

WILDLIFE PRAIRIE STATE PARK GET THE CONNECTION TEACHER'S PACKET

Grades 7- 8

Abstract

One of the most important and least understood concepts related to biological resources is our planet's biodiversity – the vast variety of organisms that inhabit the earth. How are these organisms related? What happens when a growing number of them disappear?

Addresses State Goal Requirements for Science

13B: Know and apply concepts that describe interaction between science, technology, and society.

11A: Know and apply the concepts, principles, and processes of scientific inquiry.

12A: Know and apply concepts that explain how living things function, change, and adapt.

12B: Know and apply concepts that describe how living things interact with each other and with their environment.

Also meets Math Goal 8B

Objectives

Students will discover how the earth is experiencing an ongoing and accelerating loss in variety as well as absolute numbers of organisms.

Students will determine what factors are causing the accelerations of loss and factors that connect them.

Students will make decisions based on presented information to determine how to stop the losses.

The goal of all environmental education programs at Wildlife Prairie State Park is to help students become environmentally knowledgeable, skilled, dedicated citizens who are willing to work individually and collectively toward achieving and maintaining a dynamic equilibrium between the quality of life and the quality of the environment.

STUDENT PREPARATION

Before coming to Wildlife Prairie State Park, please familiarize your class with the following vocabulary words. In addition, students should participate in at least one pre-trip activity.

- 1. adaptation** -the modification of a species' behavior or a change in one of its physical features that helps it survive in a changing environment.
- 2. endangered species** -a species that is in immediate danger of becoming extinct.
- 3. extinct** -a species which no longer lives anywhere.
- 4. extirpated** -a species, which no longer lives in a given region.
- 5. habitat** -the area where an animal or plant lives and obtains food, water, shelter and living space.
- 6. introduced/exotic species** -an animal or plant species brought into a new area; non-native.
- 7. native species** -a species that occurs naturally in a region (compare introduced).
- 8. poach** -to kill, collect or hunt an animal or plant illegally.
- 9. rare species** -a species that normally has only a small number of individuals or a limited distribution.
- 10. species** -the set of organisms that can interbreed that produce their own kind.
- 11. threatened species** -a species whose numbers are low or declining precipitously but not yet declared endangered.

Wildlife Prairie State Park
Get the Connection?
Post-trip Activity

Humans as Part of the Whole

OBJECTIVE: To help students perceive our total dependence on other organism.

COMMENTS: Three requirements for human survival are food, clothing, and shelter. In this activity students discover how totally dependent we are on other living organisms in meeting these requirements.

PROCEDURE: Write the words *food, clothing, and shelter* on the board. Use *clothing* as an example of how to proceed with the activity. Write the headings *Item, Materials, Made From, Origin,* and *Other* on the chalkboard. Begin by asking students to list several items of clothing. Ask the following questions about each item. What materials are used to make it? From what are these materials made? What, in turn, is the origin of these substances? Finally, what natural organisms (*Other*) are necessary for the items under *Origin*? Your completed chart should resemble the example below.

Item	Materials	Made From	Origin	Other
Shirt	cotton shirt	cotton fiber	cotton plant	Insects (act as pollinators)
	Silk	silk threads	silkworm	mullberry (serves as food plant)
	Polyester	synthetic fibers	petroleum	decayed plants & animals
	Wool	fleece	sheep	forage (serves as food source)
Boots	rubber	plant sap	rubber tree	insects (serve as pollinators)
	Leather	animal hide	cow	forage (serves as food source)

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 Post-trip Activity

Illinois Biodiversity

1. Complete the second column by inserting the number of species found in the world. These numbers are given in the handout **Numbers of Described Species #1**.

	Illinois	World	Percentages Found In Illinois
Fungi	20,000	_____	_____
Ferns	75	_____	_____
Monocots & dicots	1955	_____	_____
Sponges	14	_____	_____
Insects & relatives	27,800	_____	_____
Mollusks	271	_____	_____
Reptiles & Amphibians	98	_____	_____
Birds	297	_____	_____
Mammals	67	_____	_____

2. For each group of organisms, calculate the percentages that are found in Illinois. Write your answers in the last column.
3. Can you think of reasons why some groups of organisms have relatively few species in Illinois whereas others have enormous numbers?
4. Today, a very large percentage of Illinois (over 60%) is farmland in monoculture (only one plant species grows there), and at least 8% in urban. What do you these percentages tell you about where the more than 53,000 species of plants and animals live in Illinois? Are small habitat fragments important for maintaining biodiversity? Explain.
5. Do you know of, or can you think of, places in Illinois where you can find “wild”, native species? List below.

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Post-trip Activity

World Biodiversity

Ask students to find the total number of described species by adding the number of species for each group. Then have them determine the percentage of the total that each group represents. Those percentages are entered in Column A. Next, students compute the number of degrees of a circle represented by each percentage. Those numbers are entered in Column B. Numbers should be rounded to the nearest tenth of a percent or degree.

Example: $\# \text{ bird species} / \text{total} \# \text{ species} = \% \text{ of all species that are birds}$

$\% \text{ birds} \times 360 \text{ degrees} = \text{portion of pie chart that represents birds}$

When all computations have been made, students plot the data on a large circle. Segments of the pie chart should be labeled.

Discuss the completed pie charts or graphs. What is the largest group of organisms? The smallest? Which groups do you think have the most unknown species? Why? In what other graphic forms could this information be presented? Is one method of presentation preferable to the others? If so, why?

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Post-trip Activity**

Number of Described Species #1

Group	No. of Species	Column A (%)	Column B (degrees)
Viruses, bacteria Blue-green algae	5,800	_____	_____
Fungi	47,000	_____	_____
Protozoans	26,900	_____	_____
Ferns	10,000	_____	_____
Dicots	170,000	_____	_____
Monocots	50,000	_____	_____
Other plants	18,500	_____	_____
Sponges	5,000	_____	_____
Jellyfish & relatives	9,000	_____	_____
Worms	36,200	_____	_____
Mollusks	50,000	_____	_____
Starfish & relatives	6,100	_____	_____
Insects & relatives	875,000	_____	_____
Other invertebrates	9,300	_____	_____
Primitive chordates & fish	21,000	_____	_____
reptiles & amphibians	10,500	_____	_____
birds	9,040	_____	_____
mammals	4,000	_____	_____

Adapted with the permission of the Illinois Natural History Survey from Biodiversity in Illinois: Activities for Young People

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Post-trip Activity
Teacher's Guide

What is Biodiversity?

What sets earth apart from the other planets in our solar system? The answer is simple: life. To refer to the variety of this life on earth and of the habitats, in which life is found, scientists use the term biodiversity.

In recent decades the science of systematics (the study of organisms with regard to their natural relationships) has expanded rapidly, and a considerable body of information about the diversity of organisms has been accumulated. Of 1.4 million species that have been described, approximately 750,000 are insects, 41,000 are vertebrates, and 250,000 are plants. The remaining species include various kinds of invertebrates, fungi, algae, and microorganisms.

A species is generally defined to be a population (or group of populations) in which each organism is capable of breeding and producing offspring with any individual of the opposite sex in that population. (This definition, the best that scientists have been able to devise, cannot be applied to organisms that reproduce by means other than sexual reproduction, such as self-fertilization or parthenogenesis.)

Scientists at the Illinois Natural History Survey recently compiled data on the biodiversity of Illinois. They conservatively estimated that more than 53,000 species are native to our state. This is an especially large number for a region the size of Illinois in a temperate climate.

The diversity of organisms in an area is linked to the number of different habitats present and to the ability of those habitats to support various species. Illinois, for example, contains nearly 100 types of habitat, each of which is favorable only to particular plants and animals. Among the habitats types found in Illinois are forests, prairies, savannas, wetlands, lakes, ponds, streams, and caves. Although each of these habitats continues to exist, many are no longer easy to find because of extensive urban and agricultural development over the past 150 years. Fortunately, remnants of nearly all the native habitats can be found in nature preserves, state parks, conservation areas, and other protected sites.

A decline in biodiversity is not usually the direct result of human exploitation of species. Rather, the decline is directly linked to the habitat destruction associated with expansion of human populations and human activities.

Distribute a copy of the handout **Illinois Biodiversity** to each student. Relying on information from the **Number of Described Species #1** handout, students should complete the third column (World) and compute the percentage of each group of organisms that are found in Illinois. Computations may be completed in the classroom or as homework. The questions on the handout may be assigned to students for completion or used as discussion questions in class.

Possible answers to questions 3 and 4 on Illinois Biodiversity worksheet:

3. *Many groups of organisms live primarily in a habitat or ecosystem that is not present in Illinois. Sponges, for example, live primarily in salt water. Nonetheless, Illinois is a relatively large state and has a tremendous diversity of terrestrial and freshwater habitats that can support a large number of other groups (plants, fungi, and insects).*
4. *Many of the organisms found in Illinois occur in a relatively small area of the state. Even though the overall number of species appears to be great, the population of individuals for a given species can be quite low because of lack of suitable habitat. When the population of a species gets very low, that species is categorized as threatened or endangered; it may become either extinct or extirpated (eliminated) from the state. Given the small portion of Illinois that still contains habitats suitable for many species, each of these biological "islands" becomes very important. The island habitats must be preserved to ensure the survival of the organisms that inhabit them.*

**Wildlife Prairie State Park
Get the Connection?
Post-trip Activity**

The People Factor

Part 2: A World Full of People

After discussing some effects of the growing U.S. populations, have students focus on the world population.

<p>Examples of Extinct Animals:</p>	<p>Explain that in many parts of the world, especially in many Asian, South American, and African countries, the human population is growing even faster than it is in the United States. Tell them to look at the information in chart #4. Explain that this represents the world's population growth since 1650. Pass out a large piece of graph paper, along with pencils, and markers. Then tell them vertical axis can represent human populations in millions and the horizontal axis can represent the years.</p>
<p>ATLAS BEAR Extinct 1870</p>	<p>Now have them look at the information in chart #5. Explain that this information shows the approximate number of species of birds and mammals that have become extinct around the world since 1600. Have them use this information to make a bar graph next to the population graph they just made. You can suggest that they use one color to represent birds and another color to represents mammals. (Older children can try to combine both sets of data in the same graph by making the right vertical axis represent the number of species that have become extinct. See graph example).</p>
<p>BALI TIGER Extinct 1937</p>	<p>When the students have finished graphing, discuss how the growing population is threatening many of the world's plants and animals. Explain that the number of plants and animals becoming endangered is rising every year, and as the world's population continues to grow, people will continue to put more pressure on plant and animal species.</p>
<p>BLUE BUCK Extinct 1799</p>	

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Post-trip Activity

The People Factor

In the last 35 years, the number of people in the world has increased from 2.6 billion to 6 billion. Scientists estimate that by the year 2100 it could climb to over 10 billion! What does an “exploding” human populations have to do with endangered species? Plenty! In this two-part activity, your students will learn about some of the ways that the growing human population affects plant and animal species around the world, both directly and indirectly.

Part 1: Close to Home

Start the activity by passing out copies of the next page. Have the students look at the information in the first graph. Ask if anyone can explain what the graph shows. (It shows how the population of the United States has grown since 1800.) Then have the students look at the information in charts #1 and #2. These charts show the average number of pounds of trash generated by an U.S. citizen each day in 1960, 1970, 1980, and 1986, and the approximate acreage of urban land in the United States. Ask the students to think about the connection between the information in the charts and the graph of the United States’ rising population. (More people use more resources, including energy, food, water, and so on; more people generate more waste, which takes up more space[landfills, etc.] and can pollute the environment; more people clear more land to make room for houses, roads, shopping malls, and other development.)

Now have the students look at the information in chart #3. It shows the number of birds and mammals that have become extinct in the United States, and Canada since 1700. Explain that this is an approximate number of extinctions, since no one knows for sure what might have become extinct early in our history. Discuss in general, the connection between the number of birds and mammals that have become extinct in the United States and the rising human population. More people using more resources, settling in new areas, and clearing more land for development, can directly and indirectly harm plant animal populations. For example, some animals, such as passenger pigeons and great auks, have become extinct because of unregulated marketing hunting. Many others have become extinct for a combination of reasons, most stemming from human-related pressures that increase as the human population increases.

**Wildlife Prairie Park
Get the Connection?
On Site Activity**

Use the following information to complete this worksheet:

Status in Illinois	Reason for Status	
Abundant	habitat loss	interfere with humans
Rare	migrate	specific food/nesting requirements
Threatened	pesticides	small broods/long gestation period
Extirpated	illegal trade	sensitive to change
Endangered	naturally rare	

Name of animal: *Sandhill Crane*
 Status in Illinois: *Rare*
 Reasons for status: *Migrate and nesting requirements. The Sandhill Crane was once abundant on the large marshes in northern and central Illinois but had become very rare by the late 1800's. Prior to its return to the state in 1979, the last known nesting occurred in 1872.*

Name of animal _____
 Status in Illinois _____
 Reasons for status _____

Name of animal _____
 Status in Illinois _____
 Reasons for status _____

Name of animal _____
 Status in Illinois _____
 Reasons for status _____

Source: Endangered and Threatened Species of Illinois: Status and Distribution

Updated by Wildlife Prairie State Park Education Department, 1995.

**Wildlife Prairie State Park
Get the Connection?
On Site Activity**

Use the following information to complete this worksheet:

Status in Illinois	Reason for Status	
abundant	habitat loss	interfere with humans
rare	migrate	specific food/nesting requirements
threatened	pesticides	small broods/long gestation period
endangered	naturally rare	sensitive to change
extirpated	illegal trade	

Name of animal _____
Status in Illinois _____
Reasons for status _____

Name of animal _____
Status in Illinois _____
Reasons for status _____

Name of animal _____
Status in Illinois _____
Reasons for status _____

Name of animal _____
Status in Illinois _____
Reasons for status _____

**Wildlife Prairie State Park
Get the Connection?
On Site Activity**

Use the following information to complete this worksheet:

Status in Illinois	Reason(s) for Status	
abundant	habitat loss	interfere with humans
rare	migrate	specific food/nesting requirements
threatened	pesticides	small broods/long gestation period
extirpated	illegal trade	sensitive to change
endangered	naturally rare	

Name of animal: *Bobcat*
 Status in Illinois: *Threatened*
 Reasons for status: *Habitat loss, small broods, interference with humans and sensitive to change. Bobcats prefer heavy timber stands along waterways. Most of these areas have been reduced. Also trapping pressure has reduced their numbers.*

Name of animal: *Cougars*
 Status in Illinois: *Extirpated*
 Reasons for status: *Habitat loss, infrequent broods, and interference with humans. The cougar was exterminated from Illinois before 1870. Their numbers probably never were large, and fear of the large animal aided in its demise.*

Name of animal: *Badger*
 Status in Illinois: *Rare*
 Reasons for status: *Naturally rare. Habitat loss (prairies plowed), pesticides. Originally in the northern part of the state but have spread south; they have also recently expanded eastward. Badgers were hunted and poisoned because of their destructive hole digging supposedly causing broken bones in livestock and weakening structures they had burrowed under.*

Name of animal: *River Otter*
 Status in Illinois: *Endangered*
 Reasons for status: *Habitat loss (drained wetlands), pesticides in water, and over-trapping. Otters were never abundant in Illinois and were hunted for their fur until approximately 1928. Otters require freshwater and estuaries for their habitat with natural cover along the banks.*

Source: Wild Mammals of North America, Chapman and Feldhamer.

Updated by Wildlife Prairie State Park Education Department, 1995.

**Wildlife Prairie State Park
Get the Connection?
On Site Activity**

Use the following information to complete this worksheet:

Status in Illinois	Reasons(s) for Status
abundant	habitat loss interfere with humans
rare	migrate specific food/nesting requirements
threatened	pesticides small broods/long gestation period
extirpated	illegal trade sensitive to change
endangered	naturally rare

Name of animal: *Bison*
Status in Illinois: *Extirpated*
Reasons for status: *Habitat loss and interference with humans. Huge herds once roamed the vast prairies. As settlers arrived, areas were fenced, crops planted and domestic animals introduced, taking over the original habitat of the bison. Defenseless against rifles, millions were shot all over the continent.*

Name of animal: *Elk*
Status in Illinois: *Extirpated*
Reasons for status: *Habitat loss and interference with humans. The fate of the elk is similar to that of the bison. Farms and ranches are unable to coexist with the elk.*

Name of animal: *White Tailed Deer*
Status in Illinois: *Common*
Reasons for status: *Deer are one of our most adaptable animals. They live on the "edges" of the woods and they forage in farm fields for corn and other grains. They also browse on shrubs at the forest edge. By dividing the original woods with roadways and housing developments more "edges" were created.*

Name of animal: *Eagle*
Status in Illinois: *Threatened*
Reasons for status: *Pesticides; loss of habitat. DDT accumulated through the food chain that ended at the top of the chain for the eagle. This accumulation of pesticides resulted in egg shells too fragile to be hatched. The banning of the use of DDT has helped the eagles. Protection of their roosting, feeding, and nesting sites is still imperative.*

Source: Wild Mammals of North America, Chapman and Feldhamer.
Endangered and Threatened Species of Illinois: Status and Distribution

Updated by Wildlife Prairie State Park Education Department, 2001.

**Wildlife Prairie State Park
Get the Connection?
On Site Activity**

Use the following information to complete this worksheet:

Status in Illinois	Reason(s) for status	
abundant	habitat loss	interfere with humans
rare	migrate	specific food/nesting requirements
threatened	pesticides	small broods/long gestation period
extirpated	illegal trade	sensitive to change
endangered	naturally rare	

Name of animal: *Red Fox*
Status in Illinois: *Common*
Reasons for status: *The red fox is very adaptable and is omnivorous. They can move right into the city, feeding on mice, rats, insects, fruits, and nuts. Their enemies are hunting, trapping, and cars.*

Name of animal: *Gray Fox*
Status in Illinois: *Common*
Reasons for status: *We seldom see gray foxes because they are nocturnal and secretive, hiding in shrubby cover. They are omnivorous and eat whatever is available.*

Name of animal: *Black Bear*
Status in Illinois: *Extirpated*
Reasons for status: *Habitat loss and interference with humans, also small, infrequent broods. They were never abundant in Illinois. Fear of this large mammal led to the last bear in Peoria County being killed about 1835.*

Name of animal: *Timber Wolves*
Status in Illinois: *Extirpated*
Reasons for status: *Interference with humans. Until recently, the wolf was feared by man even though there are no known attacks on humans. Some livestock was taken by wolves as their food source because the bison and elk disappeared. Bounties were placed on wolves and the wolf population was eradicated from Illinois before 1860.*

Source: Wild Mammals of North America, Chapman and Feldhamer.

Updated by Wildlife Prairie State Park Education Department, 1995.

**Wildlife Prairie State Park
Get the Connection?
Pre-trip Activity**

Get the Connection

Part 2: What's important?

After tallying up the results, discuss why some people are often more interested in protecting birds and mammals than reptiles, amphibians, insects and other “lower” animals and plants. Also talk about why people are more likely to want to protect large and/or beautiful species rather than smaller, less beautiful ones. For example, most people would probably support a panda protection program over a mouse or beetle protection program. Some people feel that smaller animals are not as important as insects, reptiles, and other animals. Another feeling is that animals are more important than plants. Point out that all living things depend on plants for food, homes, and many other “services”. You might also mention that many people tend to place more importance on species that are pretty, cute, or cuddly-looking.

Use mosquitoes as an example to emphasize the ecological importance of all species, no matter how unattractive or small. Describe how a mosquito is critical to the survival of many other species. Explain that billions of these tiny creatures live on the earth and provide food for fish, frogs, other insects, birds, bats and owls.

Divide your class into several teams and give each the same challenge: They must show how one small or not-so-glamorous animal or plant is important to people and/or a natural community.

Examples for Are They Important?

apple tree
bamboo
dung beetle
earthworm
grasshopper
oak tree
penicillin mold

Wildlife Prairie Park Get the Connection? Worksheet

Part 1: What do you think?

1. Which do you think are more important to save: endangered plants or endangered animals? Why? _____

2. Your town is thinking about building a recreation center in your neighborhood. But the proposed site is the home of an endangered insect, and building the center might wipe out the insect. Do you think it's OK for the recreation center to be built on that site? Explain your answer.

3. Would you feel different if there were an endangered bird living on the site? Why or Why not?

4. Which of the following do you think is most important to save?

- a. animals that are very beautiful
- b. large animals, such as whales and grizzly bears
- c. all types of animals
- d. animals that provide people with food or clothing
- e. animals that live in the United States

5. You have just been put in charge of a team that will be working to save the 10 endangered species listed below. But you have only enough money and materials to work with one species at a time. Number the plants and animals in the order you would try to save them, with #1 being the most important species to save. What other information would you need to make your decision?

- | | |
|-----------------------|-----------------------------------|
| _____ gray bat | _____ cobweb skipper |
| _____ river otter | _____ coachwhip snake |
| _____ rice rat | _____ showy lady's slipper orchid |
| _____ alligator gar | _____ white-tailed jackrabbit |
| _____ common barn owl | _____ cypress minnow |

Adapted with permission of National Wildlife Federation from the *Endangered Species* issue of *NatureScope*, copyright 1989.

**Wildlife Prairie State Park
Get the Connection?
Pre-trip Activity**

Get the Connection

Many people are familiar with the plight of the giant panda, but not many people know much, if anything about the plight of the green pitcher plant. Although both are endangered species, the panda gets a lot more press than the pitcher plant. In this two-part activity, your students can explore their own feelings about how they value different species and then discuss whether it's important to protect all species—even the ones that aren't so "famous."

Part 1: What do you think?

Pass out copies of the survey and go over the questions. Make sure the students are familiar with the species listed in question #5. Then tell them they should read each question carefully on their own and answer it according to how they feel.

When your students have finished the opinion poll, summarize their responses on the chalkboard. Then discuss the opinion poll using the information under "What's Important?"

Wildlife Prairie State Park Get the Connection?

Pre-trip Activity

Name that Habitat

OBJECTIVE:	To introduce some of the habitats found in Illinois and to help students distinguish among them.
SKILLS:	Classification, inference
VOCABULARY:	Bog, carnivorous plants, cave, savanna, swamp, prairie, presettlement

Illinois was not always corn and soybeans, cities and highways. Unfortunately we cannot see the state as it was when the first explorers crossed the seemingly limitless prairie on horseback, or canoed down the magnificent Illinois River. We can, however, rediscover many of the habitats that were present in presettlement times. These habitats are being preserved by law because they support a fascinating diversity of irreplaceable living things. This activity encourages students to look at Illinois in a more enlightened way and to discover some of the habitats that make up Illinois.

Illinois Habitat Types

Woodlands—land covered with various kinds of trees, usually with a closed canopy. Only shade-tolerant plants can grow in the understory of a forest. Illinois woodlands are of various types, including oak-hickory and beech-maple. Originally, nearly 14 million acres of Illinois (38%) was forested. Today, Illinois has 4.3 million acres of forest, covering about 12% of the land. Most of the quality wildlife habitat that remains in Illinois is found in woodland settings.

Prairies—tree-less areas dominated by grasses. Illinois prairies once covered over 21 million acres (60%) of the state. Nearly 500 species of plants grew on the prairies, with grasses like big and little bluestem, cordgrass, Indian grass, and needlegrass being the most prevalent. In addition, hundreds of species of flowering plants made the prairie a virtual wildflower garden throughout most of the growing season.

Swamps: trees and shrubs growing on ground covered by water for most of the year. The cypress-tupelo-gum swamps of far southern Illinois are more reminiscent of the Gulf Coast than Illinois. Many southern species of plants and animals, such as the cottonmouth, green tree frog, and red iris, live here.

Savannas—widely spaced trees, usually oaks, with prairie vegetation growing beneath them. Savannas and prairies were maintained by fire. Thus, the trees found on a savanna are most often fire-tolerant bur, white, or black oaks. Although this habitat is extremely rare in Illinois today, it was undoubtedly very common in presettlement days.

Caves—underground cavities, with an opening to the surface, usually formed by water. At least 480 caves are known to exist in Illinois. Some of the interesting organisms that inhabit caves possess highly specialized adaptations that allow them to live in a world of total darkness. Other animals, such as bats, visit caves to rest or spend the winter.

Bogs—wet, spongy, ground rich in plant remains, usually acidic and frequently surrounding a body of water. Bogs are found in Illinois only in the northeastern corner. Because of the low nutrient content of the soil, certain bog-inhabiting plants are carnivorous and obtain nitrogen by capturing and digesting insects. Various traps and snares are used to lure and capture unsuspecting prey.

Adapted with permission of the Illinois Natural History Survey from **Biodiversity in Illinois: Activities for Young People**.

**Wildlife Prairie State Park
Get the Connection?
Pre-trip Activity**

Name that Habitat

Begin by presenting your own version of the information in the Illinois habitat types on the previous page. Distribute copies of Illinois Habitats and Habitat Questions. Students refer to the pictures and draw upon information from your opening remarks to answer the questions.

Habitat Questions

1. Match the name of an Illinois habitat with the letter of the corresponding drawings.

savanna **C**

woodland **D**

tallgrass prairie **E**

bog **F**

cave **B**

cypress swamp **A**

2. Which of these habitats is found only in the far southern part of the state? **Cypress swamp.**
3. Name a plant or animal that you think might be found in each habitat.

Savanna **bur or white oak**

woodland **any tree**

Bog **sphagnum moss, pitcher plant**

tall grass prairie **big bluestem, Indian grass**

Cave **salamander, bat**

cypress swamp **cottonmouth, green tree frog**

4. Which of these habitats are considered wetlands? **A, F**
5. One of these habitats once covered 60% of Illinois but now covers only 0.01%. Which one is it? **Tallgrass prairie**
6. Where would a bog be found in Illinois?
- A. near Chicago** D. in extreme southern Illinois
B. in Northwest Illinois E. none are found in Illinois
C. near Danville
7. In which habitat would you expect to find carnivorous plants? **Bogs**
8. Which habitat in Illinois has been almost entirely converted to agriculture? **Tallgrass prairie**

9. Explain the difference between a savanna and a woodland. *A savanna has trees that are widely spaced with sun-loving prairie vegetation underneath; woodlands have a closed canopy with shade loving species underneath.*
10. Caves are lifeless places that have no living organisms in them. *False. Although the diversity of life in a cave is lower than that of most habitats, a number of organisms are specifically adapted to live in caves (salamanders, fish, crickets), and others use cave as homes or shelters for part of the year (bats, raccoons, snakes).*
11. Name two habitats not pictured that are found in Illinois. *Marshes, streams, lakes*
12. Is it important to preserve habitats? Give two reasons for your answers. *Students justify their answers in a variety of ways. One important justification is that the community of species that finds a home in one habitat may not be found in other habitats. Species are irreplaceable natural resources that cannot be saved unless we save their habitats. Also, the size of a habitat does not necessarily determine its importance in terms of diversity or rarity of a species.*

Discuss the habitats introduced in this exercise. How many students were aware that bogs and swamps differed? How many students were aware that there are bogs and swamps in Illinois? Why are these areas important to preserve? Why have these habitats survived the extensive development that has occurred in Illinois over the past 100 years? Are there any organisms that have become extirpated in Illinois since presettlement times? Why? If students need help, suggest the black bear, bison, elk, wolf, and passenger pigeon.

Evaluation: Ask students to bring in photographs from magazines and other sources that illustrate various habitats. Old copies of *National Geographic* would be useful, and photos from family vacations might help students to relate more closely to particular habitats. Include habitats that are not found in Illinois: desert, rainforest, arctic. Display the collection on a bulletin board. Identify and label habitats that might be found in Illinois and discuss why the others are unlikely to be found in our state.

Wildlife Prairie State Park
Get the Connection?
Pre-trip Activity
Name that Habitat

Habitat Questions

1. Match the name of an Illinois habitat with the letter of the corresponding drawings.

savanna	woodland
tallgrass prairie	bog
cave	cypress swamp

2. Which of these habitats is found only in the far southern part of the state?
3. Name a plant or animal that you think might be found in each habitat.

Savanna	woodland
Bog	tall grass prairie
Cave	cypress swamp

4. Which of these habitats are considered wetlands?
5. One of these habitats once covered 60% of Illinois but now covers only 0.01%. Which one is it?
6. Where would a bog be found in Illinois?
- A. near Chicago D. in extreme southern Illinois
B. in Northwest Illinois E. none are found in Illinois
C. near Danville
7. In which habitat would you expect to find carnivorous plants? _____
8. Which habitat in Illinois has been almost entirely converted to agriculture?

9. Explain the difference between a savanna and a woodland.
10. Caves are lifeless places that have no living organisms in them. True or False
11. Name two habitats not pictured that are found in Illinois.
12. Is it important to preserve habitats? Give two reasons for your answers. _____

**Wildlife Prairie State Park
Get the Connection?
Pre-trip Activity**

Name That Habitat



A.



B.



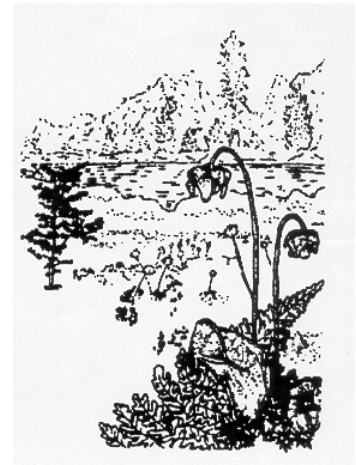
C.



D.



E.



F.

Wildlife Prairie State Park Get the Connection? Factsheet

Oryzomys palustris Harlen

Rice Rat

MURIDAE

Status: Threatened in Illinois



Present Distribution: The rice rat occurs from Texas, Oklahoma, and southeastern Kansas eastward to the Atlantic coast, and north to Pennsylvania and includes the area south of the Shawnee Hills Section and extends northward along the Mississippi river on the west and through the Shawnee Hills Section by way of the Big Muddy River valley into the poorly drained upland of the Mt. Vernon Hill country. Rice rats recently have been recorded from 11 southern Illinois counties.

Former Illinois Distribution: The present Illinois range of the rice rat is probably similar to its distribution of the last few centuries. Archeological evidence indicates that this species occurred farther north in the state during prehistoric times (Baker 1936, McLaughlin and Robertson 1951).

Habitat: Rice rats live in wet swampy fields and marshes of southern Illinois, especially in areas of the Shawnee Hills or Ozark Uplift (Hoffmeister 1989). In Illinois, they have been found along drainage ditches, farm ponds, marshy railroad right-of-ways, cypress swamps, lowland meadows, and wet ecotonal areas of woods and grass (Klimstra and Roseberry 1969, McLaughlin and Robertson 1951, Klimstra and Scott 1956, Klimstra 1969, Hofmann and Gardner 1987, Hoffmeister 1989).

Reason For Status: The occurrence of this species in human-modified habitats is a favorable indication of its likelihood for continued existence in Illinois. However, due to the threatened nature of southern Illinois wetland habitats and the generally low population levels of this species a degree of concern is justified.

Management Recommendations: The major threat to this species is the continued loss of wetland habitat; therefore, existing populations in natural habitats such as cypress swamps and along streams should be protected.

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Wildlife Prairie State Park Get the Connection? Factsheet

Myotis grisescens A. H. Howell

Gray Bat VESPERTILIONIDAE

Status: Endangered in Illinois
Federally Endangered

Present Distribution: The range of this species extends



From eastern Kentucky and Tennessee to Western Missouri and northeastern Oklahoma, extending in the east through Alabama to northwestern Florida. In Illinois, gray bats are known from only a few Illinois counties in the extreme southern and west-central parts of the state. Most of the gray bats that summer in southern Illinois, Kentucky, and Tennessee gather for hibernation in one cave complex in Kentucky. One gray bat, however, banded in Missouri was later recovered in La Salle County, Illinois, a distance of 640 km (Elder and Gunier 19780). Gray bats also use four caverns in west-central Illinois predominantly during the late summer and early fall, apparently as traditional assembly areas and transient roosts before and during migration to caverns in southern Missouri.

Former Illinois Distribution: Although probably never common or widely distributed in Illinois, the population of gray bats seems to have decreased significantly in the last few decades. In the summer of 1960, Hall and Wilson (1966) found a nursery colony of about 10,000 gray bats in Cave Spring Cave, Hardin County. In August 1974 this same cave was partially explored and only 1,000 to 2,000 individuals were found (Whitaker 1974).

Habitat: Gray bats roost, raise their young, and hibernate exclusively in caves. The winter caves are cold to facilitate torpor whereas the summer caves are warm to conserve body heat (Tuttle 1976a). While in their summer caves, adult females establish large, compact nursery colonies and the males and yearling females live in nearby “bachelor” caves. There are two records of wintering gray bats from Illinois, both from Hardin County. Gray bats roosts observed in west-central Illinois were always in remote, spacious, high-roofed locations (Kerr 1973, Skaggs 1973). Foraging is almost exclusively over rivers, streams, and lakes within 1 km of their caves (LaVal et al. 1977, Tuttle 1976b.) This species is intolerable of human disturbance and even a moderate level of human activity can exclude gray bats from an otherwise suitable cavern.

Reason For Status: The alarming decline in the number of gray bats is due to increased human disturbances and vandalism to colonies in both their winter and summer caves (Skaggs 1973, Barbour and Davis 1974, Tuttle 1979). Contamination from organochlorine pesticides also has contributed to the general decline of this species (Clark et al. 1978).

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Wildlife Prairie State Park Get the Connection? Factsheet

Lepus townsendii Bachman

White-tailed Jackrabbit

LEPORIDAE

Status: Endangered in Illinois



Present Distribution: northwestern Illinois, southwest to central Kansas and the mountains of north-central New Mexico, and west to east-central California and central Washington. This species' only known recent occurrence within Illinois was at the Savanna Army Depot, Jo Daviess County. The last reliable sighting, however, was in 1983 and this species is now believed extirpated from Illinois.

Former Illinois Distribution: Hoffmeister and Grebner (1948) documented the first record of this species from Illinois, a specimen taken on the sandy areas of the Savanna Army Depot in Jo Daviess County. Reports from that time suggested it was common at the Depot. There are also unconfirmed reports from Carol, Ogle, Winnebago and Whiteside counties (Yeager 1945, Hoffmeister and Greber 1948). A specimen was shot east of the Rock River between Oregon and Dixon in 1955 but precise locality data are not available.

Habitat: In Wisconsin, white-tailed jackrabbits prefer remnant prairie ridges and large expanses of cropland and pasture with scattered brushy fencerows on land that was formerly prairie (Dumke 1973). In Illinois, the species seems to prefer the sand prairie areas of extreme northwestern Illinois. Similar habitat occurs in north-central Illinois, but jackrabbits have never been reported from that region.

Reason For Status: The number of jackrabbits in Illinois has declined over the past several decades, and now may be extirpated. At the Savanna Army Depot where it was reportedly once common, its status is uncertain. The reason for the jackrabbit's decline in Illinois is unknown, but habitat deterioration is suspected.

Management Recommendations: The Savanna Army Depot seems to offer the best white-tailed jackrabbit habitat in Illinois. More intensive surveys are needed to determine if this species still occurs in Illinois.

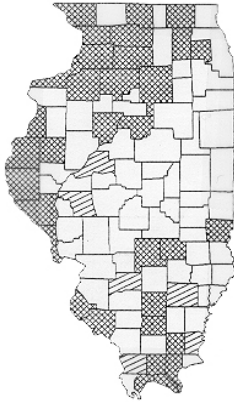
Wildlife Prairie State Park Get the Connection? Factsheet

Lutra Canadensis Schreber

River Otter

MUSTELIDAE

Status: Endangered in Illinois



Present Distribution: The range of the river otter includes most of the U.S. and Canada (Burt and Grossenheider 1976). In Illinois, river otters exhibit a sporadic distribution with recent records from 33 counties. The major portion of the population, however, occurs along the backwaters of the Mississippi river in Jo Daviess, Carroll, and Whiteside counties. There also may be a small population in southern Illinois along the Cache River system (Anderson and Woolf 1984). Most occurrences from elsewhere in the state probably represent dispersing or wandering individuals and not permanent populations. River otter may wander 160 km or more in search of favorable habitat (Jackson 1961).

Former Illinois Distribution: The river otter was once common and widely distributed throughout Illinois (Cory 1912, Mohr 1943) but was scarce on most parts of the state by the last 1800's (Hoffmeister 1989). The river otter ceased to be important in the Illinois fur trade by about 1900 and were considered to be extirpated by 1943 (Brown and Yeager 1943).

Habitat: In Illinois, important characteristics of river otter habitat include: waterways isolated from the large river channels, riparian habitat with extensive woodlands, good water quality, and the presence of suitable den sites and open water in winter (Anderson and Woolf 1984). Otters require large amounts of suitable habitat, possibly requiring as much as 80-160 km of linear habitat along shorelines and floodplains (Schwartz and Schwartz 1959, Burt and Grossenheider 1976).

Reason For Status: Otters were rapidly reduced in number immediately after European settlement. This decrease was due to unregulated trapping and to destruction of habitat by agricultural activities, stream pollution, and channelization. Despite a continuous closed season since 1929, river otter populations have remained low, probably due to continued degradation and riparian habitat and declines in water quality.

Management Recommendations: Improvement of stream conditions, protection of large tracts of riparian habitat from intensive development or deforestation, an expanded public education program and continued enforcement of a closed trapping season should help maintain the river otter as part of Illinois fauna.

Wildlife Prairie State Park Get the Connection? Factsheet

Tyto alba Scopoli

Common Barn Owl

TYTONIDAE

Status: Endangered in Illinois



Present Distribution: The common barn owl is distributed nearly worldwide, occurring in the Americas from southern Canada to southern South America. In Illinois this owl is an occasional permanent resident (Bohlen 1989), nesting sporadically throughout the state.

Former Illinois Distribution: Cory (1909) listed this species as of casual occurrence in northern Illinois and as a probable regular breeder in the southern part of the state. The common barn owl probably once nested throughout Illinois, where it was considered to be relatively common or even abundant in some localities (Ridgeway 1889).

Habitat: The barn owl occurs in open and partly open areas often near human habitation (American Ornithologists' Union 1983). Nests are placed in silos, steeples, grain elevators, abandon buildings, and hollow trees.

Reason For Status: Nearly every small town and some farms had barn owls prior to the early 1960's when populations declined rapidly (Bohlen 1989). The causes of the rapid decline are not entirely clear but probably involve a combination of loss of grassland and farmland foraging habitat, loss of nesting sites, pesticides, and rodent control programs.

Management Recommendations: Habitat protection is probably the most effective management tool for this species. Trees providing potential nest cavities should be left standing, and artificial nest boxes should be provided in areas that provide suitable barn owl foraging habitat.

Wildlife Prairie State Park Get the Connection? Factsheet

Masticophis flagellum Shaw

Coachwhip

COLUBRIDAE

Status: Threatened in Illinois



Present Distribution: This large snake is found virtually from coast to coast in the southern U.S. and from northern Nebraska to central Mexico (Wilson 1973). Illinois is at the northern limit of its range. Specimens are available only from Monroe County. Although common in most parts of its range, this snake is rarely encountered in Illinois. *Masticophis flagellum flagellum* is the sub-species found in Illinois.

Former Illinois Distribution: This species was first discovered in Illinois in 1948 when two specimens were found in Monroe County (Smith and Burger 1950). Within the state it has apparently always been restricted to the Mississippi River bluffs in Monroe County.

Habitat: In Missouri, coachwhips occur in seasonally dry, rocky, brushy or wooded hillsides especially in cedar glades (Johnson 1987). In Illinois this habitat type is met by the Mississippi River bluffs in southwestern Illinois.

Reason For Status: The coachwhip is considered threatened because of its limited range in the state and because it may be susceptible to decimation from habitat destruction, traffic fatalities, and indiscriminate killing.

Management Recommendations: Habitat disturbances (forest clearing, mining) in areas known to harbor coachwhips should be minimized.

Wildlife Prairie State Park Get the Connection? Factsheet

Lepisosteus spatula Lacepede

Alligator Gar

LEPISOSTEIDAE

Status: Threatened in Illinois



Present Distribution: The alligator gar ranges in the Mississippi river basin from southwest Ohio and southern Illinois south to the Gulf of Mexico and on the Gulf Coastal Plain (Page and Burr 1991). The alligator gar is uncommon throughout its range except locally in the swamps and bayous of the extreme southern U.S. (Page and Burr 1991). In Illinois the species was last seen in 1965 (Burr 1991).

Former Illinois Distribution: Illinois records for the alligator gar are available for the lower Mississippi, Big Muddy Wabash, Kaskaskia, Illinois, and Ohio rivers, and also Horseshoe Lake in Alexander county (Nelson 1876a, Jordan 1878, O'Donnell 1935, Smith 1979). The species probably was formally widespread in the lower Mississippi and Ohio rivers and the lower portions of their larger tributaries.

Habitat: The alligator gar lives in sluggish pools and backwaters of large rivers, and in swamps, bayous, and lakes (Page and Burr 1991).

Reason For Status: Destruction by commercial fishermen probably has contributed to the decline of the alligator gar, but far more damaging have been the channelization and impoundment of the state's large rivers, particularly the Mississippi. River modifications that eliminate quiet backwater areas reduce habitat and spawning grounds for many aquatic organisms including the alligator gar. Consistent barge traffic and channel modification for navigation disrupt the normal flow of the river and further modify the important backwater areas.

Management Recommendations: Natural big-river habitats are becoming increasingly rare in Illinois, and plans for deeper channels and increased barge traffic will accelerate their disappearance. The only way to retain alligator gars as part of the native fauna of Illinois is to avoid further modifications of our large rivers.

Note: This species is also referred to as *Arctosteus spatula* (Page and Burr 1991).

Wildlife Prairie State Park Get the Connection? Factsheet

Hybognathus haya Jordan
Cypress Minnow

LEPORIDAE

Status: Endangered in Illinois



Present Distribution: Ohio and Mississippi River basins from southwest Indiana and southern Illinois to the Gulf of Mexico, also along Gulf shore drainages (Page and Burr 1991). The cypress minnow has declined dramatically in abundance in the lower Ohio and lower Mississippi River basins (Warren and Burr 1989). In Illinois this species is apparently restricted to the Cache River and Horseshoe Lake drainage (Warren and Burr 1989).

Former Illinois Distribution: The cypress minnow has always been restricted to southern Illinois, but once also occurred in the Big Muddy River and Clear Creek drainage (Warren and Burr 1989).

Habitat: The cypress minnow is a lowland species inhabiting sluggish back waters of streams, oxbows and cypress lakes over soft substrates usually sand, overlain with silt and detritus or mud (Burr and Mayden 1982, Warren and Burr 1989).

Reason For Status: The cypress minnow is disappearing from the northern parts of its range (Page and Burr 1991) and was formerly thought to be extirpated in Illinois (Smith 1979). It was rediscovered in Illinois in 1984, but is known only from Horseshoe Lake, Alexander County, and the Cache River system (Warren and Burr 1989).

Management Recommendations: Protection from wetland destruction, pollution, and excessive siltation are the primary needs of this species in Illinois (Warren and Burr 1989).

Wildlife Prairie State Park Get the Connection? Factsheet

Hesperia metea Scudder Cobweb Skipper

HESPERIIDAE

Status: Threatened in Illinois



Present Distribution: The cobweb skipper is found from Minnesota and Main south to Texas and Florida (Pyle 1981). It is presently known to occur in one southern and three west-central counties.

Former Illinois Distribution: In Illinois, this butterfly was first collected in 1978 and has since been found in three other counties.

Habitat: The cobweb skipper inhabits sand dunes, loess-sand prairies, loess hill prairies and barrens (Sedman and Hess 1985). The larval food plants appear to be little bluestem and big bluestem (Sedman and Hess 1985, Heitzman and Heitzman 1987). Adults are frequently found on wild hyacinth (*Camassia scilloides*), wild strawberry (*Fragaria virginiana*), rose verbena (*Glandularia Canadensis*) and Dwarf larkspur (*Delphinium tricorne*) (Heitzman and Heitzman 1987). This species may be dependent on fire. Populations appear to be highest immediately following a fire and then decline in subsequent years.

Reason For Status: This butterfly is found in very few locations in Illinois and appears to be dependent on a specific type of habitat that is rare in Illinois.

Management Recommendations: The cobweb skipper may be dependent on fire and is intolerant of vegetation change due to succession. Therefore management for early successional stages using fire appears to be important for this species' survival in Illinois. This species has a habit of relocating colonies.

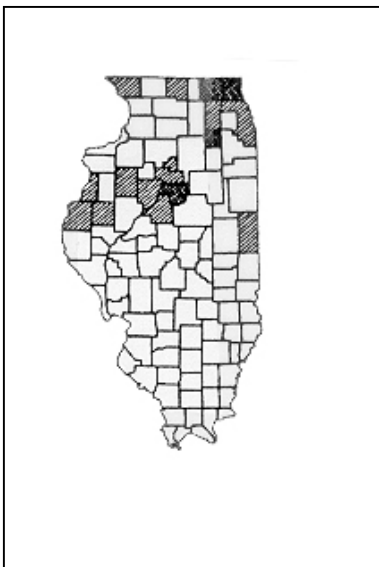
Wildlife Prairie State Park Get the Connection? Factsheet

Cypripedium reginae Walt

Showy Lady's Slipper

ORCHIDACEAE

Status: Endangered in Illinois



Present Distribution: Eastern Canada, south into northeastern United States and the Appalachians.

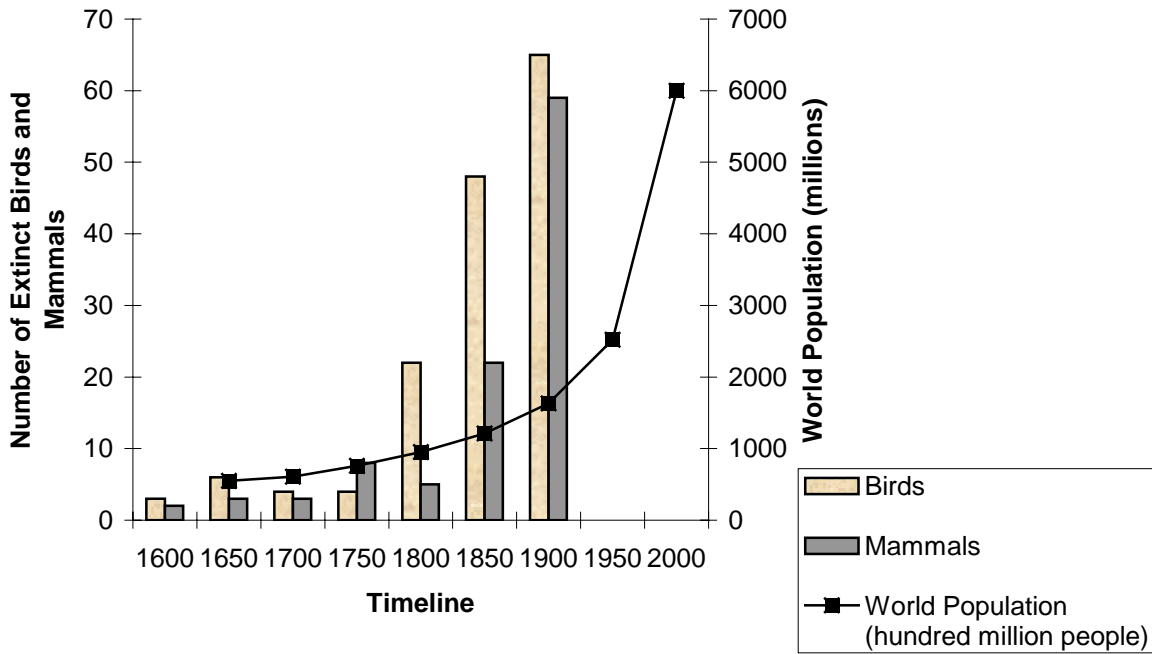
Former Illinois Distribution: Showy Lady's Slipper was formerly occasional across the northern half of Illinois in a variety of habitats, including prairies, forests, barrens, bogs, and fens. This species has almost been exterminated in Illinois by agriculture, urban development, and the removal of plants by commercial florists, orchidists, and gardeners. Extant populations are threatened by the exotic purple loosestrife and by deer browsing. Presently, populations are known in Illinois from two forested fens and one shrub fen in state nature preserves, and two unprotected graminoid and forest fens.

Habitat: Rhizomatous perennial orchid, to 90 cm high.

References: Gates (1912), Pepon (1916), Sheiak (1974a), Myers and Henry (1976), Evers and Page (1977), Moran (1978).

Wildlife Prairie State Park Get The Connection?

The People Factor



U.S. Populations 1800-1980

