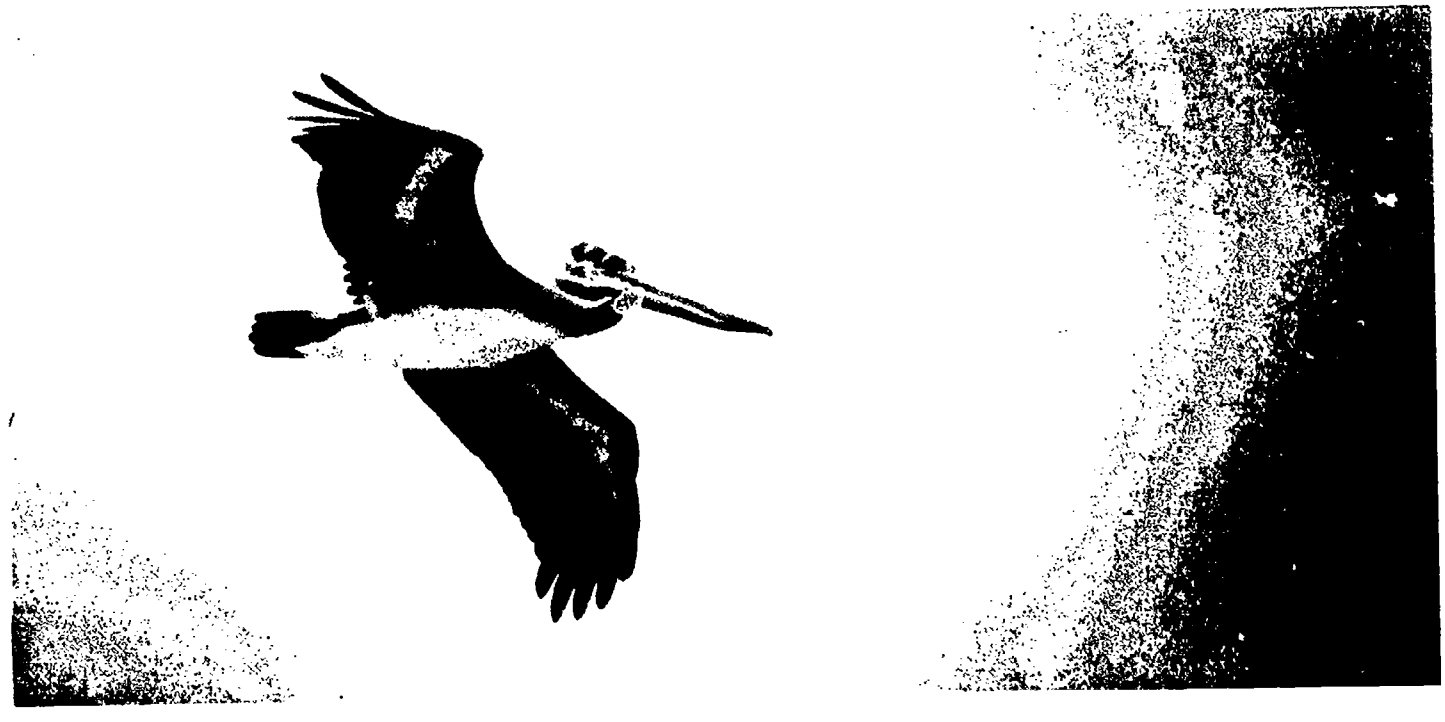
1. Survey your yard, kitchen, neighborhood, or city park. . . looking for wildlife.
2. Search magazines and books for wildlife from all over the planet.
3. "Invent" names and describe the wildlife found outside during searches. Older students can observe the animals, write a written description —and then check their invented names and descriptions against the scientific names and information found in reference materials.
4. Use state maps. Look up names of towns, cities, and counties with wild animal names!

Evaluation

In which of the following places would you be likely to find animals living? in a forest; in a hot, dry, desert; in a lake; at the top of a mountain; at the North Pole; in New York City. What kinds of animals might you find in these places? Name any areas on earth where you couldn't find any animals.

Name the things you saw, heard, or smelled which showed you that wildlife lives in the classroom and on the schoolgrounds.

ENVIRONMENTAL BAROMETER



Objective

Students will be able to: 1) observe and count wildlife in an area; 2) discuss why the wildlife is or is not present; and 3) consider ways in which the presence of wildlife can be seen as an indicator of environmental quality.

Method

Students go outside to observe and count or estimate wildlife in an area; do the same in another setting to compare findings; and—optionally—make a school "environmental barometer."

Background

Some species of animals are more adapted to difficult conditions than others. Some, in contrast, are so specialized that it is quite difficult for them to find the food, water, shelter, and other things they need.

Wildlife serves as an important indicator of the overall health of an area of the environment. If there are few wild animals—or little evidence of wildlife—present in an area, it is likely that there is little available food, water, or shelter in the area as well. The kinds of wildlife present are also important indicators. Birds of prey, for example, are high on the food chain. If they are present in an area, that is an indicator that there is some variety of other animals and plants in the area.

The major purpose of this activity is for students to consider the importance of wildlife as an indicator of environmental quality.

Materials

writing materials, poster board or construction paper and marking pens or crayons

Age: Grades 3—5
Subjects: Science, Math, Social Studies
Skills: analysis, classification, comparing similarities and differences, computation, discussion, evaluation, observation, synthesis
Duration: two 30—45-minute periods
Group Size: any
Setting: outdoors and indoors
Conceptual Framework Reference: I.A., I.B., I.C., I.C.1., I.C.2., I.C.3., I.D., II.B., II.B.1., II.B.2., II.B.3., II.B.4., IV.C., IV.D.4., IV.D.5.
Key Vocabulary: evidence, wildlife, environmental quality, habitat, barometer

Procedure

1. Go outside with your students on the school grounds to do a wildlife count. Each student should work alone and have writing materials. Ask each student to find a spot, sit quietly for ten minutes, and observe. (Quiet is very important, to increase the likelihood of seeing wildlife.) The students should record the kinds and numbers of any wildlife they see. They can include **evidence** of wildlife, in addition to actual sightings.

Ask the students to total the number of wildlife in each category, plus make a grand total of the wildlife they observed. If they find evidence rather than sighting wildlife, they should estimate the numbers. Put all the students' information on one master chart.

2. Next, take the students to a setting where wildlife is more abundant. Repeat the process—with each student observing quietly for ten minutes and recording observations.

3. Make a master chart of the information from this second environment.

4. Compare the information from the two charts. Was there any difference in the two settings? Why or why not? Which environment seemed to have the most **different kinds** of wildlife? Where were there the most of any one kind of wildlife, like the most birds? What kinds of food, water, shelter, and space were in each setting to support the survival needs of wildlife? If there were few animals, or many, in either setting—what might this tell us about the quality of the environment? What is environmental quality? Can wildlife be an indicator of environmental quality? Talk about whether it is realistic for every environment to be a good habitat for varieties of wildlife. Discuss the possibility and appropriateness of making efforts to improve environments as habitats for wildlife, and homes for people too.

NOTE TO TEACHER: Several possibilities may arise when doing this activity with your students. Your school may be in an area where there are few, if any, wild animals present—with little access to any other area with much wildlife. If there is no significant difference between your observations in the two settings, you can still talk with the students about what this means. It is also possible that your school is in a wildlife-rich setting—virtually as rich as any other setting in the area. Again, it is all right if there is no significant difference in the number and variety of wildlife observed in each area. **You may also choose to make the observations and create the information charts only for one setting, simply analyzing and discussing the quality of the one environment—without using another for comparison.**

Extension

Make an environmental barometer to indicate the quality of your school environment as a habitat for wildlife. Share your barometer with other classes. Optional: Show seasonal changes in the barometer's readings.

Evaluation

Each year, thousands of birdwatchers participate in a National Audubon Society bird count all over the United States. The information is kept and compared from year to year to see if changes occur in the total number of birds, or in how many different kinds of birds are sighted. If a steady and long decrease in the bird populations occurred over a period of five years, should **everyone** be concerned—and not just the birdwatchers?

Make a list of things we do in cities and towns that tend to **decrease** the amount and kinds of wildlife that lives there. Make a list of things we sometimes do in cities and towns that tend to **increase** the amounts of some kinds of wildlife.

Identify and describe three things that people could do to increase the numbers and kinds of wildlife living in an area that has little evidence of wildlife.

PART 3:

Predators

Overview

Predators are an exciting and important part of a habitat. Sometimes people can improve a habitat and attract more wildlife, including predators, by increasing habitat diversity.

Objectives

Students will be able to:

- Identify several ways people affect wildlife habitats.
- Name several predators.
- Describe how a predator makes a living.

Key Words

habitat diversity—the variety of plants, animals, and physical features that exist in a particular habitat.

predator—an animal that kills and eats other animals. Owls, eagles, snakes, and spiders are predators.

prey—an animal that's eaten by a predator. Mice are prey for owls.

nocturnal—active at night. Owls and earthworms are nocturnal animals.

owl pellet—a compact "package" of undigestable material coughed up by an owl. Pellets contain the bones, teeth, claws, and fur of prey animals, such as mice.

limiting factor—something that limits the existence, growth, or number of a type of animal within a habitat. Cars, predators, disease, hunting, climate, pollution, and size of habitat are examples of limiting factors.

loss of habitat—changes in and destruction of a habitat that affects the wildlife in the habitat. Loss of habitat is the main reason wildlife species become endangered.

endangered species—a plant or animal that's in danger of becoming extinct. It becomes endangered when one or more limiting factors seriously affects it. The bald eagle is an endangered species.

For Discussion

1. Why did Winston say their park was boring?

The park didn't have habitat diversity. It didn't have very many different kinds of plants and animals—only grass, tall trees and a few types of wildlife.

2. What habitat project did the children plan? What steps did they follow in planning their project?

The children started a Habitat Club at school and planned a project to improve the habitat in the park. First they decided which urban wildlife they wanted to attract. Then they found out the habitat requirements of each species. Next they made a list of all the different types of plants they would add and decided where to put them. Finally they made a model of the park to show others how it would look.

3. Name several things the children will add in the park. Explain why they chose each one.

Tall grasses for cover and clover for food to attract rabbits. Different kinds of flowers to attract butterflies and certain kinds of birds. Different kinds of shrubs and trees that provide shelter and fruits for birds and other animals. Bird houses and feeders to attract a variety of birds.

Story Summary

The children tell Dr. Simpson about the plans of their Habitat Club to increase the habitat diversity of the city park. They will attract more types of wildlife to the park by planting different varieties of plants and by adding bird houses and feeders. They learn that the improved habitat may attract predators too, such as barn owls. They also learn why the habitat won't be suitable for a predator like Pearl.

4. How might the children find out if an owl moves into the new habitat?

If they found owl pellets on the ground in the park, they would have evidence that an owl was finding its prey there. Pellets are gray, about 1½–3 inches long and might be "whitewashed" by the owl's droppings since they are found underneath the tree where the owl sits.

5. What are some limiting factors affecting barn owls in an urban habitat?

They could be poisoned by eating mice that had eaten pesticides put out by people to get rid of the mice. They could be hit by cars when they hunt for prey near roads. They may leave when people tear down old buildings that owls use for nesting and roosting.

6. What makes a barn owl or a bald eagle a good predator?

Barn owls have excellent hearing and vision. They can turn their heads very far to locate sounds, and the feathers on their face form a disk that helps pick up sounds from their prey. They also can fly very quietly, make startling sounds that "freeze" their prey, and then strike quickly, using their strong talons to grab and kill their prey. Bald eagles have large wingspans to help them travel far and soar high in search of prey. They have excellent vision and can spot prey from a mile away. Their strong talons and special toes help them capture and hold onto slippery fish. They use their strong, sharp beak to tear food apart.

7. Why would the children probably not see a bald eagle in their park?

Bald eagles aren't urban wildlife. They need lots of open space, very tall trees, and an abundant source of fish. They also prefer a quiet habitat, away from people. (There are some reported cases, though, of bald eagles nesting in highly populated areas, such as next to condominiums in Florida.)

Extensions

Habitat Blueprint: Choose an area near your meeting place or in your community that you could improve by increasing its diversity. Make a habitat plan the way the children in A HOME FOR PEARL did. First take an inventory of the plants and animals that are already on the site. Then find out what other animals might be in your area and list the ones you'd like to attract to the site. Research the habitat requirements of the animals on your want list. Finally make a plan that describes how you will provide the appropriate food, water, shelter, and space for the animals you wish to attract. If you like, you can make a display model of the improved habitat site.

Predator-Prey: Here are two games you can play after trying "The Thicket Game" from Project WILD on page 23. First, have your group form a large circle outside. Choose one child to be a barn owl (predator) and another to be a mouse (prey), and have them come into the center of the circle. Explain that the predator must tag its prey, and then blindfold the owl. The prey should call out "mouse" whenever the blindfolded predator calls out "owl" so the predator can find the prey through its sense of hearing. Remind the children, though, that owls also have very good eyesight at night and rely on their vision as well as their keen hearing. Once the owl tags the mouse, the children can take turns being predator and prey. (Idea adapted from the bat-moth game in Sharing Nature with Children by Joseph Cornell, Ananda Publications, 1979.)

Another way to act out predators and prey is to play a game similar to Red Light, Green Light. Choose one child to be a prey animal, and the rest can be predators. Line the predators up at one end of your playing area and have the prey stand at the other end with his or her back turned. Now tell the predators to try to reach the prey without being seen whenever the prey turns around. Any predator caught moving by the prey must return to the starting point. Once a predator tags the prey without being seen, that child can become prey and the game can start over. Afterward, discuss the different tactics predators can use to catch their prey. The children probably used some of the same tactics in their play, such as moving very slowly and quietly, moving very fast, "freezing" to avoid detection, changing directions to add confusion, and so on. Prey animals can use these tactics to avoid predators too. What are some other tactics for catching prey or avoiding predators?

Pick Apart a Pellet: If there are owls that live in your area, you may be able to find some of the pellets they cough up after they eat. Or you can order owl pellets from a biological supply company. After you get some pellets, try pulling them apart to find out what the owls have eaten. Tweezers work well to separate the fur from the hard parts. Put the fur, bones, teeth, and claws from each pellet in separate piles. See if these clues can tell you the number and types of animals the owl ate. You may be able to contact a naturalist or biologist in your area to help you identify the contents of your owl pellets.

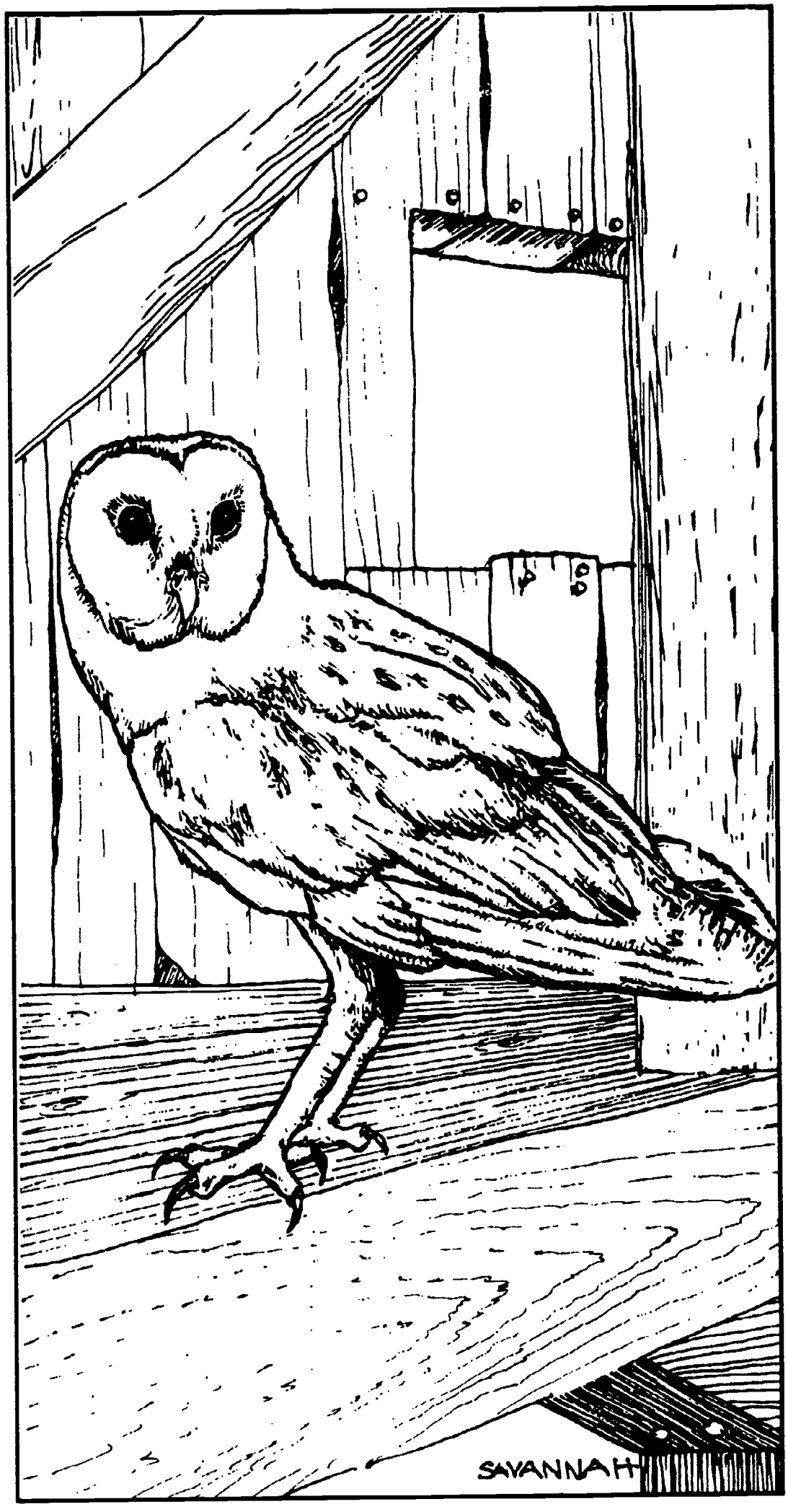
The **barn owl** is a nocturnal bird of prey, feeding mostly on mice and rats. It is a medium-sized, long-legged owl, with cinnamon-colored feathers on its back and pale feathers below. The white feathers on its face form a distinctive heart-shaped disk around its dark eyes.

Barn owls generally hunt for rodents in fields, wooded areas, towns, and on farms throughout the United States, except for in the extreme north. They nest and roost in cavities in cliffs, in trees, or in abandoned buildings. Farmers appreciate owls that take up residence in barns and earn their keep by controlling the mice and rats.

Barn owls don't really make a nest. A female simply lays from five to seven round, white eggs on a bare surface in a protected spot. Hatching occurs in about 30 days.

The life span of a barn owl is about 11 years.

In one year, a barn owl probably eats 2,000 rats and mice!



THE THICKET GAME

Objectives
Students will be able to: 1) define adaptation in animals; and 2) generalize that all animals make some adaptations in order to survive.

Method
Students become "predator" and "prey" in a version of "hide and seek."

Background
Animals are adapted to their environment in order to survive. Animals may be adapted to changes in their habitats. For example, snowshoe rabbits have a white winter coat to blend with a snowy environment and a tan summer coat to blend with summer ground and vegetation colors. Chameleons change color to blend with their surroundings. The walking-stick insect can look like a twig or stick. Fawns have spotted hair that resembles dappled light on the forest floor.

The major purpose of this activity is for students to understand the importance of adaptation to animals.

NOTE: See "Seeing is Believing" and "Surprise Terrarium" for other elementary-age adaptation activities.

Materials
blindfolds; outdoor area like a thicket or other vegetated area where students can safely hide

Procedure
1. Take the class to a "thicket."
2. Blindfold one student who will be the "predator." The predator counts to 15 slowly while the others hide. The students hiding must be able to see the predator all the time.
3. After counting, the predator removes the blindfold and looks for "prey." The predator can turn around, squat, and stand on tip-toes—but not walk or change location. The predator should see how many students he or she can find, identify them out loud and describe where they are. When identified, they come to the predator because they have been "eaten." These prey now become predators.
4. When the original predator cannot see any more students, all the predators now put on blindfolds. The original predator counts aloud to ten. All the remaining prey are to move in closer, but still try to be "safe" and hidden. All the predators remove their blindfolds and take turns naming students they can see.
5. Repeat the process if several students are still hidden. When only one or two are left hidden.

Age: Grades K-6
Subjects: Science, Physical Education, Language Arts
Skills: analysis, application, description, discussion, generalization, kinesthetic concept development, observation, psychomotor development
Duration: 30 minutes
Group Size: minimum of five students
Setting: outdoors
Conceptual Framework Reference: III.D., III.D.1., III.D.2.
Key Vocabulary: adaptation, predator, prey

23

have them stand up and identify themselves; it may be surprising how close these prey were to the predators—an example of successful adaptation because of how well they blend with their environment in order to survive. Introduce the term "adaptation."

6. Play the game again one or two times.

7. Discuss what would have made it easier to be the last one or get very close to the predators. Some ideas that may come out are: changing color (clothes); wearing clothing that doesn't stick to plants; being of smaller size; climbing a tree.

8. Ask the students to summarize what they have learned. See if the students can think of other examples of adaptation in animals. Generalize that all animals are adapted to survive.

Evaluation

Describe the importance of adaptation to animals. Give at least two examples of animal adaptation.

OH DEER!

Objectives

Students will be able to: 1) identify and describe food, water, and shelter as three essential components of habitat; 2) describe the importance of good habitat for animals; 3) define "limiting factors" and give examples; and 4) recognize that some fluctuations in wildlife populations are natural as ecological systems undergo a constant change.

Method

Students become "deer" and components of habitat in a highly-involving physical activity.

Background

A variety of factors affects the ability of wildlife to successfully reproduce and to maintain their populations over time. Disease, predator/prey relationships, varying impacts of weather conditions from season to season (e.g., early freezing, heavy snows, flooding, drought), accidents, environmental pollution, and habitat destruction and degradation are among these factors.

Some naturally-caused as well as culturally-induced limiting factors serve to prevent wildlife populations from reproducing in numbers greater than their habitat can support. An excess of such limiting factors, however, leads to threatening, endangering, and eliminating whole species of animals.

The most fundamental of life's necessities for any animal are food, water, shelter, and space in a suitable arrangement. Without these essential components, animal cannot survive.

This activity is designed for students to learn that:

a) good habitat is the key to wildlife survival;
b) a population will continue to increase in size until some limiting factors are imposed;
c) limiting factors contribute to fluctuations in wildlife populations; and
d) nature is never in "balance," but is constantly changing.

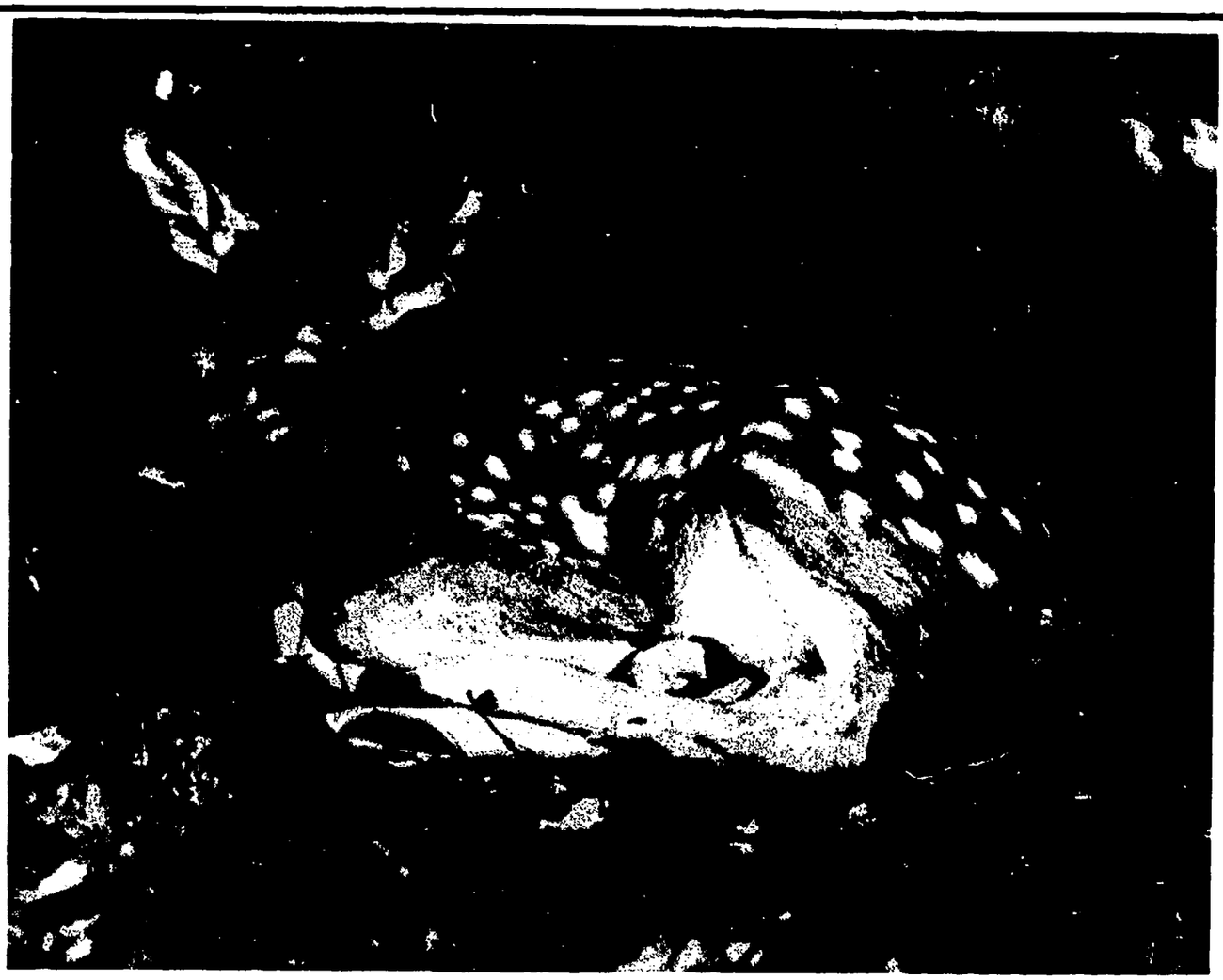
Wildlife populations are not static. They continuously fluctuate in response to a variety of stimulating and limiting factors. We tend to speak of limiting factors as applying to a single species, although one factor may affect many species. Natural limiting factors, or those modeled after factors in natural systems, tend to maintain populations of species at levels within predictable ranges. This kind of "balance in nature" is not static, but is more like a teeter-totter than a balance. Some species fluctuate or cycle annually. Quail, for example, may start with a population of 100 pairs in early spring; grow to a population of 1200 birds by late spring; and decline slowly to a winter population of 100 pairs again. This cycle appears to be almost totally controlled by the habitat components of food, water, shelter, and space, which are also limiting factors. Habitat components are the most fundamental and thereby the most critical of limiti. g factors in most natural settings.

This activity is intended to be a simple but powerful way for students to grasp some basic concepts: that everything in natural systems is interrelated; that populations of organisms are continuously affected by elements of their environment; and that populations of animals do not stay at the same static number year after year in their environment, but rather are continually changing in a process of maintaining dynamic equilibria in natural systems. The major purpose of this activity is for students to understand the importance of suitable habitat as well as factors that may affect wildlife populations in constantly changing ecosystems.

Materials

area—either indoors or outdoors—large enough for students to run; e.g., playing field; chalkboard or flip chart; writing materials

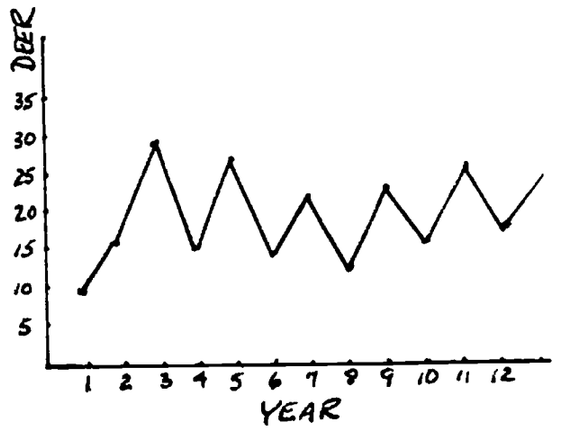
Age: Grades 4—12
Subjects: Science, Math, Social Studies, Physical Education
Skills: application, comparing similarities and differences, description, discussion, generalization, graphing, kinesthetic concept development, observation, psychomotor development
Duration: 30—45 minutes
Group size: 15 and larger recommended
Setting: indoors or outdoors; large area for running needed
Conceptual Framework Reference: I.C.2., III.B., III.B.2., III.B.3., III.B.5., III.C., III.C.1., III.C.2., III.E., III.E.1., III.E.2., III.F., III.F.1., III.F.2., III.F.3., III.F.4., III.F.5., IV.C., IV.C.1., IV.C.2.
Key Vocabulary: habitat, limiting factors, predator, prey, population, balance of nature, ecosystem



Procedure

1. Begin by telling students that they are about to participate in an activity that emphasizes the most essential things that animals need in order to survive. Review the essential components of habitat with the students: food, water, shelter, and space in a suitable arrangement. This activity emphasizes three of those habitat components—food, water, and shelter—but the students should not forget the importance of the animals having sufficient space in which to live, and that all the components have to be in a suitable arrangement or the animals will die.
2. Ask your students to count off in four's. Have all the one's go to one area; all two's, three's, and four's go together to another area. Mark two parallel lines on the ground or floor ten to 20 yards apart. Have the one's line up behind one line; the rest of the students line up behind the other line.
3. The one's 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 (the one's) 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;** e.g., when it sees what is available, during that round It can change again what it is looking for in the next round, if it survives.
4. The two's, three's, and four's are food, water, and shelter—components of 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.

5. 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 at the other line.**
6. The facilitator or teacher begins the first round by asking all of the students to make their signs—each deer deciding what it is looking for, each habitat component deciding what it is. Give the students a few moments to get their hands in place—over stomachs, mouths, or over their heads. (As you look at the two lines of students, you will normally see a lot of variety—with some students water, some food, some shelter. As the game proceeds, sometimes the students confer with each other and all make the same sign. That's okay, although don't encourage it. For example, all the students in habitat might decide to be shelter. That could represent a drought year with no available food or water.)
7. 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.
8. When 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 fails to find its food, water, or shelter dies and becomes part of the habitat. That is, in the next round, the deer that died is a habitat component and so is 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 is from round to round.
9. You as the facilitator or teacher keep track of how many deer there are at the beginning of the game, and at the end of each round you record the number of deer also. Continue the game for approximately 15 rounds. Keep the pace brisk, and the students will thoroughly enjoy it.
10. 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 size of 28) 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.
11. Using a flip chart pad or an available 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 a series of years. That is, the beginning of the game is year one; each round is an additional year. Deer can be posted by five's for convenience. For example:



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 which limit the population do not become excessive, to the point where the animals cannot successfully reproduce. The wildlife populations will tend to peak, decline, and rebuild, peak, decline, and rebuild—as long as there is good habitat and sufficient numbers of animals to successfully reproduce.
12. 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?

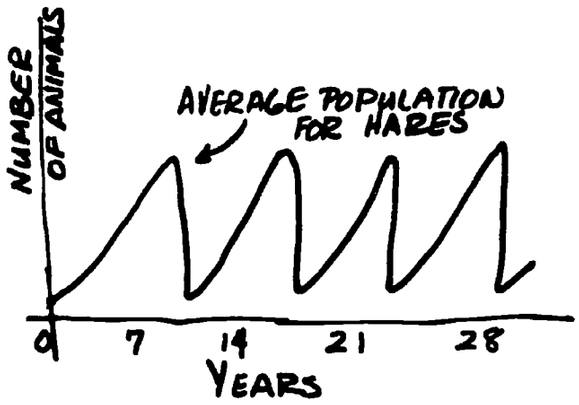
Extensions

1. When you have finished tabulating the graph data and discussing it, ask the students if they

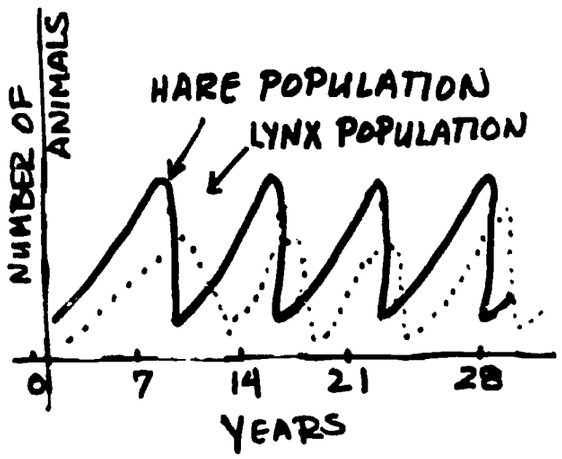
have ever heard of the Hudson Bay trappers in American history. Tell them, briefly, who they were.

There is a hundred years, or more, of records of the activities of these trappers. In those records are some interesting data. These data refer to pelts shipped from America to Europe, particularly the pelts of snowshoe hares and lynx.

Researchers have found that snowshoe hare populations seem to peak about every seven to nine years and then crash, repeating the process over each comparable time period. So, a snowshoe hare population graph would look like this:



It has also been discovered that lynx populations do the same thing—except that they do it one year behind the hare populations. The combined graph would look like this:



Graph this right over the deer graph that you made, adding first the hares, and then the lynx. Ask the students:

- Which animal is the predator? Which prey?
- Are predators controlling the prey, or are prey controlling the predators? (We have been brought up to "know" that predators control the prey—and are now discovering that this is not so. The number of prey animals available tells us how many predators can live in the area.)
- Is this like the deer habitat game we just played? Who controls? (Sometimes the habitat—when the deer population is not too large; sometimes the habitat—when the deer population "gets on top of it" and destroys the vegetative food and cover.)

2. Some recent research has added a new dimension to the story of the snowshoe hares and the lynx.

It has been found that a major winter food of the hare is a small willow. As hare populations grow, the use of the willow plants grows too. But, when the willow plant has been "hedged" or eaten back so far, the plant generates a toxin (poison) which precludes use by the hare. That is when the hare population crashes, followed by the crash of the lynx population about a year later. Then the willow, relieved of pressure, begins to grow again. The hare population begins to grow in response, and last of all, within a year or so, the lynx population follows. And the cycle has begun again—over and over—every seven to nine years.

Discuss the "balance of nature." Is it ever in "balance?"

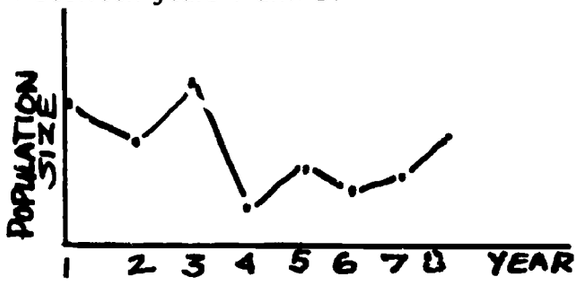
Evaluation

Name three essential components of habitat.

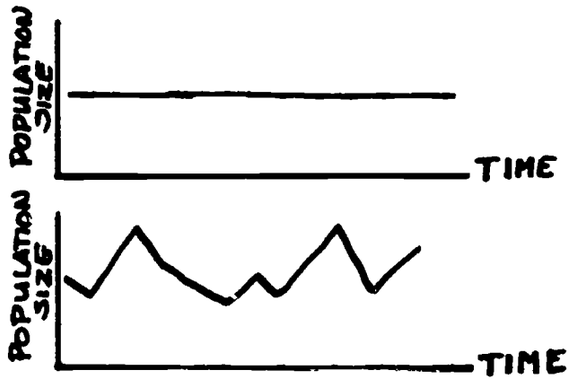
Define "limiting factors." Give three examples.

Examine the graph. What factors may have caused the following population changes:

a. between years 1 and 2?
b. between years 3 and 4?
c. between years 5 and 6?
d. between years 7 and 8?



Which of the following graphs represents the more typically balanced population?



PART 4:

The Right Home for Pearl

Overview

Bald eagles have very specific habitat requirements. They have become an endangered species due to problems with loss of habitat and pollution in their environment. Eagles and other types of endangered wildlife are protected in special places called wildlife refuges.

Objectives

Students will be able to:

- Identify the habitat needs of a bald eagle.
- List several reasons bald eagles are endangered.
- Define wildlife refuge.

Key Words

habitat—the place where an animal lives. An animal's habitat provides food, water, shelter, and space.

acid rain—precipitation that forms when certain pollutants in the atmosphere mix with water vapor. Acid rain can pollute the water and soil, affecting different types of plants and animals.

wildlife refuge—an area set aside to protect wildlife and wildlife habitat. The National Wildlife Refuge System, managed by the U.S. Fish and Wildlife Service, is a collection of nearly 450 refuges representing over 90 million acres of lands and waters managed specifically for wildlife.

loss of habitat—changes in and destruction of a habitat that affects the wildlife in the habitat. Loss of habitat is the main reason wildlife becomes endangered.

For Discussion

1. What specific kinds of food, water, shelter, and space will Pearl require in her habitat?

Eagles eat mostly fish. They may also take waterfowl and scavenge for dead animals, especially during the winter, when fish are harder to find. There must be water where there's an abundant supply of fish, and the water must be clean and unpolluted. Eagles can be affected by pollution that contaminates the fish and other animals they eat. For shelter, eagles prefer very tall trees, up to 100 feet, for perching and building their nests in. They usually prefer quiet places, away from developed areas. (Some are known to nest near people, such as next to a condominium development in Florida.) Bald eagles also need plenty of space in which to fly safely. They may fly as far as 200 miles a day in search of food. In the winter, they must fly even further, and then return to their nesting area in the spring.

2. What types of pollution can affect the food that bald eagles eat?

DDT, an insecticide that was once used in this country, contributed to the decline of eagle populations. When traces of it washed into waterways and turned up in the fish eaten by eagles, the eggs they laid were too thin-shelled to support the incubating parent and would break. Bald eagles may scavenge animals killed by lead shot. If an eagle gets the lead in its

Story Summary

Pearl, the bald eagle, has completely recovered and is ready to be released. Dr. Simpson finds Winston, Tammy, and Heather in the wildlife rehabilitation center library, researching what Pearl will need in her new habitat. They visit a state wildlife area, but find it's unsuitable because of recent development nearby. They then visit a national wildlife refuge where they track another bald eagle by radio. The children determine that the wildlife refuge is the best place to release Pearl, and they assist in returning her to the wild.

system, the lead poisoning can kill it. Acid rain is causing problems in some parts of the country. It changes the chemical balance of lakes, making them unsuitable for fish. With fewer fish, there are fewer eagles. Oil spills, such as the one in Alaska from the oil tanker Valdez, can also affect fish and fish-eating eagles.

3. Why was the state wildlife area the children first visited unsuitable habitat for Pearl?

The area had plenty of fish and clean water, and eagles had lived there earlier. But the land bordering the wildlife area had been cleared for development. With fewer trees and more people and noise, the eagles moved away.

4. How did Mr. Konishi, the wildlife officer, locate the male bald eagle in the national wildlife refuge?

Because bald eagles are an endangered species, the male eagle had been captured by a wildlife researcher and fitted with a radio transmitter. The transmitter helps track the eagle so that scientists may learn more about its habits and to help protect it. Mr. Konishi used an antenna to pick up the signals from the transmitter to find the eagle.

5. What were some signs that proved the national wildlife refuge would be a suitable place to release Pearl?

There were lots of people fishing, indicating that there were plenty of fish. There were plenty of trees, one of which already had an eagle's nest in it. There were no obvious problems with DDT or acid rain. And hunters were not allowed to use lead shot in their guns. There was enough peace and quiet. There was a male bald eagle already living in the area. The refuge is an area where endangered species and other wildlife are protected. Wildlife managers can monitor and protect the animals on the refuge. And there were other refuges south of this one where migrating eagles could travel safely, rest, and find food.

Extensions

Visit a Wildlife Refuge: There are lots of places across the country—both large and small, public and private—where wildlife is protected. There's probably one such place that you can visit in your area. For example, to find out if there's a national wildlife refuge near you, contact your regional U.S. Fish and Wildlife Service office (see list on page 41). Here are some things your group can try to discover when they visit a wildlife area: How many different kinds of habitats are in the sanctuary and what are they? What kinds of wildlife live in the sanctuary? How does the sanctuary meet the habitat needs of the different animals? Are any of the animals endangered? If so, what's being done to help protect them?

Build a Mini-Refuge: If you drew up a habitat blueprint as an extension activity for Part 3, here's a chance to put it into action. First, get permission to implement your plan from the owner of the property you wish to improve. Once you have the approval, check the list of wildlife species you wanted to attract and the changes you needed to make to attract them. Then assign separate tasks to small groups and begin work. Here are some general ideas:

- For food, add plants that provide seeds, fruits, leaves, and nectar for attracting birds, insects, and small animals. You can also include supplementary food sources such as a variety of bird feeders.
- If there's not already a natural source of water in the habitat, you must supply an artificial one, such as a shallow birdbath.
- To provide shelter, you can plant tall grasses, flowers, shrubs, and trees. Or create natural nooks and crannies by building piles of brush or rocks. You can also build and put up boxes for nesting and roosting.
- Don't forget the space needs of the animals you're trying to attract. Your habitat may not be big enough for some of the animals, but there may be other areas nearby that the animals can use to travel around safely.

Tell the World: No matter where you live, there's wildlife in your world. Find out as much as you can about the wildlife in your area and educate other people in your community about it. For example, if you create a mini-refuge, get some publicity about it; if there's an endangered species in your area, put up an exhibit about it; if there's an important habitat in your area that's in danger of disappearing, start a letter-writing campaign to stop or minimize the loss. These are just a few of the many things you can do to teach others about wildlife in their world. You can make a difference by taking action to protect wildlife and wildlife habitat.

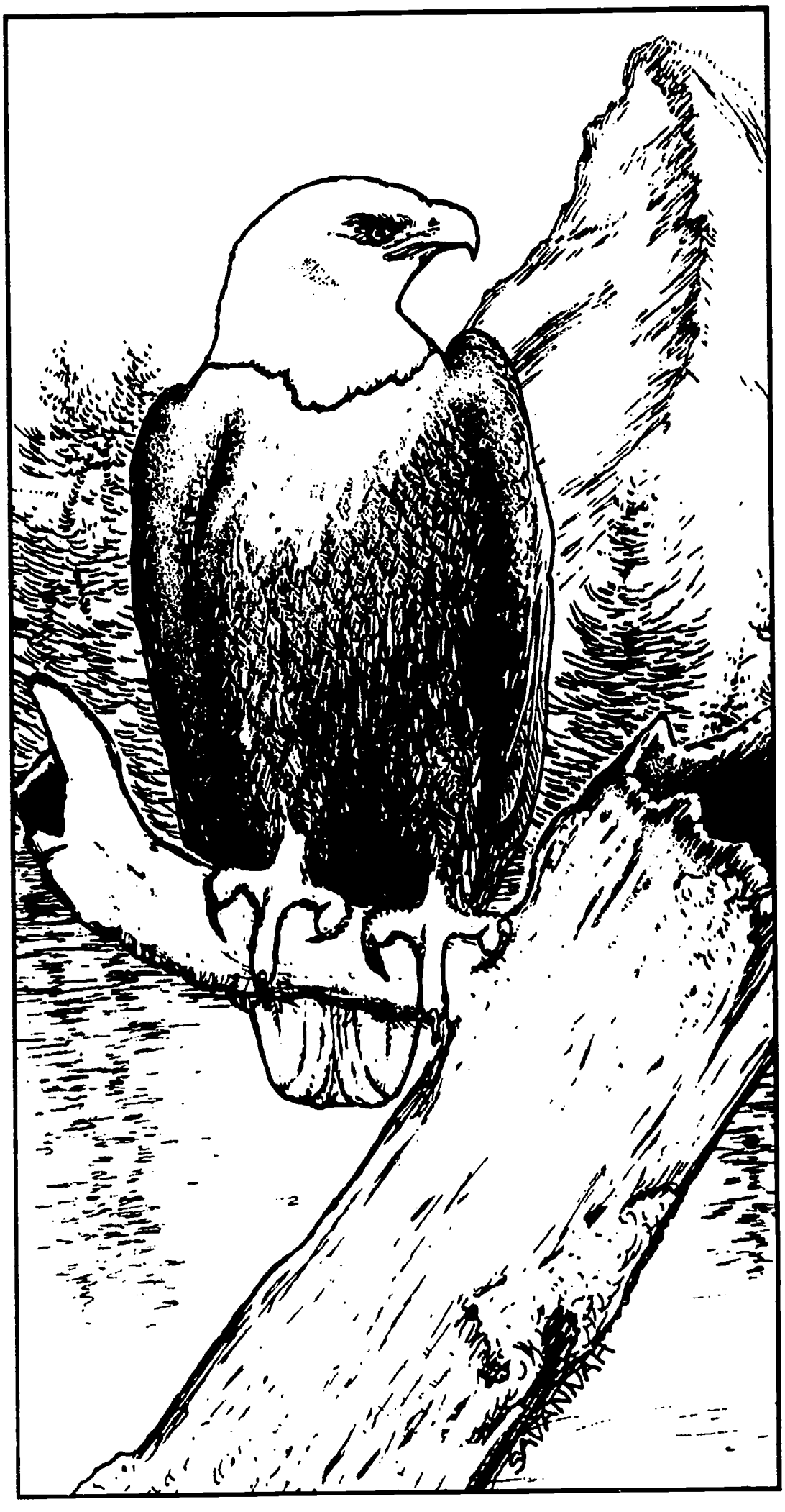
The **bald eagle** was chosen as the country's national symbol in 1782. The adult is easily recognized by its brown body, pure white head and tail, and yellow eyes, beak, and feet.

Bald eagles prefer wild areas where there are lots of fish along coasts, lakes and rivers far from human development. They became an endangered species due to habitat loss, pollutants such as DDT and lead, and poaching. Although eagles are still in trouble, they've made a comeback since the mid-1970s due to the banning of DDT and widespread protection efforts.

Bald eagles are not endangered in Alaska because there is a lot of suitable habitat there.

Eagles build large nests of sticks in tall trees, usually evergreens, and each pair may raise one to three young. The pair usually returns to the same nest year after year, adding new sticks each year until the nest becomes so large and heavy that it breaks off.

When a young bald eagle leaves its nest, it is larger than its own parents!



31

CAN DO!

Objectives

Students will be able to: 1) identify a problem involving wildlife on their own school grounds; 2) suggest and evaluate alternative means by which to either solve the problem or at least improve the situation; 3) successfully undertake the project; and 4) analyze and describe the process by which they successfully solved the problem or improved the situation.

Method

Students select a school environmental project; conduct research; make plans; and follow procedures to accomplish the project.

Background

Each of us can make constructive contributions to improving the environment in which we live. Sometimes our actions can improve the environment for people, sometimes for wildlife, and sometimes for both. Sometimes our effectiveness can be improved if we work with other people—sharing ideas, information, and skills.

A working knowledge of the following terms will be useful to students in this activity:

Problem—a difficult situation to be improved, or an opportunity to make things better. Problems can't always be "solved," but situations can usually be improved.

Authority—an individual or group of people with the power to make changes.

Compromise—a way to settle a problem in which both "sides" usually give a little.

Given that it is important for young people to learn that they "can do" for people, wildlife, and the environment—use your judgement in the course of this activity to assist students in selecting a project that is realistic, constructive, and possible. If not, the students may experience an activity that contributes to their thinking that they "can't do."

The major purpose of this activity is to provide students an opportunity to experience success in taking constructive actions to improve the environment for people and wildlife.

NOTE: See "The Monday Group: From Awareness to Action" for descriptions of successful community projects undertaken by older students, but still relevant as examples of what can be done.

Materials

writing materials

Age: Grades 2—9
Subjects: Social Studies, Language Arts, Science
Skills: analysis, application, description, discussion, evaluation, invention, listing, public speaking, problem-solving, small group work, synthesis, writing
Duration: minimum of three 45-minute periods
Group Size: any
Setting: outdoors and indoors
Conceptual Framework Reference: I.D., IV.A., IV.A.1., IV.A.2., IV.A.3., IV.A.4., IV.C., IV.D., IV.D.1., IV.D.2., IV.D.3., IV.D.4., IV.D.5., IV.D.6., IV.E., IV.E.4., IV.E.5., IV.E.9., IV.E.10., IV.F.11., VI.B.7., VII.A., VII.A.2., VII.A.3., VII.B., VII.B.1., VII.B.5., VII.B.6.
Key Vocabulary: problem, authority, compromise, constructive, realistic, effective, alternatives

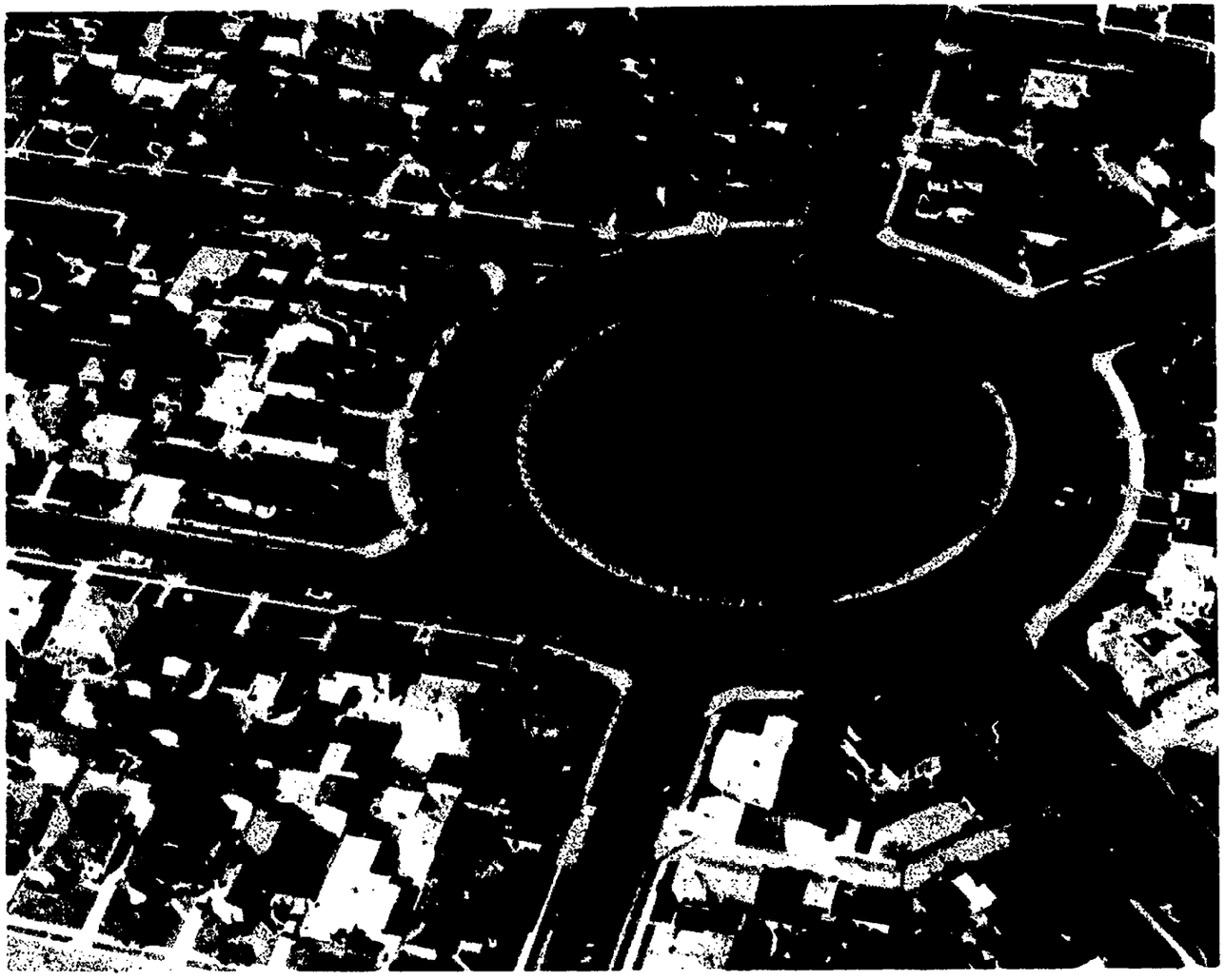
Procedure

1. Ask the students to think of some ways in which they could improve areas of the school grounds as a home for wildlife. They might generate a list of activities on their school grounds that have a negative impact on wildlife. The list might include litter that poses a hazard for some kinds of wildlife; a muddy area that birds use for water but that has been recommended for blacktopping to minimize dust and mud; a proposed pesticide spraying that will not only kill the "pest" but perhaps affect other plants and animals; removal of a tree that presently helps contribute to cleaning the air, produces oxygen, and serves as a food and shelter source for varying kinds of wildlife, etc.
2. Looking at the list of possible problems and suggestions for ways to improve wildlife habitat at school—ask the students to select one they think they could realistically handle and do something constructive about. If there is difficulty in deciding which one, and reasonable support has been offered for each, the students might vote to decide. Students could also make speeches in support of the project they want to tackle, in hopes of swaying the class vote.
3. Once the project has been selected, ask the students to work alone or in small groups to begin to generate ideas for possible solutions to the problem and ways to implement the project. Each individual or small group could come up with a plan, including a written description and illustrations or sketches of how it will work, and how it can be accomplished.
4. Ask the groups to present their plans to the rest of the students. Students may ask questions for clarification. Once all the plans have been presented, ask the students to select the plan that seems most: a) constructive; b) realistic; c) helpful to wildlife; and d) apt to make a lasting contribution.
5. Also ask the students to select one or more alternative plans, in case their first choice is not acceptable to authorities at the school.
6. Once a plan, with alternatives for "back up," has been selected—ask the students to select a delegation to present their proposal to the school principal or whomever the appropriate authority would be. Remember janitors, groundskeepers, school board, etc.—anyone who would be physically and/or officially involved. A practice session before the students and any interested parents or other groups of students would be helpful. At the practice session, the student delegation would make their presentation as they plan to before the principal, janitor, etc.—responding to any questions from their audience that might be raised.
7. The students should make an appointment to present their proposal, make the presentation, and report back to their classmates. If their plan is accepted, they should make sure they know who to contact next in order to successfully complete their project. Making sure they have all necessary permissions secured, the students should proceed to successfully accomplish their project.
8. Once accomplished, ask the students to analyze their results. Did things work out like they wanted them to? Were there any surprises? Any unforeseen problems? How might they have been any more effective?

Evaluation

A nature trail near you is being vandalized. People are shooting at squirrels, taking bird nests from trees, and using knives to destroy interpretive signs. Name three things you and your class could do to help reduce this problem.

SHRINKING HABITAT



Objectives

Students will be able to: 1) describe some effects of human development of land areas on plants and animals previously living in the area; 2) evaluate the importance of suitable habitat for wildlife; and 3) recognize that loss of habitat is generally considered to be the most critical problem facing wildlife today.

Method

Students simulate a process of land development in a physically-involving activity.

Age: Grades 4-7
Subjects: Social Studies, Science
Skills: application, comparing similarities and differences, description, discussion, evaluation, generalization, kinesthetic concept development, observation, synthesis
Duration: one 45-minute period or longer
Group Size: minimum of six students, with one developer, one carnivore, three herbivores, and one tree
Setting: indoors or outdoors, large area with room for people and props
Conceptual Framework Reference: I.A., I.B., I.C., I.C.1., I.C.2., I.C.3., I.C.4. I.D., II.B.2., III.C.1., III.D.2., III.D.3., III.D.4., IV.C., IV.C.1., IV.C.2., IV.C.3., IV.E.10., V.A., VI.A., VI.A.2., VI.A.3., VI.A.4., VI.A.5., VI.B., VI.B.1., VI.B.2., VI.B.3., VI.B.4., VI.B.5., VI.C., VI.C.2., VI.C.12, VI.C.16., VI.D., VI.D.1., VII.A., VII.A.1., VII.A.2., VII.A.3., VII.A.4., VII.B., VII.B.1., VII.B.2., VII.B.3., VII.B.4., VII.B.5., VII.B.6., VII.B.7.
Key Vocabulary: habitat, food chain, development, herbivores, carnivores, vegetation, consequences

Background

All around us, and all over the planet, wildlife habitat is being lost. Whenever an area of land is paved for a shopping center, divided and excavated for homes for people, and sometimes when it is plowed to grow a crop—small animals lose their homes, and frequently their sources of food and water. As these small animals disappear, so too do the larger animals that previously depended upon the smaller animals in the food chain as a source of food. Animals that cannot tolerate human intervention may also disappear without any direct relationship to the food chain. (For example, see "Too Close For Comfort.")

Students can observe this phenomenon near their homes and schools, or at least in their region. This process is happening in large ecosystems and small, all over the earth.

For example, many wetlands on the planet have been filled in and drained to make land for farming and homes. When they are filled in, many kinds of water birds, reptiles, amphibians, crustaceans, and other life forms—including a wide variety of vegetation—are lost. Sometimes the animal forms can move on; most often they cannot.

Some of the tropical forests of the planet have become extremely vulnerable in recent years. Scientists estimate that huge numbers of plant and animal forms exist in these forests that have not even been identified as yet. They are tremendously important sources of the earth's biological diversity. In fact, some scientists warn that as these genetic pools are reduced, the flexibility and thus capacity to survive of the remaining plants and animals on earth will ultimately be reduced.

The major purpose of this activity is for students to simulate some of the potential impacts of land development on wildlife and its habitat, to recognize that this process is one that is taking place in areas all over the planet, and to understand that loss of habitat is generally considered to be the most critical problem facing wildlife today.

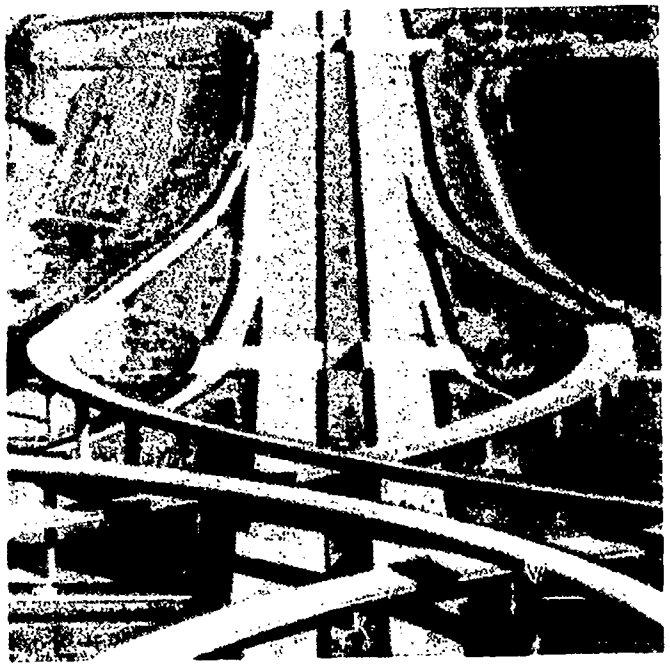
Materials

green and blue construction paper; classroom desks, tables or chairs; five or six large bedsheets or blankets for a student group of about 25

Procedure

1. Review with the students the elements necessary for a habitat (food, water, shelter, and space arranged suitably for the particular animal). (See Components of Habitat in the "Cross References.") After some discussion to make sure that the elements of habitat are clearly in mind, tell the students that in this activity they will be simulating wildlife in its habitat.
2. Divide the students into four groups: **herbivores, carnivores, vegetation** (trees, shrubs, grasses, etc.), and people who will be **land developers.** If the students are not familiar with the terms "herbivore" and "carnivore," provide them with working definitions of those terms (herbivore—a plant-eating animal; carnivore—a meat-eating animal; and although not needed for this activity, omnivore—an animal that eats both plants and animals). Plan for three times as many herbivores as carnivores with a small number of developers in proportion to the other two groups. The numbers (amount) of vegetation may vary. For example, two developers, three carnivores, nine herbivores, and six trees or bushes (vegetation).
3. Establish a large area—either in the classroom, with tables, chairs, and desks moved to the sides of the room, or outside—that can be used to simulate the wildlife habitat area before development. The "land developers" are to stay on the sidelines at this time, simply observing the undeveloped land and its wildlife inhabitants—or meeting on their own, nearby, to make plans for development. In fact, they can make their entrance rather suddenly once the wildlife habitat has been established—simulating the arrival of heavy construction equipment.

4. Provide each "herbivore" with:
• two desks or chairs to use as "shelter" (or string or hula hoops);
• three pieces of green construction paper to represent food;
• one piece of blue construction paper to represent water; and
• some of the vegetation portrayed by students.
Provide each "carnivore" with:
• one desk or chair to use as a "lair" (or string or hula hoop);
• space equivalent to that used by three herbivores;
• three herbivores as a potential food source;
• one piece of blue construction paper to represent water; and
• some of the vegetation portrayed by students.
5. Ask the "herbivores" to arrange the food, water, and shelter—including the students who are "vegetation"—in a space to represent their habitat. Once the herbivores have arranged their habitat, ask the "carnivores" to move into the area to establish their lairs and water sources, keeping an eye on the herbivores as possible food sources. For added interest, suggest that the students identify what particular kind of animal they are, and role-play its characteristics. (This phase takes about ten minutes, with the developers planning while the herbivores and carnivores arrange their habitat.)
6. Once all the animals are established in their habitats, it is time for the developers to enter the picture. These developers have been given the opportunity to create a housing and shopping area. (They may use three to seven minutes to construct their development, explaining their actions as they take them.) They are restricted in how much space they can use. They may use the space equivalent to that used by three herbivores. The developers may use the sheets and blankets to build their development. They may remove trees, represented by students (without physically hurting the students), shelter, (represented by desks), food and water.
7. Once they have constructed their development, engage all of the students in a discussion of what happened. What action took place? With what consequences? Would or did any animals die? From what causes? Could the developers have done anything differently to change the consequences? Could they have developed several scattered small areas instead of one large area, or vice versa, with what effects? Would it have reduced negative consequences for wildlife if they put the development in a different area of the habitat? Rather than negative consequences, were there positive consequences? If so, what were they? How were they achieved? Ask the students to consider and discuss what seemed realistic about the activity, and what did not. For example, sometimes development can take place that enhances the area for some kinds of wildlife. Often, however, it will not be the same kinds of wildlife that were in the area before development. Planners and developers can sometimes add to the vegetation in an area, creating additional shelter and food for some kinds of wildlife, and make water sources available under some conditions, if there is insufficient water in the area.



8. Ask the students to summarize some of the possible impacts on wildlife from human activities like development of land areas. Are there places in your community where wildlife habitat has been lost by human development? Are there places where wildlife habitat has been enhanced by human activity? What choices, if any, are there to development of previously undeveloped areas? What trade-offs are involved; for example, in developing vacant areas within communities rather than undeveloped areas outside of communities? If development does take place, what kinds of actions can people take to minimize the negative consequences for wildlife, vegetation, and other elements of the environment? What about possible economic costs? Social costs? Ecological costs? Aesthetic costs? etc. Discuss loss of habitat as something that is affecting wildlife all over the planet. Ask the students to summarize the importance of suitable habitat for wildlife. Discuss the students' concerns and recommendations.

Extensions

1. Conduct this activity twice, with the students trading roles the second time. When the former wildlife become land developers, they could see if they could produce a development plan that could benefit the area for people and wildlife in some ways. The activity can also be conducted to show differences between developing the entire area—with likely loss of all wildlife in the area—to developing only part of the area, with some wildlife likely to survive.
2. Ask students to complete the following sentence, and discuss their response: "If I were going to build a house for my family in a previously undeveloped area, I would. . ."

Evaluation

Name and describe three animals or plants which used to live in your area, but no longer do.

Describe the changes that seem most responsible for eliminating each of these plants or animals.

Suggest and evaluate the advantages and disadvantages, if any, of possible actions that could have been taken to prevent the elimination of these plants or animals from the area.

Name one kind of wildlife that would do better, and one kind of wildlife that would do worse, in areas in which humans cut down a forest and planted grass; dammed a creek to flood a valley; put in a housing development with large lawns and many shrubs; built a city on a lakeshore with crowded skyscrapers.

APPENDIX

Evaluation Exercises

When A HOME FOR PEARL was pilot-tested with elementary school students in the Washington, D.C. metropolitan area, it was found to have a positive impact on their wildlife attitudes and knowledge. There were significant changes in their responses to the statements provided below under "What Do You Think?" and "What Do You Know?" when asked before and after viewing the video. You can determine how great an impact the video has on your group by using these evaluation questions. Here's how:

Before showing Part 1 of A HOME FOR PEARL, read the attitude statements under "What Do You Think?" to your group. Have the children tell you whether they **agree** or **disagree** with each one. If they aren't sure how they feel, they should just say, "I don't know." Ask them to think carefully about each statement and to respond as honestly as possible. Explain that there are no right or wrong answers and that all answers are OK. Also explain that they shouldn't worry about how anyone else might respond. They should simply give their own opinions.

Next ask the true or false questions under "What Do You Know?" Tell your students you don't expect them to know the right answers.

Some terms will be unfamiliar to them. Explain that these terms will become more familiar after watching A HOME FOR PEARL.

After showing all four parts of the video and completing the activities for Part 4, read the attitude statements and knowledge questions again. You may want to keep a record of how the children responded both before and after viewing A HOME FOR PEARL. People's attitudes about a given topic can sometimes change according to the amount of knowledge or awareness they have about the topic. Did any of the children's attitudes change? If so, have them discuss their reasons.

What Do You Think?

1. If I found a baby bird on the ground, I would take it home and keep it for a pet. (agree or **disagree**?)

2. I would rather watch television than go outside to watch birds. (agree or **disagree**?)

3. I feel sorry for wild animals that have to take care of themselves in the wild. (agree or **disagree**?)

4. I think it would be fun to raise a baby raccoon so it would follow me around as if I were its mother or father. (agree or **disagree**?)

5. I would like to live in a place where lots of different wild animals live all year around. (**agree** or disagree?)

6. It would be fun to keep a wild rabbit for a pet. (agree or **disagree**?)

7. It would be gross to go looking for where worms live. (agree or **disagree**?)

8. It would be disgusting to see an owl throw up its food. (agree or **disagree**?)

9. I think we should get rid of wild animals that kill and eat other animals. (agree or **disagree**?)

10. It would be fun to go hunting for a bald eagle with a gun. (agree or **disagree**?)

What Do You Know?

1. The best thing to do if you find a baby bird is to bring it home and give it food and fresh water. (true or **false**?)

2. Dogs and deer are domesticated animals. (true or **false**?)

3. Skunks and worms are urban wildlife. (**true** or false?)

4. Eagles and cottontail rabbits are wild animals. (**true** or false?)

5. The four things that every habitat should have are food, water, shelter, and space. (**true** or false?)

6. Cars and cats are limiting factors for some kinds of urban wildlife. (**true** or false?)

7. All predators need to live far away from people. (true or **false**?)

8. Bald eagles need lots of mice around when they raise their babies. (true or **false**?)

9. The poison that can change the chemical balance of lakes and kill fish is called lead poisoning. (true or **false**?)

10. One reason bald eagles are endangered is that the places where they prefer to live are disappearing. (**true** or false?)

APPENDIX

More About Project WILD

Project WILD is an interdisciplinary, supplementary environmental and conservation education program emphasizing wildlife. It was developed for educators of young people in kindergarten through high school. The goal of Project WILD is to assist learners of any age in developing awareness, knowledge, skills, and commitment to result in informed decisions, responsible behavior, and constructive actions concerning wildlife and the environment on which all life depends.

Project WILD offers three instructional activity guides for use by teachers—one for elementary, one for secondary, and a third spanning kindergarten through high school that emphasizes water and aquatic ecosystems. Activity guides are provided free of charge to teachers who participate in Project WILD workshops.

Project WILD is a joint project of the Western Association of Fish and Wildlife Agencies and the Western Regional Environmental Education Council. Project WILD materials have been endorsed by the National Council for the Social Studies and are consistent with recommendations of the National Science Teachers Association. The U.S. Fish and Wildlife Service is an Associate Organizational Sponsor of Project WILD.

For more information, contact your state's Project WILD coordinator in the list below or write to Project WILD, PO Box 18060, Boulder, CO 80308-8060, or call 303-444-2390.

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41

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APPENDIX

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Albuquerque, NM 87103
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Region 3
Federal Building, Fort Snelling
Twin Cities, MN 55111
612-725-3563

U.S. Fish and Wildlife Service
Region 4
Richard B. Russell Federal Building
75 Spring Street, SW
Atlanta, GA 30303
404-331-3588

U.S. Fish and Wildlife Service
Region 5
One Gateway Center, Suite 700
Newton Corner, MA 02158
617-965-5100

U.S. Fish and Wildlife Service
Region 6
Box 25486, Denver Federal Center
Denver, CO 80225
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U.S. Fish and Wildlife Service
Region 7
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907-786-3542

The U.S. Fish and Wildlife Service is a federal agency in the Department of the Interior which manages the National Wildlife Refuge System, a collection of over 90 million acres of lands and waters managed specifically for wildlife.

Contact the Environmental Education Specialist in the Regional Office nearest you to inquire about the refuges in your area and the educational resources available to you. Ask for specific information regarding teacher workshops, special activities, regulations, and educational publications about wildlife.

For information about the educational programs of the Service on the national level write the U.S. Fish and Wildlife Service, Office of Training and Education, 4401 North Fairfax Drive, Arlington, VA 22203, or call 703-358-1781.

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