U.S. Fish & Wildlife Service

Wild Things 2002-2003

Habitat is Where it's At!

Educator's Guide
A Live Electronic Field Trip
Please register for this free satellite broadcast at:
www.wildthingsfws.org

National Wildlife Refuge System
Centennial Year 1903-2003
Special Event

Grades 5-7
Wednesday, March 5, 2003
1:00 - 2:30 pm Eastern Daylight Time

Special thanks to Alexandria Seaport Foundation, Alexandria, VA; Oregon Coastal Refuge Complex, Newport, OR; The Oregon Zoo, Portland, OR; The Nature Conservancy, OR; Pelican Island National Wildlife Refuge, Sebastian, FL; and Laconia Fisheries Assistance Office, NH.

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Table of Contents

Field Trip Welcome! *6*

Meet Your Guides *7*

Field Trip Know-How *8*

Field Trip Broadcast Outline *10*

Field Trip *10*
Learning Objectives

Part 1 – What is Habitat *18*

Part 2 – Why is Protecting and Restoring Habitat Important *24*

Part 3 – What is the U.S. Fish and Wildlife Service Doing to Protect and Restore Habitat? *29*

Part 4 – What Can YOU and Your Community Do to Help Protect and Restore Habitat? *30*

Evaluation *32*

Correlation to National Science Education Standards *34*

Glossary *36*

Resources *38*

Appendix and Photographs *40*

Student Pages

Pages 6, 7, 15, 17, 18, 19, 24, 28, 36, 37, 38, 39 may be duplicated for student handouts or notes.


National Wildlife Refuge System 2002
Field Trip Sites
1. Potomac River Alexandria, VA
2. Oregon Coastal National Wildlife Refuge
3. Souhegan River Wilton, NH
4. Pelican Island National Wildlife Refuge
5. National Conservation Training Center Shepherdstown, WV
U.S. Fish & Wildlife Service
National Wildlife Refuge System
International Boundary
Regional Boundary
Broadcast Field Trip Sites
National Wildlife Refuge
Hawaii
Alaska
Pacific Islands
Puerto Rico and Virgin Islands

Field Trip Welcome!

Habitat ... it's hip, it's happening, it's where it's at! Why? Think about it. Everyone needs habitat - people and wildlife - to exist, to survive, to live, and to play.

Join us in this adventure as we look at what students, such as yourselves, can do to help protect and restore habitat. You will truly be amazed. And what's more important, it was all made possible because they became involved.

What's a National Wildlife Refuge?

A National Wildlife Refuge is a special area of land or water set aside to protect wildlife and habitat - the places where plants and animals live. These National Wildlife Refuges, found all across the United States, are part of the U.S. Fish and Wildlife Service. In fact, there are over 538 National Wildlife Refuges, with at least one in every state and U.S. Territory.

We have a special National Wildlife Refuge that we will be visiting in the broadcast. It is special because it is our first National Wildlife Refuge. It was established almost 100 years ago, in March 1903, by President Theodore Roosevelt, at Pelican Island in Florida.

We'll start our broadcast at the U.S. Fish and Wildlife Service National Conservation Training Center in Shepherdstown, WV. From there we will visit sites in New Hampshire, Oregon, Virginia, and Florida.

Along with several National Wildlife Refuges, we will also visit a **Fisheries Assistance Office**. And just what is a Fisheries Assistance Office? It is a place where biologists study fish and wildlife populations and work with others to protect and restore their habitats. One of our field trips joins a class that raise salmon from eggs and then release the fry into New Hampshire's Souhegan River.

Above: You can ask questions during the broadcast!

Meet Your Guides

Host
Laura Jones

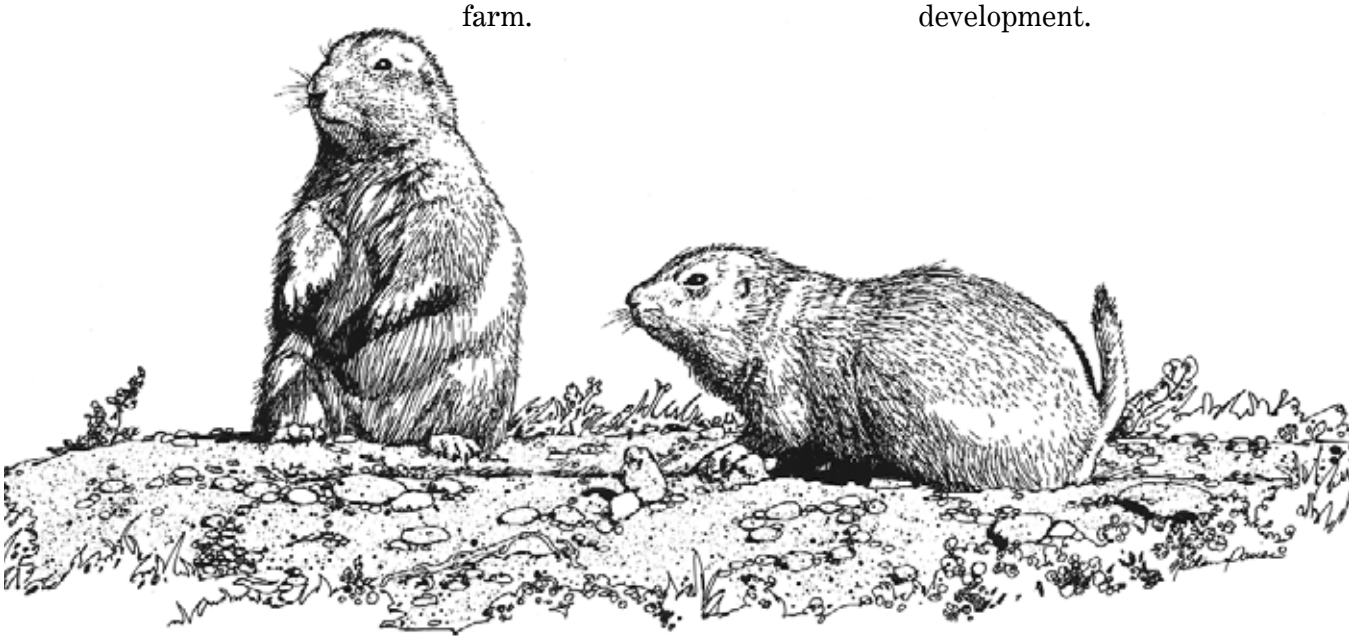
Ms. Jones is a training specialist with the U.S. Fish and Wildlife Service National Conservation Training Center in Shepherdstown, WV. Her responsibilities include education and outreach training, course design and delivery, student intern and volunteer coordination, and community relations. This is Ms. Jone's fourth year as a host for the "Wild Things" distance learning broadcast.

Student Host
McCall Breuer

McCall is a 7th grade student at Middletown Middle School, in Middletown, Maryland where she participates in 7th grade honors classes and is on the honor roll.
She has performed in *Godspell, Aladdin,* and *Hansel and Gretel* for SAB Productions in Frederick, Maryland, and the International Migratory Bird Day broadcast at the National Conservation Training Center in Shepherdstown, WV.
McCall is a student at the Dee Buchanan School of Dance and studies voice with Deb Inveldt of Harmony Music Studio, Middletown, MD. In her free time, McCall enjoys riding her horse "Scooter" around her farm.

Featured Expert
Carol Pollio, Ph.D

Dr. Pollio serves as a Fish and Wildlife Biologist for the U.S. Fish and Wildlife Service's Branch of Fish and Wildlife Management Assistance in Washington, D.C. She is responsible for aquatic habitat restoration and management, fisheries program analysis, and environmental compliance issues. Throughout her 25-year natural resources career in the Federal government, Dr. Pollio has been involved in aquatic resources studies, habitat monitoring, assessment and restoration. She holds a doctorate and master's degrees in environmental science, and a bachelor's degree in natural resource development.



Field Trip Know-How

Wild Things 2002
Habitat is Where it's At!

Grades 5 - 7
Wednesday, March 5, 2003
1:00-2:30 p.m. Eastern Daylight Time

Satellite Downlink	**C Band**
Satellite:	Galaxy 3 or G-3
Transponder:	2
Location:	95degrees West
Downlink frequency:	3740 MHZ
Polarity:	Vertical
Audio:	6.2/6.8

Question Line
888/212 0803

Fax Line
877/884 6282

E-Mail
broadcast@fws.gov

What is an electronic field trip?
An electronic field trip is an instructional distance learning opportunity with clearly defined learning objectives. Students can interact throughout the program via phone, e-mail, and fax.

Who can view the program?
Anyone with a moveable C-Band satellite dish can participate. If you do not have a satellite dish, contact your local cable company and ask if they can provide you with access to the program. Another possibility is to call your local public broadcasting station affiliate. (See section on "Don't have a satellite dish?" for further information.)

Who developed the program?
The Fish and Wildlife Service's Division of Refuges and the National Conservation Training Center's Division of Education Outreach developed this curriculum-centered electronic field trip. The program was developed by educators and biologists and makes use of cross-curricular instructional design.

What makes our electronic field trips so special?
We take students to National Wildlife Refuges where they can learn from wildlife experts. Our goal is to explore the wonder of the natural world and bring that adventure into the classroom. By means of these broadcasts, students can appreciate these natural areas regardless of where they live or go to school.

Don't have a satellite dish?
Try your local cable company! If you do not have satellite capabilities, do the following:

1. If you have cable in your school, contact your local cable company and ask to speak to the programmers for your area's public access channel. Request a download of these educational programs and a simulcast on the access channel. Give them the coordinates listed under "Satellite Downlink." Please give them plenty of advance notice so they can schedule these time slots.

2. Contact the educational programming department at your local public TV station and ask them to download and air the programs for you on their station. Again, give them the satellite coordinates listed above.

3. Advise those you speak with that these programs are free of charge. If they have questions or concerns, direct them to the National Conservation Training Center's Distance Learning Team at 304/876 7480 or the Division of Education Outreach at 304/876 7319.

4. We recommend that students participate live in order to benefit the most from the interaction with the experts, but if you cannot find a way to receive the program, you will be able to obtain a copy of the video after the broadcast from our website at :**http://www.wildthingsfws.org or contact Deborah McCrensky, Division of Refuges, at 703/358 2386 for a video copy.**

Field Trip Know-How

Wild Things 2002
Habitat is Where it's At!

Television receiver.

Plan your set up before the day of the event. Check the technical information page for the satellite coordinates. Tune in the satellite and make sure you can receive the satellite listed. Check to see that all other equipment is working properly. Make sure that everyone can see and hear the broadcast. Use one or more televisions depending on the number of viewers. For larger groups, a projection TV is recommended.

Plan to interact with us.
Plan in advance for the phone, e-mail, and fax interactions with us.

Review the broadcast outline in advance of the event if at all possible.
To prepare for the question and answer session, make sure the phone is in the back of the room, away from the TV. An operator will answer your phone call. When you are advised that your phone call is live on air, make sure the room is quiet and your TV volume is turned down to prevent feedback. Listen for the moderator to instruct you to ask your question. While on the phone, you will hear your voice as well as the voice of the moderator and the panelists.
Review "Meet Your Guides."
Within your classroom, decide which are the most important questions to ask and of whom. Make each question as clear and brief as possible. We want to answer as many questions as time permits. Please ask one question at a time.

Visit our website. If you wish to download the educator's guide, link to other resource sites, or evaluate the program, go to the "Wild Things 2002" website at **http://www.wildthingsfws.org**

Videotaping the broadcast. You are encouraged to tape and use the program for future lessons.

Broadcast Schedule – March 5, 2003
NOTE: All times are Eastern Daylight Time (EDT). To verify broadcast times for your city, consult the time zone reference chart below.

12:30 - 1:00 pm – NCTC Test Signal

1:00 - 2:30 pm – Wild Things 2002 Telecast

Time Zone Reference

City	Test Signal	Program Starts	Program Ends
Anchorage/Fairbanks	8:30 am	9:00 am	10:30 am
Sacramento/Portland/Phoenix	9:30 am	10:00 am	11:30 am
Denver/Salt Lake City	10:30 am	11:00 am	12:30 pm
Milwaukee/Tulsa	11:30 am	12:00 noon	1:30 pm
Washington D.C.	12:30 noon	1:00 pm	2:30 pm

Field Trip
Opening Sequence

A short history of the first National Wildlife Refuge at Pelican Island, Florida, describes the work of warden Paul Kroegel in 1903.

Broadcast Outline

Introduction

A. Welcome and purpose

B. Review objectives

C. Introduce activity and how to participate

D. Explain habitat
1. define habitat
2. explain relationship between habitat and species decline
3. identify different habitat types
4. explain the need for habitat
5. introduce field trips

Part 1: Student Field Trip - Potomac River Trip

Why is protecting habitat important?

Part 2: Student Field Trip - Oregon Silver Spot Butterfly Trip

Protecting habitat

Part 3: Student Field Trip - Nashua Salmon Restocking Trip

What is the Fish and Wildlife Service doing to help?

Part 4: Student Field Trip - Scrub Jay Habitat Restoration Trip

What can you and your community do?

Part 5: Live Questions and Answers

Learning Objectives

Part 1: What is Habitat?

Students will be able to:
- define habitat
- understand that habitat loss is the key factor in species decline
- identify at least two types of habitat
- explain why wildlife (and people) need habitat

Part 2: Why is protecting and restoring habitat important?

Students will be able to:
- explain why habitat needs protection
- explain why habitat may need restoration
- identify one or more ways to prevent habitat loss

Part 3: What is the U.S. Fish and Wildlife Service doing to protect or restore habitat?

Students will be able to:
- describe one thing that the USFWS is doing to protect or restore habitat
- identify threats (past and present) to quality habitat

Part 4: What can you and your community do to help protect or restore habitat?

Students will be able to:
- identify a threat to a local habitat
- list one or two ways you can become involved in a habitat project
- name a project or partner you could work with
- Name the nearest National Wildlife Refuge
- identify one problem/issue that led to establishing the first National Wildlife Refuge at Pelican Island
- name one individual who helped build the National Wildlife Refuge System
- understand why and how we can help celebrate the Refuge System's 100th anniversary

Pre-Activity:
What is a National Wildlife Refuge?

Method:

This lesson is designed to introduce students to National Wildlife Refuges. Students will work in small groups, and each group will learn about a specific refuge. Students will also learn about the mission of the National Wildlife Refuge System and the role of individual refuges in the Refuge System.

Objectives: Students will be able to

- Explain the mission of the National Wildlife Refuge System
- Explain the importance of the National Wildlife Refuge System for wildlife
- Name at least two refuges and describe resources that they protect
- Describe a basic code of conduct appropriate on a refuge

Materials:

- Copies of Student Page "National Wildlife Refuge System Notes"
- Map of the United States of America
- Push pins to mark locations of refuges on the map
- Brochures from National Wildlife Refuges (1 for every 3 students)
- National Wildlife Refuges Visitor Guide

Subjects: Social Studies, Civics, Science

Time: 2 45-minute sessions or 1.5 hours

Setting: Classroom

Background Information:

Origins of the National Wildlife Refuge System: The National Wildlife Refuge System began in 1903, when President Theodore Roosevelt established 3-acre Pelican Island in Florida as a Federal Bird Reservation. This was the first Federal land set aside specifically to protect wildlife. However, the foundations for protecting wildlife and land resources began long before this date.

In the mid-1800's, certain groups became more aware of the importance of fish, wildlife, and land resources. Scientists began to see evidence of depleted natural resources, as did hunters and anglers. These groups began to lobby Congress for protection of the nation's resources. Interest increased in saving our nation's wild lands.

From its modest beginning in Florida, the National Wildlife Refuge System has continued to grow. The passage of the Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp Act) in 1934 helped provide the money needed to buy land for refuges. Under this act, duck hunters are required to buy the Federal duck stamp, thereby supporting the Refuge System. The act also opened up parts of the Refuge System for hunting. In the same year, the passage of the Fish and Wildlife Coordination Act authorized Federal water resource agencies to acquire land in order to protect and enhance fish and wildlife.

Influential People: Several people were influential in the development of the Refuge System. Paul Kroegel was our first refuge manager at Pelican Island when it was established in 1903. A committee formed by President Franklin Roosevelt in 1934 had great impact. The members of the committee were Aldo Leopold, J.N. "Ding" Darling, and Thomas Beck. This committee advised the President on the needs of waterfowl. In 1935, J. Clark Salyer II was sent around the nation to select new refuge areas. Many of these new refuges provided habitat for waterfowl. Salyer is considered by most to be "the father of the Refuge System." For 31 years, he oversaw refuge administration and management and defended the integrity of refuges and the wildlife that used them.

1960's-1990's: In the early 1960's, United States citizens were becoming more interested in outdoor recreation. The Refuge Recreation Act (1962) opened up refuges for more recreational uses, including education. The major stipulation of this act was that recreation could not interfere with the primary goals of the refuge. Further legislation in the 1960's helped to establish

Pre-Activity:
What is a National Wildlife Refuge?

guidelines for administration and management of refuges. In 1997, Congress passed the National Wildlife Refuge System Improvement Act, which clarified the Refuge System's mission. As established by the act, the mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources of the United States for the benefit of present and future generations of Americans.

Refuges today and in the future:
Refuges are unique because their primary purpose relates to the conservation and management of fish, wildlife, and plant resources. Almost a century after the first refuge was established, the Refuge System includes more than 538 refuges and encompasses more than 93 million acres. At least one refuge is found in every state and U.S. Territory.

There is a wide diversity among refuges. Refuges are found in a variety of habitats and climates. The present Refuge System protects a variety of organisms, including insects, mollusks, plants, birds, fish, reptiles, amphibians, and mammals. Refuges also vary greatly in size. The smallest refuge is Mille Lacs National Wildlife Refuge (Minnesota) - it is only a half-acre in size. The Arctic NWR (Alaska) is one of the largest refuges - it covers 19.2 million acres.

The National Wildlife Refuge System is a shining example of the value that Americans have placed on wildlife. Those who helped to found the Refuge System showed great foresight. It is a truly magnificent wildlife conservation program, unique in the world.

Rachel Carson's Essay about National Wildlife Refuges:

If you travel much in the wilder sections of our country, sooner or later you are likely to meet the sign of the flying goose-the emblem of the National Wildlife Refuges.

You may meet it by the side of a road crossing miles of flat prairie in the middle West or in the hot deserts of the Southwest. You may meet it by some mountain lake, or as you push your boat through the winding salty creeks of a coastal marsh.

Wherever you meet this sign, respect it. It means that the land behind the sign has been dedicated by the American people to preserving, for themselves and their children, as much of our native wildlife as can be retained along with our modern civilization.

Wild creatures, like men, must have a place to live. As civilization creates cities, builds highways, and drains marshes, it takes away, little by little, the land that is suitable for wildlife. And as their space for living dwindles, the wildlife populations themselves decline. Refuges resist this trend by saving some areas from encroachment, and by preserving them, or restoring where necessary, the conditions that wild things need in order to live.

Summary of Key Events:
1903: Beginning of the National Wildlife Refuge System - President Theodore Roosevelt established Pelican Island (Florida) as the first bird sanctuary. During his term he created 51 bird reservations and for big game preserves.

1918: The Migratory Bird Treaty Act between the U.S. and Canada became the foundation for future legislation that would greatly expand the Refuge System.

1934: President Franklin D. Roosevelt convened a committee to determine how to save waterfowl during the Dust Bowl era. Conservationist Aldo Leopold, cartoonist J.N. "Ding" Darling, and publisher Thomas Beck suggest a "Duck Stamp Act" to raise funds for acquiring wetland habitat. Congress passed the Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp Act.)

1935-1936:
"Ding" Darling, head of the U.S. Biological Survey (the predecessor of the U.S. Fish and Wildlife Service) sent biologist J. Clark Salyer II to locate prime wetlands nationwide. The 600,000 acres that were eventually purchased became more than 50 refuges, including Red Rock Lakes (Montana) for trumpeter swans and Agassiz (Minnesota) for waterfowl.

Pre-Activity:
What is a National Wildlife Refuge?

1940: The U.S. Fish and Wildlife Service was formed as a part of the Department of the Interior.

1966: The National Wildlife Refuge System Act was passed. It included measures to preserve ecosystems for endangered species, perpetuate migratory bird species, preserve natural diversity, and create public appreciation for wildlife protection.

1980: Alaska National Interest Lands Conservation Act adds almost 54 million acres to the Refuge System in that state.

1997: National Wildlife Refuge System Improvement Act legally establishes the conservation of fish, wildlife, and plants as the mission of the Refuge System. The Act also gives priority to certain wildlife-dependent recreational uses on refuges so long as they are compatible with the purpose of the refuge and the mission of the Refuge System. These uses are hunting, fishing, wildlife observation and wildlife photography, environmental education and interpretation.

<u>Suggested Procedure:</u>

1. Explain to the class that they will be visiting a National Wildlife Refuge on their field trip. On the trip, they will have the chance to explore the refuge and participate in activities. The purpose of this lesson is to discover what refuges are and why they exist.

2. Ask the whole group to brainstorm what they think of when they hear "National Wildlife Refuge." Record students' answers on an overhead or on the board.
3. Discuss the history of the Refuge System.

4. Organize the class into groups of 2-3 students. If the activities that you plan to do on your field trip require group work, you may wish to use this activity to establish the groups for the trip. Ask the students to think of a name for their group.

Suggested tasks for students working in their groups:

- time keeper - makes sure the group finishes it's task in the allotted time.
  recorder - records the group's ideas or writes the group's answers to specific questions.
- reporter - presents the group's findings to the class.
- materials manager - is responsible for any materials that the group needs.
- facilitator - makes sure everyone in the group participates in the activity and feels that they are part of the process.

5. Give each group a brochure from a National Wildlife Refuge and one copy of the Student Page "National Wildlife Refuge Expert's Notes" which is attached at the end of this activity. Each brochure contains a variety of information about a particular refuge.

The refuges selected for this activity are all located in the central region of the United States. When the students map the locations of their refuge, they will begin to see that some refuges play an important role in the migration of water birds. Such refuges provide resting and eating areas along migration routes.

6. Make learning about the different refuges fun by challenging your students. Tell them that each group's assignment is to become experts on a refuge and report their discoveries to the class. Part of their task during the group presentation is to demonstrate their expertise to the class. They need to be convincing experts. Explain that the Student Page you will give them will help get them started, but they will need to seek out other information in their brochure. If possible, provide them with props (hats, shirts, etc.) to help them get into their roles.

7. Have each group report on "their" refuge, display the refuge's brochure, and place a marker on the map of the United States where the refuge is located.

8. After the groups have presented their information, ask them if they notice a pattern on the map related to the locations of the refuges. The refuges picked for this lesson are all in the central area of the United States and illustrate a "pathway" for

Pre-Activity:
What is a National Wildlife Refuge?

migratory birds
(called the Central Flyway.)

Discuss this as one of the values of the refuges. You may also want to remind the students that these refuges are just a few examples of the more than 538 refuges.

Show them the map included in the National Wildlife Refuges Visitor Guide brochure to give them a more full understanding of the Refuge System.

9. Ask the class if there is anything they would like to add or delete from the list they developed concerning what they think of when they think of a refuge.

10. Ask the students what they think the purpose of the National Wildlife Refuge System is, based on what they know and what they have learned from the brochures. As a class, try to brainstorm a mission statement for the Refuge System.

11. Copy the National Wildlife Refuge System's mission statement onto the board or an overhead (see background information in this activity.) Have the students compare the two statements and discuss the mission of the National Wildlife Refuge System.

12. Explain to the class that even though the National Wildlife Refuge System was established to protect our nation's plants and animals, the U.S. Fish and Wildlife Service cannot do this job alone. The plants and animals that every refuge protects are threatened in some way. Environmental degradation, such as water and air pollution, loss of habitat, exotic plant and animal species, and other problems, affect natural resources. Vandalism, acid rain, adjacent development, and other problems also affect natural resources.

13. Explain that the Refuge System belongs to us all. It is everyone's responsibility to learn about and care for our refuges.

14. Refer to Rachel Carson's essay and discuss what the quote means (see background information in this activity.) Ask the students to imagine they are on a talk show and the interviewer asks them to answer the question, "What do you think of the National Wildlife Refuges?" Have them record their own responses.

15. Close the session by having the students brainstorm a code of conduct for how they should behave when they visit the refuge on their trip. Use "The Rules of Respect on the Refuge" (at the end of this activity) as a reference.

Explain that because refuges are protected, Federal law prohibits removing anything from the refuge. Use the motto, "Take only memories, leave only footprints."

Extensions/Adaptations:

• As a class, make a time line illustrating the history of the National Wildlife Refuge system using the brochures and background information. Add important dates in U.S. history to the time line. Research other refuges near you and add them to the time line as well. Have the students find out if any refuges were established in the year they were born, or during other years significant to them.

• If your class has computer access to the Internet, have the students visit the National Wildlife Refuge System's home page **(http://refuges.fws.gov)** Or go to the home pages of individual refuges using the **refuge locator button.** The students can download pictures and information from the web or send e-mail questions to refuges.

Leaflets to accompany this activity: Brochures from 7-10 refuges in a centralized location, the National Wildlife Refuge System Visitor Guide, and a map of the United States.

Refuge brochures online: http://training.fws.gov/library/Refuges/index.html

Pre-Activity: National Wildlife Refuge Expert's Notes

Group Name: _____

Group Members:

_____

_____

_____

You and your group are about to become EXPERTS on a National Wildlife Refuge. The challenge is that you will not be able to visit this refuge in order to see the area first-hand. All you have been given is the brochure from that refuge.

You will be presenting what you know to your classmates, and you will need to show them exactly what you know! You need to make your classmates believe that you know everything there is to know about this refuge.

When speaking to the class, you will be able to use your notes, so use this worksheet to write down information that an expert would know about the refuge. The questions listed below will help get you started, but you will find that there are other interesting tidbits of information you want to write down and share with the class to prove to them that you know lots about this refuge.

1. Basic information
a. What is the refuge's name?

b. How long ago was the refuge established?

c. In what town and state is the refuge located? (Be ready to place a marker on a map to show where the refuge is located.)

2. What kinds of plants and animals are found on this refuge?

3. What activities can people do on this refuge?

4. What are three things that make this refuge special?

5. What are two reasons this refuge should be preserved and protected for future generations?

6. Other information about the refuge.

Pre-Activity:
The Rules of Respect at the Refuge

Before your group visits the refuge, have a discussion about what kind of behavior they think is appropriate on the field trip. As a class, brainstorm a list of rules and discuss it. Such a discussion can make students more likely to be courteous while on the refuge because they have "designed" the rules.

Remind the students the refuge is different than a playground. It is protected, as are the plants and animals that live there. The students can play an important role in protecting the refuge.

It may also help to remind the students that they will be visiting the home of many plants and animals. They should act like polite guests.

Below is a list of the basic behaviors that students and all visitors should follow while on the refuge.

• The outdoors is a place for learning,
Just like the classroom. Follow directions and be respectful of others, including the plants, animals, and people.

• Hike only on established trails.
By staying on the designated trails, students will not harm the plants and animals. This will allow others to enjoy the plants and animals too.

• Take only memories, leave only footprints.
All of the plants and animals on the refuge are protected. Collecting flowers, rocks, or any other natural objects is not allowed. Students can take pictures, drawings, rubbings, and memories.

• Replace what you pick up
If students want to pick up a stick or a rock to look at it, they should put it back where and how they found it. Help students relate to this by asking them how they would feel if someone came into their room and turned their bed upside-down or emptied their closet.

• Walk and talk quietly.
The students will see and hear more if they are moving quietly. They will also disturb less wildlife. Silence can allow you to listen to nature.

• Never run or chase any animals you see.
You could injure the animal or yourself. Chasing an animal forces it to burn energy that it needs for survival. Also, the animals are protected by law. Be respectful and quiet when watching an animal. Remember, seeing the animals is part of the reason you are there.

• Clean up your trash.
Do not leave trash anywhere on the refuge. Pick up litter that you see. Recycle at designated places. Help keep the refuge clean.

• Stay with your group.
For safety reasons, students should stay with their group at all times.

• Touch and taste only if given permission.
Some plants are poisonous. Students should only taste something if they are directed by an adult to do so.

• Do not do extra experiments.
You could cause injury. Just as in the classroom, some students have the tendency to design their own experiments that can be dangerous to themselves and/or harmful to plants and animals. Out of respect for the plants and animals on the refuge, students should follow the directions given by their leader.

•Clean equipment.
Return things as you found them.

Naturalist's Journal

My Visit to a National Wildlife Refuge

Name: Date:

Weather conditions:

Refuge name:

General description of the habitat here:

The birds and animals I saw during my visit:

Name/Type	Description

These are the sounds I heard:

The National Wildlife Refuge System

A National Wildlife Refuge is a great place to visit with your class, and chances are there's one within a short drive of your school. Here are some guidelines and tips to help you plan a successful trip.

During Your Visit

1. Take along binoculars, notebooks, and pencils.
2. Be sure to stop at visitor centers or visitor contact stations.
3. Interview the refuge manager, a naturalist, or other employee.
4. When hiking, walk slowly and look carefully. Stop frequently and look around. Listen carefully, too. What do you see and hear?
5. Take a close look at what makes and keeps a wild place wild. Make note of new things you learn, sights and sounds that are particularly striking, and new questions. Make sketches!

The Field Trip
Part 1

What is Habitat?

A **habitat** is the place where a person or an animal lives. A habitat must have everything in it that an animal needs to survive to be a "good" habitat. Like all of us, animals need four things to call a habitat a home: food, water, **cover**, and a place to have and raise their young.

Food

The best habitat contains a variety of native plants to provide a good food source for animals. From grasses, shrubs, and large trees, many nutritious foods are produced, such as nuts, berries, seeds, and fruit. Nuts and seeds are called **hard mast**, while fruits and berries are known as **soft mast**. Both are very important sources of energy for small animals. Some other important foods are insects, nectar, and pollen. Food is an essential part of an any habitat, but there are other important parts, too.

Water

Just like food, water is needed by every living thing. Animals use water for both drinking and bathing, just like people! Some animals need to live very close to water, such as frogs and turtles, while others can use water if it is close enough to visit when they need it. Whether they need lots of water, or just a little, it must be clean and free of **pollutants**.

Cover

Cover is very important for an animal's safety. Low growing shrubs and thick undergrowth allow small animals, like mice, places to hide from their predators. Fallen branches and rotting logs on the forest floor provide cover for small animals, amphibians and reptiles. Birds need both shrubs and higher tree branches to get away from larger animals, like cats and hawks. So the best habitat has many different layers of **vegetation** so that animals can have good cover, and move about safely.

A Place to Raise Young

Animals need a special type of cover to raise their young. This place must be very well protected and allow them to stay long enough for their young to mature. For birds, a nesting place is important. Dense brush or tall trees provide the best habitat - a place for nests where their young are protected from predators and harsh weather. Amphibians (frogs and toads), need pools of water in which to lay their eggs. These pools must have water in them long enough for tadpoles to grow into young frogs that can live outside of water.

Types of Habitat

There are many different types of habitat. We use these types to describe the best habitat for specific animals. For example, a **wetland** is a special type of habitat that contains water for most of the year, and has wet soils and plants that need lots of water. Many animals rely on wetlands as their primary habitat type. Some examples are frogs, turtles, ducks and other **waterfowl**, and beaver. Another habitat type is a **desert** habitat. In this specialized type of habitat, water-storing plants, such as **cacti** and other **succulents**, are common. Animals that live in the desert are often **nocturnal**, meaning that they are active at night, to avoid the heat of the sun. These animals have learned how to eat cactus to get their water and other ways of surviving in this harsh environment. Many of us know some of the most common habitat types, such as forest, open field, lake, or ocean. Each of these is very important for those animal **communities** that call them home.

Habitat Loss

In many places, habitat is being lost. Sometimes it is because the land is cleared to build new homes or shopping centers. In other cases, it is because water has been polluted or used for another purpose, such as for our drinking water or for farms. What happens to the animals that once depended upon these habitats? Sadly, many of them leave or die out.

The Field Trip
Part 1

What is Habitat?

Today, we have many **species** that have lost their best habitat and are in a state of **decline**. Remember that habitat has four parts - all of which must be present for a species to survive. If you take away just one part, the habitat is no longer suitable for that species. A good example is salmon (a species of fish). When this fish species comes upriver to **spawn**, and the river is blocked by a dam, it cannot get to the place where it produces and rears its young. Even though it has food, cover, and water, it is still missing a key component of its habitat. The primary reason most species are in decline today is loss of habitat. Unless we protect or **restore** habitat, we will continue to lose many species that depend upon these special places for their survival.

Do We Need Habitat?

Do people have the same requirements for habitat as animals do?
The answer is YES! We need food to eat and water to drink. We also need cover - a place to stay warm and dry - our homes. The place where we raise our young, though, is bigger than our home: it is our neighborhood or the city or town in which we live. All these things combined make up our habitat. Habitat is just as important to people as it is to animals!

Outdoor (Or Indoor) Activity
How Many Bears Can Live in Our Forest?

Objectives

Students will be able to:
1. Define the term "habitat."
2. Identify one factor that limits a population.

METHOD

Students will become "bears" that will search for one or more component of habitat during this physical activity.

BACKGROUND

This activity is designed to help students understand the four components of habitat: food, water, cover, and shelter (a place to raise young). Key concepts include carrying capacity, survival, and basic needs of wildlife.

Black bear habitat limits black bear populations. Because these animals are territorial, meaning that they maintain a set space between them and other black bears nearby, space can be a limiting factor. Another limiting factor is shelter. When young bears are two years old, the adult bears send them away to find their own living space. These wandering young bears are often the ones that people see in their yards and near highways - they will settle down once they find an open area where there is not another bear family.

When food supplies are limited, bears must compete with each other for food. Food shortages can happen as a result of weather changes (droughts, floods). Bears must then look over larger areas to find food, or try to live on the smaller amount of food found in their territory.
All components of habitat are important, but this activity is designed to use food and shelter to help students recognize the importance of suitable habitat.

MATERIALS

Five colors of construction paper (a few sheets of each color) or poster board. One black marker. One envelope for each student. One blindfold. Pencils.

PROCEDURE

1. Make a set of 2" x 2" cards from the colored paper for a group of 31-35 students. Make 30 cards of each of the five colors to represent food as follows:

ORANGE = nuts (acorns, pecans, walnuts, hickory nuts); mark five pieces N-20, mark 25 pieces N-10.

BLUE = berries and fruit (blackberries, elderberries, raspberries, wild cherries); mark five pieces B-20, mark 25 pieces B-10.

YELLOW = insects (grub worms, larvae, ants, termites); mark five pieces I-12, mark 25 pieces I-6.

RED = meat (mice, rodents, peccaries, beaver, muskrats, young deer); mark 5 pieces M-8, mark 25 pieces M-4.

GREEN = plants (leaves, grasses, herbs); mark five pieces P-20, mark 25 pieces P-10. The numbers above equal pounds of each food.
There should be less than 80 pounds of food per student so that there is not enough "food" in the forest for all the bears to survive. You can also add water to the activity, by cutting out 50 squares of light blue paper.

If you have a group of more or less than 31-35 students, you may use this chart to help determine how many cards to make.

2. In a large, open area, scatter the colored pieces of paper.

3. Give each student an envelope and have them write their name on it.

4. Have students stand on a 'starting line' with the envelopes on the ground between their feet. This is their 'den site' and should be left on the ground. Other ideas for den sites could be small plastic containers or bowls.

Outdoor (Or Indoor) Activity
How Many Bears Can Live in Our Forest?

# of Students:	10-15	16-20	21-25	26-30	31-35	36-40	41-45
Nuts (N-20) Berries (B-20) Insects (I-12) Meat (M-8) Plants (P-20)	2	3	3	4	5	6	7
Nuts (N-10) Berries (B-10) Insects (I-6) Meat (M-4) Plants (P-10)	8	13	17	21	25	29	33

Tell students, "You are now black bears. All bears are not alike, just as each one of us is not exactly alike. One of you will be the young male bear that has not been able to find his own territory. Because he is tired, he will have to hop on one leg to hunt. (Assign one student to be this bear. Another bear is a young female that got too close to a porcupine and whose eyes were injured. She cannot see very well. (Assign one student to be this bear and wear the blindfold.) A third bear is a mother bear with two cubs. She must gather twice as much food as the other bears. (Assign one student as the mother bear.)

5. Students are not to be told what the colors, initials, and numbers on the colored paper represent. They can be told that the different colors represent different kinds of food (and water). Since bears are omnivores (eating a variety of foods), they should gather different colored squares.

6. Students then should walk into "our forest." Bears do not run down their food, but gather it. Students pick up food one piece at a time and return it to their "den" before picking up another square of paper. (Bears would not return to their den to eat, they would eat it where they found it.)

7. When all of the colored squares have been gathered, the students pick up their envelopes and return to the classroom.

8. Explain what the colors and numbers mean. (Each color is a kind of food and the numbers are pounds of food eaten.) Each student should total up the number of pounds he or she has gathered. Students should write the total number on the outside of their envelopes.

9. Using a chalkboard, ask the three special bears (young male, young female, and mother bear) how much food they found. Write this on the board. Then have each student report their numbers and write this on the board as well. Tell students that each bear needs 80 pounds of food to survive. Which bears survived? Was there enough food to feed all the bears? Did the mother bear get 160 pounds of food? If she had eaten first, would her cubs have survived? Will each of the special bears survive?

10. If there were water squares, each student needed to pick up one water square to survive. Water is often a limiting factor and an essential component of habitat.

For higher level students:

11. Have students record how many pounds of each of the five categories of food he or she gathered. Have each student convert this number to a percentage of the total food they gathered. Compare these percentages to the following table that represents actual data from a bear population in Arizona. Ask the students how healthy they think their bears would be, based upon these needs. Did their bears have a balanced, nutritious diet?

nuts	20 pounds	=25%
berries & fruit	20 pounds	= 25%
insects	12 pounds	=15%
meat	8 pounds	= 10%
plants	20 pounds	= 25%
TOTAL	80 pounds	= 100%

Outdoor (Or Indoor) Activity
How Many Bears Can Live in Our Forest?

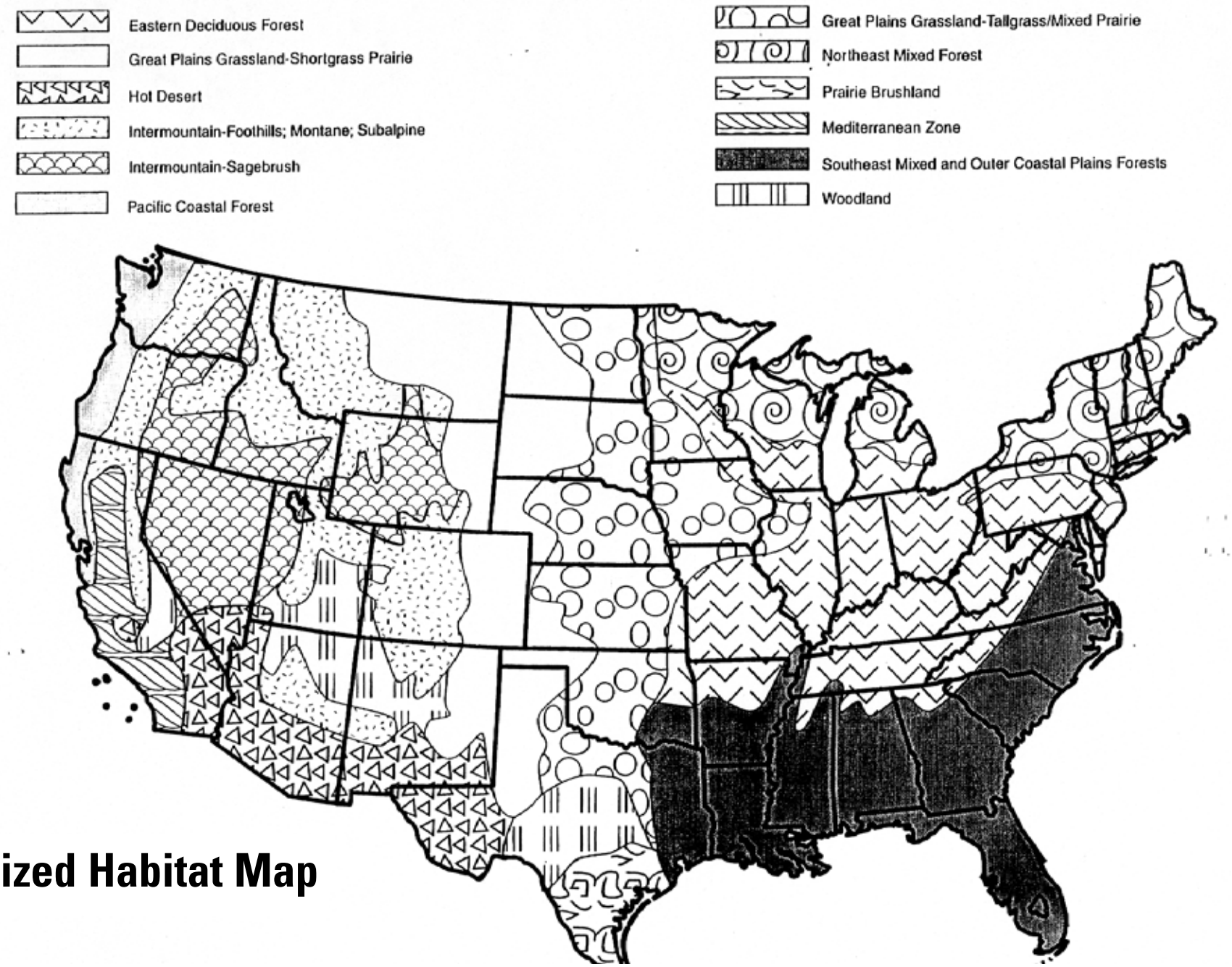
12. Students can calculate a class total for all the pounds of food they gathered as bears. Divide this number by 80 pounds needed for a single bear to survive a 10-day time period. How many bears would this habitat support? Why did only some bears survive when the class gathered food? What percentage of bears survived? If the food had been evenly divided, what percentage of bears would have survived? In each case, what percentage of bears did not survive? What limiting factors (natural and cultural) would be likely to influence the survival of individual bears and populations of bears in an area.

EVALUATION

1. Define "limiting factor." Describe some of the factors that limit survival of an animal that lives in your area.

2. Have students invent an indoor game to demonstrate limiting factors for wildlife.

3. Have students explain how this relates to human populations. What are our "limiting factors?"



Generalized Habitat Map

The Field Trip
Part 2

*Why is **Protecting** and **Restoring** Habitat Important?*

Habitat is being lost every day. If you went to the store to buy groceries, and the store had been replaced by a gas station, could you find another place to get food? If you turned on the faucet in your house and no water came out, where would you get water to drink? These kinds of problems face many species of wildlife as their habitats are being changed or destroyed. It is important that we protect habitat so that both people and wildlife have a place to live.

Think of all of the animals, plants, and people on Earth as a giant book, with each animal or plant a separate page in the book. If you tried to read it, and all the time pages kept falling out, wouldn't it be difficult to understand? That's similar to the loss of habitat - it may not seem very big when each little piece is lost, but when many pieces are missing, the tale is incomplete - all of the pages belong together to form the entire story. Each page, just like each habitat, is important!

Restoring Habitat

Sometimes we have an opportunity to restore habitat that has been lost. In the 1970s, so many plants and animals were disappearing, that people began to notice. To try and prevent more species from becoming **extinct**, Congress passed the **Endangered Species Act** in 1973. Biologists now study **endangered species** to find out which pieces of the habitat picture are being lost and either protect it or restore it. Some of the reasons habitat is lost are clearing of forests for construction, building dams to produce electricity, turning forests into mowed lawns and parking lots, and pollution of our rivers, wetlands, and oceans.

To restore a habitat is no easy task. Remember that a habitat must provide food, water, cover, and a place to rear young. In some cases, these things are not very easy to replace. The bald eagle (our national symbol) was the first animal to be listed as an endangered species. To help restore eagles, their habitat had to be restored. In areas where forests had been removed, nesting poles (a telephone pole with a platform on the top) were put in to provide high roost sites. The United States also had to ban DDT, a strong chemical that was used to keep insects from eating farmers' crops. And people had to be kept away from eagles' nests during the summer, when young eagles were being raised and taught to fly. It took a great deal of effort to protect and restore nesting sites and reduce pollutants, but eagle **populations** are making a comeback! If we did not restore this important habitat, our national symbol could have been lost forever.

Preventing Habitat Loss

How Can We Prevent Habitat Loss?

Aside from protecting large pieces of land, there are some ways for everyone, including students, to prevent the loss of habitat. One such way is to plant trees or other native plants to provide cover and food for wildlife in your backyard or schoolyard. Students can learn about habitat destruction and become involved with local or national organizations that preserve them. Students, parents, and friends can volunteer to complete habitat restoration projects, such as planting beach grass, performing habitat surveys, or counting species that use habitat in their area.

Another way everyone can help is to conserve resources. For example, the less paper and packaging we use, the fewer trees that are needed to make it. If we recycle our waste paper and newspapers, this can also keep more forest trees standing. Reducing water use around our homes can mean more water stays in rivers and streams for wildlife. If there is a forest near your home, simply leaving the logs on the ground to rot, undisturbed, will give a salamander or snake a great home.

There are some sites on the Internet, like www.ecologyfund.com, that need only the click of a mouse from your computer and their advertisers will buy land or donate to habitat conservation funds. Or, you could join a conservation club and really get involved! It's not only easy, but fun, too. (Look in the "useful links" section of this guide for more great ideas and Web sites.)

The Field Trip Activity

Habitat Hunt

Message: All animals need habitat and each type of animal has a specific habitat that it needs.

Subject: Science/Social Studies/History/Literacy

Time: 30 minutes for introduction and wrap-up; 30 minutes for each inside station; 45 minutes for each outside station.

Lesson Objectives:

Students will:

- identify significant features of habitat for wildlife
- describe habitat needs for animals
- compare and contrast adaptations of animals to their habitat
- analyze the difficulties of removing pollutants from water

Background:

What would happen if a prairie dog had long ears like a jackrabbit? Animals are adapted to their habitats. A prairie dog with its short ears can move fast into its hole in the ground. A jackrabbit's long ears provide a large area for moving air to cool down the animal's body on a hot summer day.

Your students will study close-up the grassland and wetland habitats and their associated animals. They may also see common woodland, shrubland, and disturbed-site animals as they occasionally wander from their habitats. It will be important for students to understand that animals choose habitat best suited for their lifestyle. The animals are not forced to stay in any one place and therefore may be searching for the best habitat for them. Habitat needs include food, water, shelter (cover) and space.

Grasslands provide homes for many animals that graze, burrow, run, or fly. These animals include prairie dog, coyote, mule deer, some small songbirds, and even a snake. In wetlands many animals find habitat. These animals may include muskrats, raccoons, great blue herons, ducks, bullfrogs, Canada geese, blackbirds and a salamander or two.

Common in the woodlands are white-tailed deer, squirrels, and red-tailed hawks. Shrublands are habitat for the jackrabbit and one of the species you will learn about, the scrub jay. Weedy disturbed sites are homes for ground squirrels and other song birds, such as the sparrow.

Procedures:

Inside Stations

Station 1 - Habitat Types

Materials: bag of soil, clay pot of prairie grass, small aquarium of pond water, animal pictures.

• Show students a clear plastic zip-lock bag filled with soil. Show the students the animal pictures. Ask them what animals might live in this habitat. Answer: worms, centipedes, prairie dogs. Discuss the possible advantages: less need for camouflage, some protection from the heat and cold. Discuss the "tools" each one has for living in this habitat: prairie dog – digging claws; worms – long and thin, can dig from either end of body; etc. Discuss how the soil habitat provides food, water, shelter (cover), and space for these animals.

• Show students a large pot of prairie grass. Repeat the activity using the same pictures. Answer: insects, birds, snakes, spiders. Discuss the advantages, tools, and four parts of habitat.

• Show students a gallon jar of settled pond water with associated mud and plants. Repeat the activity using the same pictures. Answer: fish, salamanders, frogs, turtles, ducks, snails. Discuss the advantages, tools, and four parts of habitat.

Station 2 - Habitat Matching

Materials: animal pictures, muskrat skin and skull (or another small mammal), duck mount, blackbird nest, prairie dog mount, snake shed skin, deer antlers, butterfly mounts, and habitat drawing (at end of activity.)

• Discuss the general characteristics of each type of habitat. Hang the habitat drawing of the four habitat types. One at a time, show a

The Field Trip Activity

Habitat Hunt

picture of an animal and the animal artifacts. Discuss what this animal eats.
Ask the students to decide which habitat the animal lives in. Have the students post the picture in the correct habitat. More than one animal may occupy a habitat.

Answers:

Wetland:
muskrat,
duck, blackbird

Grassland:
prairie dog,
snake, mule deer

Woodland: squirrel,
white-tailed deer

Disturbed site:
sparrow, butterflies

• Ask students what might happen to these animals if their habitat disappeared due to human activities or buildings.

Answer:

They have to move to a new habitat or they may die.

Emphasize that refuge habitat is protected and no shopping mall or other development can happen there.
Outside Stations

Station 1 - Find the Habitat

materials: clipboards, pencils, student pages, example maps, animal pictures

• Explain the boundaries and the rules before conducting this activity: walking, not running; leaving sites as we found them; not disturbing/destroying animals' homes, etc.

• Show the students a few example refuge maps and how symbols are often used on maps.

• Give students in groups of two a clipboard with refuge map attached of the area. Assign each group one wetland animal. As you walk around the wetland, have each group find a spot that is ideal habitat for the animal assigned to them and mark it with a symbol on their map. They should draw the habitat details and the animal at the appropriate spot on the map. Assignments of animals should be made from the following list: muskrat, raccoon, great blue heron, duck, bullfrog, blackbird, Canada goose, salamander.

• At the end of the walk have the students show their map and where they think their animals might like to live.

Station 2 - Ant Habitat and Behavior

materials: bug boxes, cookie crumbs

• Explain to students that they will be studying a bit of habitat from an "ant's eye view." Have the students lie down on their stomachs in a circle with their feet in the middle like the spokes of a wheel. Direct their inquiry with the following statements. Put your chin on the ground. Smell the dirt and the plants. Imagine you are an ant. The grass is a forest in front of you. Some of the grains of dirt are like big rocks you must climb over. Blow on the grass in front of you. When the wind blows your whole world moves.

• Catch a few ants and put them in bug boxes to pass around to the students. Ask them the following questions: How many body segments? How many legs? How many antennae? etc.

• Next, have the students gather around the anthill. Caution them that ants can bite and should not be handled. Help the students observe the ant behavior and movement. Watch a line of ants moving from and toward the anthill. Ask the students why and how they follow this trail. Continue asking questions to help them discover the ant behavior.

• Ask students to make guesses about the following questions:

Q. What do antennae do?
Answer: ants smell through their antennae. They cannot see well and they also use their antennae to find their way.

Q. How do ants find their way?
Answer: ants make a substance like perfume that other ants can smell and follow to find where some ants are finding food. They leave a trail of this perfume for other ants to follow.
Q. What do ants do when they find food? Answer: They carry it back to their nest or get other ants to help carry it.

The Field Trip Activity

Habitat Hunt

Give each team a few cookie crumbs to put near their anthill. Ask students to watch to see how long it takes for the ants to find it and to be ready to explain what happens when they find it.

Post-trip Activity

• Take students on a field trip of the school yard. Ask them "How is the school yard like the refuge? How is it different?" Ask them to predict, based on the type of habitat you have, what kinds of animals might live there.

• Find out what the ideal habitat would be for animals that live on school grounds. Have students make feeders or houses to provide habitat for animals.

• Ask students, with teacher assistance, to catch, and keep a common insect such as a grasshopper or cricket in a jar in which they create a good habitat. A small piece of apple or small piece of wet sponge could supply water and leaves and dry oatmeal could supply food. Have students make observations of the insect's behavior over a number of days.

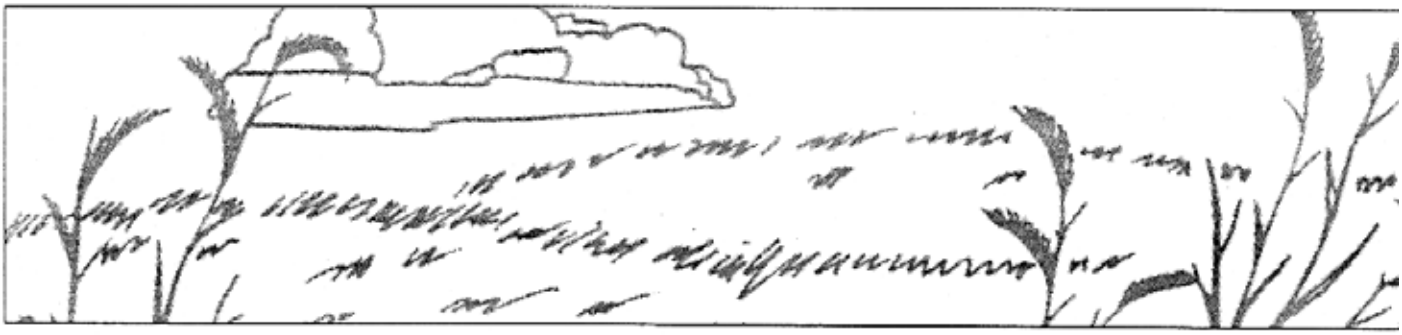
Activity adapted from "Home is Habitat", U.S. Fish and Wildlife Service, Rocky Mountain Arsenal National Wildlife Refuge Educator's Guide.

Above: Aquatic habitats will be degraded where cattle have open access.

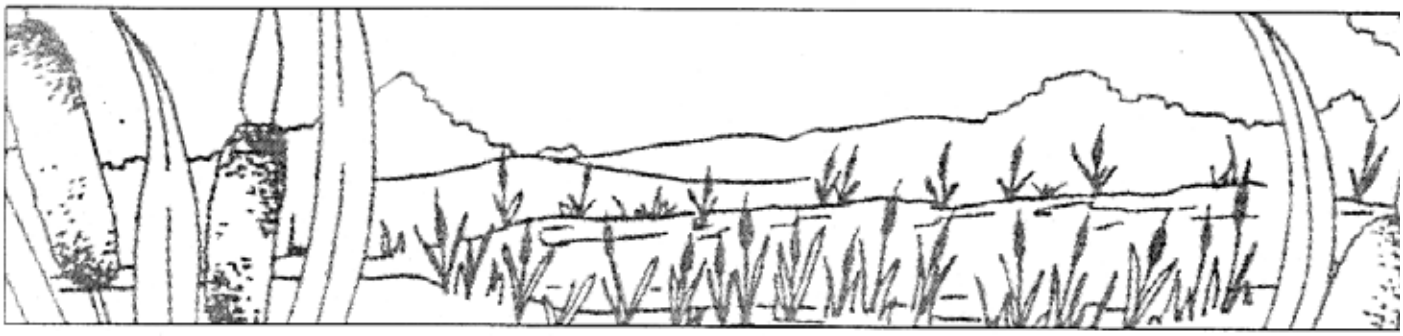
STUDENT PAGE

HABITAT MATCHING

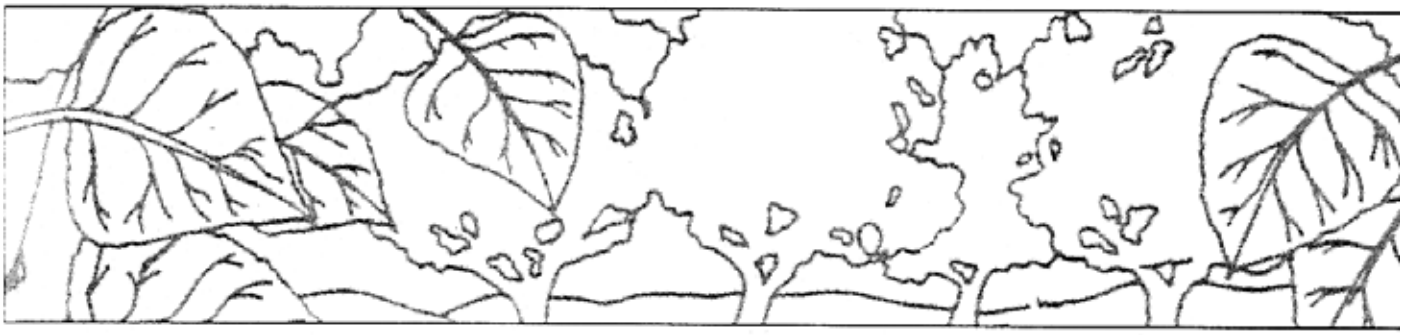
Grassland



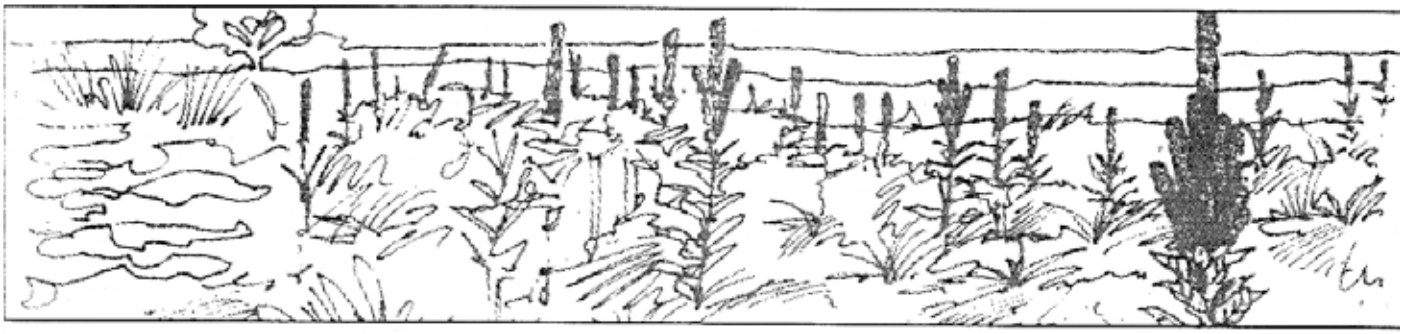
Wetland



Woodland



Disturbed Sites



The Field Trip
Part 3

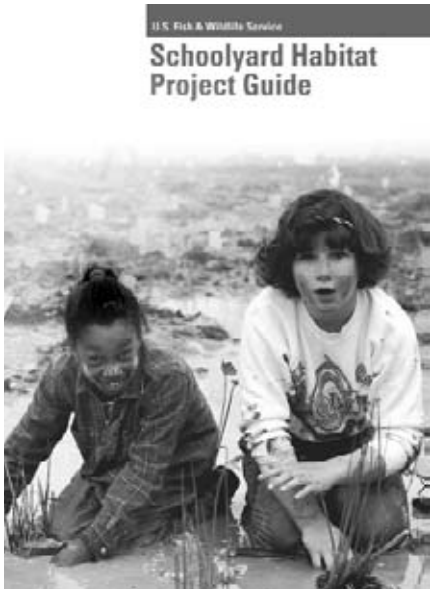
What is the U.S. Fish and Wildlife Service doing to restore and protect habitat?

Habitat. It comes in all shapes and sizes. As you learned in Part One - What Is Habitat? Animals, and people, need four things to call a habitat a home: food, water, cover, and shelter (a place to have and raise their young.) But it is not easy to keep habitat intact. Development, pollution, farming, and draining of wetlands can all have an impact on the places we live.

So, what is the U.S. Fish and Wildlife Service doing to help restore and protect habitat? Plenty.

Did you know that our **Partners for Fish and Wildlife Program**, working with private landowners and Native Americans has restored wetlands, native grasslands, **riparian** areas, in-stream habitats, and other habitats important to **Federal trust species**? The Partner's program helped restore or enhance over 49,000 acres of wetlands; 335,000 acres of native uplands; 990 miles of riparian corridors, streambanks and in-stream aquatic habitat; and assisted with the removal of 100 fish passage barriers!

At John Heinz National Wildlife Refuge, located just a stone's throw from the Philadelphia International Airport, the U.S. Fish and Wildlife Service, through a program called **Earth Stewards**, worked with local schools (over 150 students) and planted close to 400 native plants on the refuge and removed 15 trash bags of **non-native** garlic mustard from one of their trails. Twenty one students began work on Monday by conducting tests in the possible planting areas and started some of the planting. Tuesday saw 49 students complete the planting and then pull up 10 bags of the garlic mustard. On Wednesday a kindergarten class completed the native planting and removed more of the garlic mustard and on Thursday another group of students finished the planting.



The U.S. Fish and Wildlife Service Schoolyard Habitat program helps teachers and students create wildlife habitat on school grounds. The Service provides and coordinates with other agencies to give technical assistance (help) and guidance, provides teacher training, develops written resources, and works with individual state departments of education. What are some of the benefits of getting involved in a schoolyard habitat?

Schoolyard habitat projects:
- provide habitat for local and migratory wildlife, including songbirds, shorebirds, small mammals, reptiles, amphibians, and insects.
- offer many teaching and learning opportunities in language arts, science, mathematics, history, geography, social studies, and art.
- stewardship - students develop values and perceptions about their environment.
- social behavior - young children are driven to explore, discover, and play while refining motor skills. A well-designed schoolyard allows students to exercise these needs leading to a happier and more fulfilled childhood. Older students and adults also benefit. Research shows that most people are more relaxed in a natural landscape

The guide shown on this page is available online at:

http.www.fws.gov/r5cbfo/schoolyd.htm

The Field Trip
Part 4

What can you and your community do to help protect and restore habitat?

There are many things students and teachers can do to help protect and restore habitat. The U.S. Fish and Wildlife Service is responsible for wildlife conservation and is dedicated to doing everything possible to protect and restore healthy habitats. In Part 3 you read about some of the projects that the Service is doing to help. What about YOU?

You could start by volunteering. Serve as a volunteer at a nearby National Wildlife Refuge, Hatchery or Fishery Resource Office. Learn all you can about the Service and its volunteer program by visiting our website at **www.fws.gov.**

You can get involved in a project through your community, youth group, or school. Check out a program that 4-H and the Service is involved in called **The National Wildlife Habitat Evaluation Program (www.whep.org)** It is designed to teach youth about the fundamentals of wildlife science and management through a contest. In this program youth learn that management for wildlife includes management of habitat and populations. For more information about this program, you can contact your state 4-H office, county extension agent, or the Division of Outreach and Education at The National Conservation Training Center.

If you live in the states of Florida or California and are in the 5th grade, Walt Disney World, sponsors a program entitled "Jiminy Cricket's Environmentality Challenge." This is a unique partnership between Walt Disney World Co. and the states of Florida and California, and encourages students to think more about their environment and why it is "cool to care" about the earth. Classes participate in a two-part program consisting of a pledge and class project. The pledge requires an easy personal commitment to the environment. If the students want to take their environmental actions to the next level, they may submit a more comprehensive group project. Each project can be incorporated into existing curriculum and can encourage students to develop language skills, teamwork, mathematics, and environmental skills. For more information on how your class can get involved, visit: **http://disney.go.com/disneyland/environmentality/index.html**

FWS volunteer with a Gopher Tortoise. Okefenokee, NWR, Georgia. Refuge volunteers are very important to the U.S. Fish & Wildlife Service.

The Field Trip Activity

Help the habitat around you!

Now that you know about habitats, you can use that knowledge to help restore the habitats around you! You are a very important part of what happens outside. You can make a junkyard into a very livable place for wildlife around you. This can be done in your own backyard, or at school, or any place in your community. Not only will you be able to look at an area that used to be a mess, you can tell other people, that you made a difference to the many different kinds of animals that will move in to enjoy that nice place to live.

Before you get started on your project, you must first make plans to be successful. The information in this activity will give you some ideas of what you should be able to do. For some of the projects, you will need to get more information. Some of the projects will take a lot of time, and help from your teachers and other adults.

These are just a few suggestions of what you and your class can do.

• Hold an Arbor Day Celebration by planting trees in April. To do this you need to talk to the school officials about where you can plant the trees. When you are selecting your trees, it is best to pick native trees. Also pick trees that are for your climate. You can ask the local tree nurseries for advice, and ask them if they would be willing to donate some trees. To attract native animals get native trees.

For more information about Arbor Day, write to:

National Arbor
Day Foundation
100 Arbor Drive
Nebraska City, NE
68410

You might want to invite local officials to attend your Arbor Day celebration. Any time you and your school do a project like this, it is good to let the people around you know what special things you are doing.

• Plant a garden on your school grounds to attract wildlife, birds, and butterflies. Any age group can participate in this project. Not only is this project fun, if you follow the National Wildlife Federation's Backyard Wildlife Habitats guidelines, the project can be certified, which will allow your school to show off their own Schoolyard Habitats sign. For more information, check out the **National Wildlife Federation's** web page at: **http://www.nwf.org.** There are loads of good ideas and activities at this site.

The U.S. Fish and Wildlife Service has an excellent notebook called the Schoolyard Habitat Project Guide This notebook covers how to get started on the project and what to do for a forest, wetland, and meadow habitat project.

To get this notebook, write to:
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
Or download the guide online at:
www.fws.gov/r5cbfo/schoolyd.htm

• Pick an area around your school's playground and come up with a plan to improve that area. Make sure that the wildlife you want to attract to your spot won't be upset by any activity that could be going on at the playground.

• You can replant riverbanks using native plants to keep the soil in place and to provide wildlife habitat. You will need to have supervision by people who are experts in the field.

Other activities you and your classmates could do include convincing your school to recycle aluminum cans, paper, plastic bottles, and anything else that can be recycled. Check around your neighborhood to find out the location of a recycling center before you get started.

Recycling saves energy, resources, and therefore, habitat!

Activity courtesy of U.S. Fish and Wildlife Service Blackwater National Wildlife Refuge Environmental Education Manual.

Wild Things 2002
Habitat is Where it's At!

Educator's Feedback Form

Note: If you have Internet access, please use the online version of this form:

www.wildthingsfws.org

1. Please enter your mailing address:

First Name: _____ Last Name: _____

School: _____

Address: _____

City: _____ State: _____ Zip: _____

2. What is your e-mail address? _____

3. How many students viewed the broadcast?_____

4. What grade level were the students? ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 ☐11 ☐12

5. Students live in an area that is primarily: ☐Urban ☐Suburban ☐Rural

6. My students' favorite part of the broadcast was:

Favorite part: _____

Why: _____

7. My students' least favorite part of the broadcast was:

Least favorite: _____

Why: _____

8. What changes could make this a more useful event?

Changes: _____

9. Please assign a rating on a scale from 1 to 5, where 1 represents "Poor" and 5 represents "Excellent".

	Poor	*1*	*2*	*3*	*4*	*5*	*Excellent*
Overall quality of the program		☐	☐	☐	☐	☐	
Met learning objectives		☐	☐	☐	☐	☐	
Live student activities		☐	☐	☐	☐	☐	
Interactive game during the broadcast		☐	☐	☐	☐	☐	
Q&A with schools		☐	☐	☐	☐	☐	
educator's guide		☐	☐	☐	☐	☐	
Quality of the video		☐	☐	☐	☐	☐	
Quality of the audio		☐	☐	☐	☐	☐	
Web site		☐	☐	☐	☐	☐	
Teacher's guide		☐	☐	☐	☐	☐	

Wild Things 2002
Habitat is Where it's At!

Educator's Feedback Form

10. How did you view the broadcast? (check one)

☐ Live on March 5, 2003 via a direct satellite downlink
☐ Live on March 5, 2003 via cable TV
☐ Pre-recorded via cable TV
☐ Pre-recorded via video cassette tape

11. What was your overall impression of the broadcast?

12. Other comments?

Thank you for taking the time to complete this survey. Please Fax to **304/876 7231** or mail to

Wild Things 2002
NCTC (mail stop 18)
Route 1 Box 166
Shepherdstown, WV
25443

Correlation to National Science Education Standards

Adapted from:

National Science Education Standards
National Research Council
National Academy Press, Washington, D.C. 1998

The U.S. Fish and Wildlife Service Wild Things 2002 broadcast, "Habitat is Where it's At!" Educator's Guide activities and Web site resources can be generally correlated to the following National Science Education content standards for grades 5–8. Educators may correlate content with state standards as appropriate.

Life Science

CONTENT STANDARD C: POPULATIONS AND ECOSYSTEM

Fundamental concepts and principles that underlie this standard include:

• A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.

• Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some micro-organisms are producers--they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers, and decomposers in an ecosystem.

• For an ecosystem, the major source of energy is sunlight. Energy entering an ecosystem as sunlight is transferred by producers into chemical energy through photosynthesis. That energy then passes from organism to organism in food webs.

• The number of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition. Given adequate biotic and abiotic resources and no disease or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.

DIVERSITY AND ADAPTATIONS OF ORGANISMS

• Millions of species of animals, plants, and microorganisms are alive today. Although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes, and the evidence of common ancestry.

• Biological evolution accounts for the diversity of species developed through gradual processes over many generations. Species acquire many of their unique characteristics through biological adaptation, which involves the selection of naturally occurring variations in populations. Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.

• Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival. Fossils indicate that many organisms that lived long ago are extinct. Extinction of species is common; most of the species that have lived on the earth no longer exist.

Science in Personal and Social Perspectives

CONTENT STANDARD F:

POPULATIONS, RESOURCES, AND ENVIRONMENTS

Fundamental concepts and principles that underlie this standard include:

• When an area becomes overpopulated, the environment will become degraded due to the increased use of resources.

• Causes of environmental degradation and resource depletion vary from region to region and from country to country.

Correlation to National Science Education Standards

NATURAL HAZARDS

• Internal and external processes of the earth system cause natural hazards, events that change or destroy human and wildlife habitats, damage property, and harm or kill humans. Natural hazards include earthquakes, landslides, wildfires, volcanic eruptions, floods, storms, and even possible impacts of asteroids.

• Human activities also can induce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal. Such activities can accelerate many natural changes.

• Natural hazards can present personal and societal challenges because misidentifying the change or incorrectly estimating the rate and scale of change may result in either too little attention and significant human costs or too much cost for unneeded preventive measures.

History and Nature of Science
CONTENT STANDARD G:
Fundamental concepts and principles that underlie this standard include:

SCIENCE AS A HUMAN ENDEAVOR

• People of various social and ethnic backgrounds--and with diverse interests, talents, qualities, and motivations--engage in the activities of science, engineering, and related fields such as the health professions. Some scientists work in teams, and some work alone, but all communicate extensively with others.
• Science requires different abilities, depending on such factors as the field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity--as well as on scientific habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

NATURE OF SCIENCE

• Scientists formulate and test their explanations of nature using observation, experiments, and theoretical and mathematical models. Although all scientific ideas are tentative and subject to change and improvement in principle, for most major ideas in science, there is much experimental and observational confirmation. Those ideas are not likely to change greatly in the future. Scientists do and have changed their ideas about nature when they encounter new experimental evidence that does not match their existing explanations.

• In areas where active research is being pursued and in which there is not a great deal of experimental or observational evidence and understanding, it is normal for scientists to differ with one another about the interpretation of the evidence or theory being considered. Different scientists might publish conflicting experimental results or might draw different conclusions from the same data.

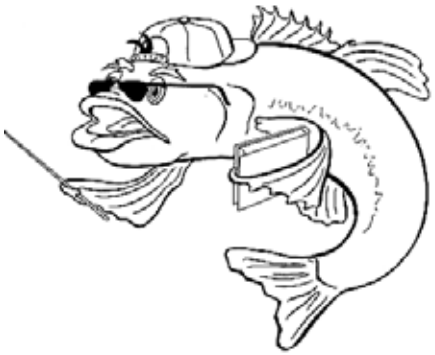
Ideally, scientists acknowledge such conflict and work towards finding evidence that will resolve their disagreement.

HISTORY OF SCIENCE

• Many individuals have contributed to the traditions of science. Studying some of these individuals provides further understanding of scientific inquiry, science as a human endeavor, the nature of science, and the relationships between science and society.

• In historical perspective, science has been practiced by different individuals in different cultures. In looking at the history of many peoples, one finds that scientists and engineers of high achievement are considered to be among the most valued contributors to their culture.

• Tracing the history of science can show how difficult it was for scientific innovators to break through the accepted ideas of their time to reach the conclusions that we currently take for granted.



Glossary

aquatic - A habitat where a plant or animal lives in or under water.

cacti - The singular form of cactus, a desert plant, that stores water in its tissues.

community - A group of all of the plants and animals that interact and live in the same area.

cover - A place where an animal can be protected from or not easily seen by predators.

decline - A population that is getting smaller over time and eventually may become extinct.

desert - A very dry area of land, where only specialized plants and animals can survive.

Earth Stewards program - A U.S. Fish and Wildlife Service program that connects students to the natural world through the passion and expertise of natural resource professionals.

endangered species - An animal or plant that is threatened with extinction.

Endangered Species Act - A law that was passed by the U.S. Congress in 1973 to protect rare, threatened, or endangered species and prevent their extinction.

extinct - A species of plant or animal that no longer exists on the Earth.

Federal trust species - These species include migratory birds, threatened or endangered species, anadromous fish, and some marine mammals.

Fisheries Assistance Office - where biologists study fish and wildlife populations and work with others to protect and restore their habitats.

grassland - A habitat where animals live in large fields of grasses and small plants.

habitat - The surroundings or living place of a plant or animal.

hard mast - All of the products of plants and trees that are hardened, such as nuts and seeds.

National Wildlife Refuge - A special area of land or water set aside to protect wildlife and habitat - the places where plants and animals live.

native - A species that has historically occurred in a particular area or region.

nocturnal - An animal that is active at night and inactive during the daytime.

Partners for Fish and Wildlife Program - This voluntary program of the U.S. Fish and Wildlife Service helps landowners, tribes, and schools restore and improve many different types of fish and wildlife habitat on their own lands.

pollutant - Something that makes water (or air) not pure or not clean, especially human-made chemicals or waste.

population - All of the animals (or plants) that are of the same species.

predator - An animal that feeds on another animal.

restore - To bring back something to the way it used to be, before it was changed or destroyed.

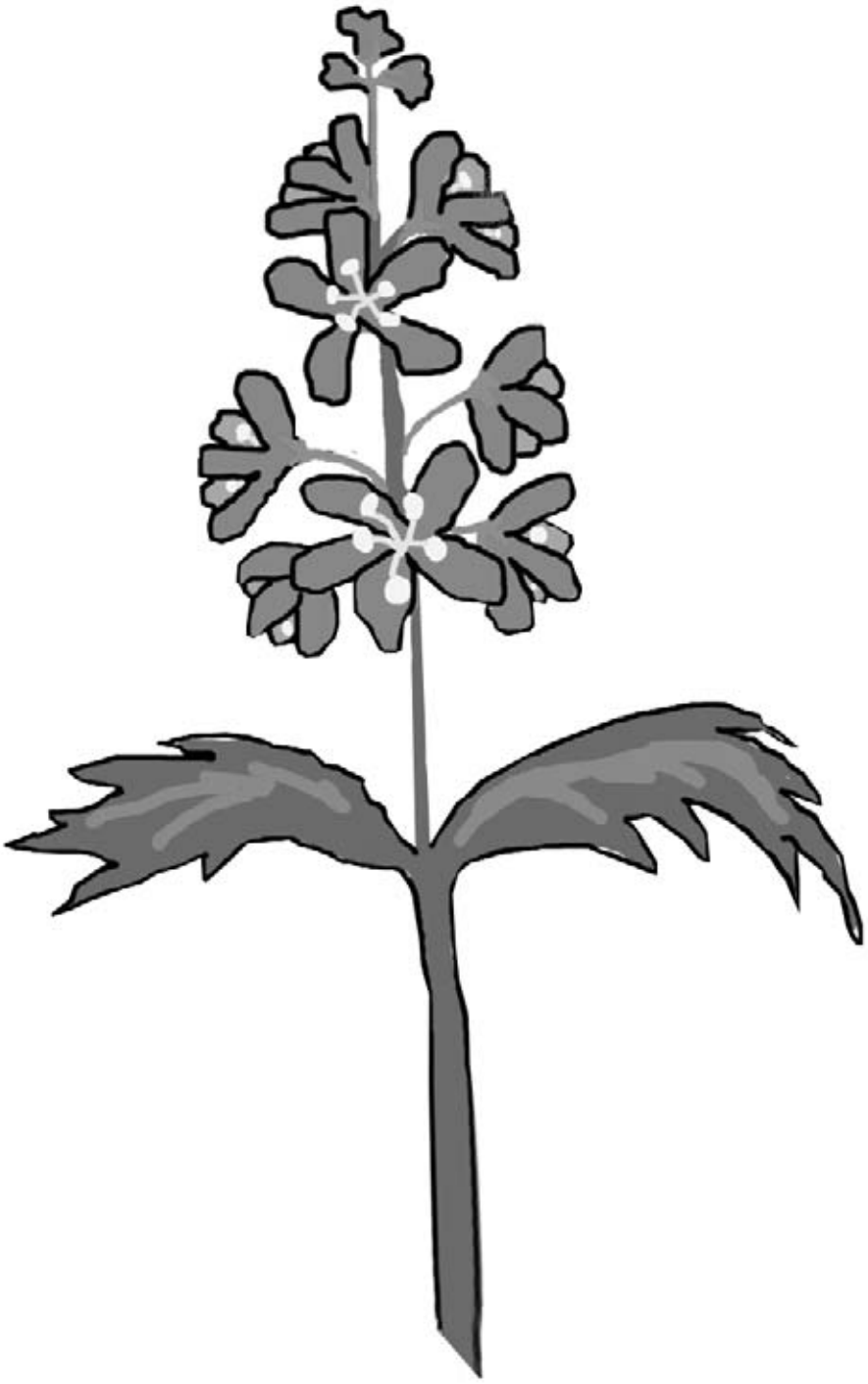
riparian - On or near the bank of a river or stream. The land area that is influenced by the adjacent water.

riverine - A habitat where animals and plants live alongside or in a river.

roost - A place where a bird settles down to rest or sleep.

scrub - A habitat where shrubs (thick bushes) and grasses are home to many animals.

Glossary



soft mast - All of the products of plants and trees that are soft, such as fruits and berries.

spawn - When fish, such as salmon, lay large numbers of eggs.

species - A group of related plants or animals.

succulent - A plant that has thick tissue to store water in a very hot environment. (example: cactus)

vegetation - All of the plants in an area.

waterfowl - Birds that swims in water, such as ducks or geese.

wetland - Land where there is usually water, hydric (saturated) soils, and hydrophytic (water-loving) plants.

Recommended Web Site Resources

Broadcast Homepage, Educator's Guide and Pre / Post Activities:

Wild Things 2002: Habitat is Where it's At! **(note: All listed resources are linked to this web site.)**
http://www.wildthingsfws.org

Road trip to Restoration: Wild Things 2002
http://www.wildthingsfws.org/wt02_roadtrip_index.htm

Educational Resources, Activities and Games:

USFWS Wildlife Fact Sheets and Species Information (note: the .pdf versions of the fact sheets are illustrated and print ready)
http://species.fws.gov/#fact

USFWS Educators and Students pages
http://educators.fws.gov/educators.html

USFWS Kids Corner, Endangered Species
http://endangered.fws.gov/kids/index.html

USFWS Endangered Species Kids Page, Where Can I Find It?
http://endangered.fws.gov/kids/wher_cur.htm

World Wildlife Fund: WWF - Kids Stuff
http://www.worldwildlife.org/fun/kids.cfm

Ranger Rick's Kid's Zone - National Wildlife Federation
http://www.nwf.org/kids

US Fish and Wildlife Service Portal
http://www.fws.gov

National Wildlife Refuge System History, Centennial and Photos:

America's National Wildlife Refuge System
http://refuges.fws.gov

National Wildlife Refuge System Centennial
http://refuges.fws.gov/centennial/index.html

History of the National Wildlife Refuge System
http://refuges.fws.gov/history/index.html

Wildlife Spectacles (month by month)
http://refuges100.fws.gov/searchbymonth.htm

USFWS National Image Library
http://images.fws.gov

USFWS Fisheries and Habitat Conservation
http://fisheries.fws.gov

Recommended Web Site Resources

Broadcast Homepage, Educator's Guide and Pre / Post Activities:

Habitat Projects and Programs for Homes, Schools, and Communities:

USFWS Shorebird Sister Schools
http://sssp.fws.gov/index.cfm

4-H Wildlife Habitat Evaluation Program (WHEP)
http://www.whep.org

USFWS Partners Program
http://partners.fws.gov/Our%20Partners/schools.htm

USFWS Schoolyard Habitat
http://www.fws.gov/r5cbfo/schoolyd.htm

National Wildlife Federation: Educational Program Links
http://www.nwf.org/education

Earth Stewards Program
http://www.refuges.fws.gov

Adopt-A-Salmon Family Program
http://www.fws.gov/r5cneafp/adopt1.htm

Journey North: Unpave the Way for Wildlife
http://www.learner.org/jnorth/unpave/index.html

Appendix

U.S. Fish and Wildlife Service
Regional Offices

Region 1
(CA, HI, ID, NV, OR, WA, Pacific Islands)
911 NE 11th Avenue
Portland, OR 97232-4181
ph: 503/231 6118

Region 2
(AZ, NM, OK, TX)
PO Box 1306
Albuquerque, NM 87103-1306
ph: 505/248 6282

(IA, IL, IN, MI, MN, MO, OH, WI)
Federal Building, 1 Federal Drive
Fort Snelling, MN 55111-4056
ph: 612/713 5301

Region 4
(AL, AR, FL, GA, KY, LA, MS, NC, PR, SC, TN, VI)
1875 Century Blvd.
Atlanta, GA 30345
ph: 404/679 4000

Region 5
(CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV)
300 Westgate Center Drive
Hadley, MA 01035-9589
ph: 413/253 8200

Region 6
(CO, KS, MT, ND, NE, SD, UT, WY)
PO Box 25486
Denver, CO 80225
ph: 303/236 7920

Region 7
(AK)
1011 E. Tudor Road
Anchorage, AK 99503
ph: 907/786 3542

For information about educational programs offered by the U.S. Fish and Wildlife Service please visit our Web site: http://www.fws.gov.

Theodore Roosevelt

Twenty-sixth President of the United States, noted conservationist, hunter, and birder, Theodore Roosevelt set aside the first national wildlife refuge at Pelican Island, Florida, in 1903. Before leaving office in 1909, President Roosevelt created 55 more bird and mammal reservations throughout the United States.

Paul Kroegel

Paul Kroegel was the first manager and game warden of Pelican Island bird reservation. Initially hired by the Audubon Society at a salary of $1 per month, Warden Kroegel worked for the Bureau of Biological Survey for nearly 20 years to protect the bird rookeries on our first refuge.

Jay Norwood "Ding" Darling

Nationally recognized for his conservation-minded cartoons and two Pulitzer Prizes, "Ding" Darling accepted President Franklin D. Roosevelt's offer to head the Bureau of Biological Survey in 1934. Although his tenure as Chief lasted only 18 months, he brought new energy and direction to the agency by creating the first Duck Stamp and acquiring many new refuges.

J. Clark Salyer

The tireless chief of the Fish and Wildlife Service's Wildlife refuge program for nearly 30 years, Salyer was actively involved in acquiring and expanding numerous refuges across the country. "Ding" Darling noted that "Clark Salyer was the salvation of the duck restoration program of 1934-36. He did most of the work for which I was given credit and awarded medals."

Rachel Carson

Hired as a junior aquatic biologist in 1935, Carson remained with the FWS for 17 years before resigning from her position as the Service's chief editor to pursue a literary career. Her success as the author of "The Sea Around Us" and "Silent Spring" was based on research performed by Fish and Wildlife Service scientists in the 1940's and 1950's documenting the effects of pesticides on human and wildlife populations.

Above: Rachel Carson and illustrator Robert Hines