

6th Annual Arkansas Endangered Species Day Art Contest

The 6th Annual Arkansas Endangered Species Day Art Contest will provide students with an opportunity to learn about endangered and threatened species, Species of Greatest Conservation Need (SGCN), and express their knowledge and support through art work . Plants or animals designated as SGCN are listed by the Arkansas Game and Fish Commission or the Arkansas Natural Heritage Commission and may require federal listing as endangered or threatened under the Endangered Species Act at some point in the future. This contest is organized by the U.S. Fish and Wildlife Service Arkansas Ecological Services Field Office, Arkansas Game and Fish Commission, and the Arkansas Natural Heritage Commission.

Endangered Species Day is a celebration of our nation's wildlife and wild places. Started in 2006 by the United States Congress, Endangered Species Day is an opportunity to learn about endangered species. The art contest is an integral part of celebrating Endangered Species Day, May 15, 2015.

Learning about endangered species

The youth of Arkansas are encouraged to learn about our nation's and Arkansas' wildlife (i.e., mammals, birds, fish, invertebrates, amphibians, and reptiles) and plants on the brink of extinction. Lesson plans and other educational materials are included in this packet. We encourage educators to use these materials in lessons culminating in student participation in the state art contest.

Subject Matter

Art work should highlight one or more land, cave, and/or stream dwelling endangered, threatened, candidate or SGCN (i.e., mammal, bird, fish, invertebrate, amphibian, plant) **found in Arkansas**. Information pertaining to Arkansas' endangered, threatened, and candidate wildlife and plants and the areas they live in Arkansas is provided in this packet.

Judging

Winners will be chosen in four categories: K-Grade 2, Grades 3-6, Grades 7-9, and Grades 10-12. First, second, and third place winners will be selected from each category this year. One

overall state winner will be selected. Contest entries will be evaluated by a panel of judges, including artists and conservationists. Contest winners will be notified prior to the end of the current school year (May 2014). The art will be judged on the basis of

- Concept: How well the work relates to the endangered species theme.
- Composition: How well the elements of line and form work together.
- Color: How color enhances the art work.
- Expression: How imaginatively the work conveys an idea or emotion.

Entry Requirements

- The physical size of submitted art work must be 8.5" x 11" or 9" x 12" and less than ¼" thick.
- Image must be a live portrayal of an endangered, threatened, candidate, or species of greatest conservation need that is native to Arkansas.
- Artistic liberties may be taken as long as the depiction is a recognizable endangered, threatened, or candidate species.
- Entries should not be matted, mounted, laminated, framed or folded. Chalk and pastel entries should be sprayed with fixative to safeguard art work.
- The entry may be multi-color, black and white, or a single color; it may be rendered in ink, paint, pastel, crayon, or pencil.
- Techniques may include scratch-board, airbrush, linoleum printing, paper collage, dry brush, crosshatch, pointillism. No photography, weak pencil, or computer-generated art. Computers or other mechanical devices may not be used in creating artwork.
- **Design entries must be entrant's original, hand-drawn creation and may not be traced or copied from published photographs or other artists' works.** Entrants may rely on photographs or published images as guides. However, especially when references are used for the subject(s), the entry must be the entrant's own creation and idea.
- The entry must have the contestant's name, school name, location, and phone number, grade and title on the back of the submission in pencil. **Please include an e-mail address for teacher/parent.**

Submission

Entries must be postmarked by **April 4, 2015**. Entries should be sent to:

U.S. Fish and Wildlife Service
ATTN: Endangered Species Day Art Contest
110 South Amity Road, Suite 300
Conway, AR 72032

Please direct questions to Melissa Lombardi at 501-513-4488 or melissa_lombardi@fws.gov.

Each winner will receive a plaque and an Acorn Naturalist Gift Card. Gift Cards will be awarded in \$100, \$50, and \$25 denominations for 1st, 2nd, and 3rd place in each category. The contest's grand prize winner will receive a \$250 Acorn Naturalist Gift Card and plaque.

Ownership

Art work will not be returned to schools or participants. Though the U.S. Fish and Wildlife Service will attempt to treat all submitted work with the utmost care, the U.S. Fish and Wildlife Service is not responsible for any damage or loss that may occur during the sending of entries through the mail. The U.S. Fish and Wildlife Service will have permission to use art work for non-profit educational purposes.

ENDANGERED SPECIES CURRICULUM

GRADES K – 5

Topic

Endangered Species

Goals/Objective

Educate students about endangered species. This includes their habitat, ecological and social value as well as the factors threatening their survival.

Educate students about the U.S. Endangered Species Act. This includes a brief history, its purpose and success stories as well as factors both threatening and strengthening this piece of legislation.

Show students how to get involved. This includes information on letter writing, public art displays and habitat awareness.

Suggested Time Allowance: 1 hour

Materials

Worksheet 1: Endangered and Extinct Species—two copies, cut up one for class (Handout 1 - <http://www.fws.gov/arkansas-es/esday.html>).

Endangered Species Coloring Book—optional (<http://www.epa.gov/espp/coloring/>).

Paper, pencil for drawing and letter writing.

CLASSROOM PRESENTATION

Introductory Interactive Game

This game demonstrates the *great loss of plants, animals and fish* around the world. Scientists estimate that 539 species of plants, animals and fish have gone extinct in the US in the past 200 years. Biodiversity, the variety of all life on earth, maintains the health of the planet. Each species plays a unique role in the ecosystem and affects all other species around it. Often, one species could not live without the other. Plants and wildlife also have many economic and medicinal values to humans, and these may be lost with the decline of biodiversity.

1. Start by handing out cards to students with names of extinct and endangered animals and plants (See Handout 1 at <http://www.fws.gov/arkansas-es/esday.html>).
2. Allow students to read their card. Encourage students to show each other their cards, maybe exchange them.
3. Ask students to stand up as the attribute of their species is read off until the entire class is standing.
4. Explain that the world has lost a tremendous number of plants and animals as a result of habitat destruction from industrial and residential development, pollution, and invasive species as well as over hunting. Tell students to sit down as their extinct species is called out.

5. The rest of the students standing represent what the Endangered Species Act is working to protect!

Glossary

Biodiversity: The variety of all life on earth

Biologist: A person who studies living organisms

Native species: A species that naturally occurs in an ecosystem

Invasive species: A species that has been introduced into an ecosystem that it does not naturally inhabit.

Endangered species: A type of animal or plant in danger of extinction

Threatened species: A type of animal or plant likely to become endangered

Extinct species: A type of animal or plant that no longer exists

Habitat: The place or environment where a plant or animal naturally lives and grows, the essential elements it needs to survive including water, food, shelter and space

Stewardship: Responsible management and care of the environment

Endangered Species Act: A law passed to ensure the survival and recovery of endangered and threatened species by protecting the species and the ecosystems they depend upon.

For a more comprehensive glossary, visit

<http://www.fws.gov/endangered/kids/pdf/glossary.pdf>

Endangered and Extinct Species List by state:

<http://www.fws.gov/endangered/wildlife.html>

Why are plants and animals important to us?

Brainstorm on the board with students about why plants and animals are important to us.

Here are just a few ideas:

Food

Clothing

Medicine - The rosy periwinkle provides the cure for Hodgkin's disease and certain forms of leukemia, while the Pacific yew helps with the treatment of cancer. A cure for many diseases may lie in a plant or animal waiting to be discovered.

Healthy Environment – plants and wildlife maintain natural ecosystems for drinking water, flood protection, open space, and recreation.

Personal Recreation - hiking, fishing, hunting, wildlife watching

Understanding the Endangered Species Act

What is the Endangered Species Act?

The Endangered Species Act is a safety net for wildlife, plants and fish that are on the brink of extinction.

Why do we need the Act?

We need the Endangered Species Act in order to ensure that our children and grandchildren can experience the environment as we have known it, and leave behind a legacy of protecting endangered species and the places they call home. The Endangered Species Act prevents the

extinction of fish, plants and wildlife, an important responsibility to uphold because once these species are gone they are gone forever!

How does the Act work?

One of the most effective ways to protect species is to protect the places where they live. Species need their habitat as much as you need your house in order to survive! The Endangered Species Act protects the critical habitat that is needed to prevent the extinction of endangered fish, plants and wildlife. The Endangered Species Act provides common sense solutions for government agencies, landowners, and concerned citizens to protect and restore endangered species and their habitat. It is based on three key elements:

- Listing species as threatened or endangered
- Protecting habitat essential for their survival and recovery
- Ultimately restoring healthy populations of the species so they can be removed from the list.

The bald eagle, the peregrine falcon, and the gray wolf have all benefited from the Endangered Species Act; once on the edge of extinction, they have rebounded to the point where populations are thriving. The Act does more than just protect threatened species; it protects a habitat supporting the greater web of life.

EXERCISES

Habitat

As mentioned before, a species habitat is as vital to their survival as our houses are to our survival. Ask students what in their house supports their lives and where they get it.

Where do you get your food? Where do you get your water/ heat/electricity/ walls/ roof etc.?

Point out that each home is comprised of the web of life around us.

Pick an animal local to your area. Ask students to brainstorm all the facets of the web of life that support a plant/animal's house (*i.e.*, the plant/animal's house uses the river for water/transportation, the trees for food/shelter, other animals for food/garbage pick-up).

Web of Life

Put students in groups and assign them these roles: River, lake, tree, plant, owl, fish, bear, beetle, mouse, logger, fisherman.

Have each role written on the board.

Have students brainstorm how the other roles affect them (*i.e.* the River group would say the fish lives in me, the other plants and animals drink from me, etc.).

Have everybody stand up.

Let one group go extinct, and have the other groups explain how they are affected by the loss of the river, or fish or trees (*i.e.* Without the trees the owl would have no home, the fish would not be shaded from the sun and die, the soil would wash into the water, the stream would become dirty, etc.).

Closing Questions for the Classroom

1) Q: *What are some things that cause species to become extinct?*

A: Habitat destruction, pollution, overharvesting, and invasive species.

2) Q: *How does the Endangered Species Act protect species?*

A: The ESA lists species whose numbers are declining as endangered or threatened, designates habitat essential for their survival, and makes a plan to restore and maintain healthy populations.

3) Q: *What is biodiversity and why is it important?*

A: Biodiversity refers to the great variety of all life on earth reflected in the variety of genes (DNA), species, and ecosystems. Biodiversity is important for the health of the planet because each species plays a unique and vital role to the survival of other species. The decline of one species may lead to the decline of many more depend on that one for food, shelter, protection or decomposition.

4) Q: *How does the Endangered Species Act protect us?*

A: Humans often benefit from the conservation of endangered species and their habitat. Protected habitats provide us with clean air and water, food sources, potential medicine, open space and recreation.

Getting Involved

Getting involved is very important. We have a responsibility to protect the wildlife, fish and plants that share our world. You can show how much you value endangered and threatened species in many ways. Bringing awareness to the community you live in can have powerful effects, especially because we can make significant efforts to protect wildlife habitat in our own back yard. Pictures, murals and community events are a fun ways to inspire awareness.

Here are a few ideas of how to get involved:

- Pictures and murals to post up around your school
- An endangered species coloring book is available on line through the Environmental Protection Agency (EPA). See <http://www.epa.gov/espp/coloring/>
- Adopt an endangered species
- "Adopt" an endangered species native to your area, find out how you can help conserve it, and inform the citizens in your community about your adopted plant or animal with speeches, newspaper articles, brochures, buttons, signs, and videos.
- Contact a local conservation group about habitat restoration projects you can get involved in. For a list of endangered species groups, visit www.stopextinction.org.
- Letter writing to senators or local newspaper.
- A simple statement by each student about why they want a particular species protected will make a meaningful impact. Sample letters can be found on the Endangered Species Coalition website at www.stopextinction.org.
- Senators contact information can be found at: <http://www.senate.gov/>

For More Information:

U.S. Fish and Wildlife Service – Arkansas Ecological Services Office

<http://www.fws.gov/arkansas-es/esday.html>

Endangered Species Day website www.stopextinction.org/endangeredspeciesday

Endangered Species Coalition Citizen’s Guide to the ESA and 30 Endangered Species success stories report www.stopextinction.org/

U.S. Fish and Wildlife Service Endangered Species Program

<http://www.fws.gov/Endangered/>

U.S. Fish and Wildlife Service Kids Corner

<http://www.fws.gov/endangered/kids/index.html>

Endangered Species Glossary for students

<http://www.fws.gov/endangered/kids/pdf/glossary.pdf>

The Endangered Species Act of 1973

<http://www.fws.gov/Endangered/esa.html>

Environmental Protection Agency endangered species coloring book

<http://www.epa.gov/espp/coloring/>

Prepared by the Endangered Species Coalition www.stopextinction.org

ENDANGERED SPECIES CURRICULUM

GRADES K – 8

ABC of Endangered Species (http://www.educationworld.com/a_lesson/02/lp260-04.shtml)

Students create an ABC Book of Endangered Animals that includes locator maps, "fast facts," and explanations about why those animals are endangered. This lesson is best suited for grades K-8 and adheres to National Education Standards.

Subjects

Arts & Humanities

Language Arts, Visual Arts

Educational Technology

Science

Life Sciences, Animals, Physical Science, Environmental

Social Studies

Geography

Brief Description

Students create an *ABC Book of Endangered Animals* that includes locator maps, "fast facts," and explanations about why those animals are endangered.

Objectives

Students will:

1. choose an endangered species to research that begins with an assigned letter;
2. research the animal's habits, habitat, and endangered status;
3. create a page for a class ABC book that includes a photograph or artwork of the animal, a brief description of the animal and its habits and habitat, a "fast fact" that shares the most interesting thing they learned about the animal, and an explanation of why the animal is endangered; and
4. report to the class the results of their research.

Keywords

animals, endangered, species, ABC, world, research

Materials Needed

1. library and/or Internet sources about animals and/or endangered species;
2. art supplies;
3. a world map that can be used as a locator map on the students' reports (sources provided);
4. materials for gathering students' pages into a book

Lesson Plan

Explain to students that they are going to create a class *ABC Book of Endangered Species*.

To assign students a letter of the alphabet, write each letter on a small piece of paper, fold the papers, put them in a container, and let each student draw a paper from the container. If students are to work on this assignment in groups, each member of the group can take a turn drawing a slip from the container and letters drawn by group members will become their assigned letters.

An alternative approach is to divide students into small groups and assign a different continent to each group. Students can search for endangered species by continent rather than by letter. If students have Internet access, they can use the Kids' Corner (<http://www.fws.gov/endangered/kids/index.html>) as one of their resources. If students do not have Internet access, print out copies of the "master list" of endangered animals from that U.S. Fish and Wildlife Services' web site, the animal and plant list (<http://www.fws.gov/endangered/wildlife.html>), will make an excellent starting point, especially for younger students. Excellent photographs that students can print and use on their ABC book pages are available on the Internet. We have included photographs of Arkansas' endangered species and information about each species in this packet.

Have students use library or Internet resources to learn facts about the endangered species they have been assigned for the class book. Following are a handful of elements that might be included on the completed pages:

1. name of the endangered animal;
2. an image of the animal (a student drawing or an image downloaded from the Internet);
3. a small world map to indicate where the species is known to exist;
4. paragraph with a description of the animal that includes information about its size, color, habits, and habitat;
5. a statement explaining why the animal is endangered;
6. a "fast fact" telling the most interesting thing the students learned about the animal -- something many people might not know

When students have completed their pages, ask them to share them with the class with a brief presentation (2 minutes) highlighting the results of their research.

Assessment

Students' work will be evaluated based on whether their animal pages include all the required elements and on the presentation of their research.

Lesson Plan Source

Education World; submitted by Gary Hopkins

ENDANGERED SPECIES CURRICULUM

GRADES 5 – 8

Post Cards from the Edge: Endangered Species

(<http://www.nationalgeographic.com/xpeditions/lessons/08/g68/habitat68.html>)

In this lesson, students will learn about endangered species in the United States, some of the reasons they are endangered (e.g. habitat destruction or the introduction of invasive species), and what is being done to protect them. Students will choose one species to focus on and examine the reasons it is endangered and why it is important to make an effort to save it. This lesson is best suited for grades 5-8 and adheres to National Geography Education Standards.

Overview

The U.S. Fish and Wildlife Service is a bureau within the Department of the Interior whose mission is to work with others to conserve, protect, and enhance fish, wildlife, and plants, and their habitats. The bureau manages the 93-million-acre National Wildlife Refuge System with more than 520 individual refuges, and thousands of wetlands and special management areas. Among its key functions is the protection of endangered species.

In this lesson, students will learn about endangered species in the United States, some of the reasons they are endangered (e.g. habitat destruction or the introduction of invasive species), and what is being done to protect them. Students will choose one species to focus on and examine the reasons it is endangered, and why it is important to make an effort to save it.

Connections to the Curriculum

Geography, science, language arts

Connections to the National Geography Standards

Standard 8: "The characteristics and spatial distribution of ecosystems on Earth's surface"

Standard 14: "How human actions modify the physical environment"

Standard 18: "How to apply geography to interpret the present and plan for the future"

Time

One to two hours

Materials Required

1. Computer with Internet access;
2. Blank Xpeditions
(<http://www.nationalgeographic.com/xpeditions/atlas/index.html?Parent=usofam&Mode=d&SubMode=w>) (one for each small group);
3. Writing and drawing materials for group presentations

Objectives

Students will:

1. learn about endangered species in the United States;
2. identify endangered species in their state;
3. create postcards of facts and pictures about the species; and
4. analyze reasons to protect endangered species.

Geographic Skills

Asking Geographic Questions

Acquiring Geographic Information

Organizing Geographic Information

Analyzing Geographic Information

Suggested Procedure

Opening

Since the arrival of Europeans in North America, more than 500 species have become extinct. The populations of many species have declined due to loss of habitat, degradation of the environment, pollution, pesticide use, and other factors. Within the United States and its territories, 574 species of animals and 749 species of plants are listed as threatened or endangered. The U.S. took a giant step toward saving plants and animals with the passage of the Endangered Species Act of 1973.

Development

Have students work in small groups. Ask each group to create a presentation about an endangered species in Arkansas. Try to have the groups represent different types of species (e.g., mammals, birds, mussels, fish, or plants). Their presentations may be on a large piece of paper or poster board, and could include photos cut out of magazines or printed out from the Internet; original drawings; important facts about the species; reasons for the decline of its numbers; and any other information they feel is important.

All presentations should include a blank Xpeditions atlas of the U.S. showing the distribution of their species. If the species number has diminished significantly, students may want to use two colors to show the difference between the original distribution of the species and the current distribution. If a species exists only in a small area, students may wish to include a blank state outline map from the Xpeditions atlas.

The following Web sites will help students begin their research:

Endangered Species on EE Link (<http://eelink.net/EndSpp/specieshighlights-mainpage.html>)

Green Kids Guide to Threatened Species: Nine Ways You Can Help
(<http://www.environment.gov.au/biodiversity/threatened/publications/index.html>)

U.S. Fish and Wildlife Service: Endangered Species Information
(<http://www.fws.gov/endangered/wildlife.html>)

WWF: U.S. World Wildlife Fund (<http://www.worldwildlife.org/>)

U.S. Fish and Wildlife Service: Teacher's Packet (included in this packet)
(<http://www.fws.gov/endangered/kids/pdf/TEACHKIT.PDF>)

As they create their presentations, ask students to address:

1. when and why the numbers of this particular species started to decline;
2. what the major threats to this species are;
3. what has been done so far (if anything) to save this species;
4. why it is important to save this particular species (Do other species depend on it for some reason?); and
5. what they would recommend doing to save this species from extinction?

Closing

Have students post their presentations around the room. Ask them to take turns giving a brief presentation about the species they have studied and answer any questions other students have.

Suggested Student Assessment

Have students write essays explaining why it is important to help save endangered species. They should use the species they studied, as well as some of the species studied by other students in the class as examples. Have them research an endangered species from somewhere outside the United States and include that in their reports to demonstrate why the problem of endangered species is a worldwide one.

Extending the Lesson

Get the students and community involved in helping to conserve rare, threatened, and endangered species and their habitats. Inform the community of endangered species native to your area through newspaper articles, brochures, buttons, signs, speeches, or videos. Ask your student council to make a contribution to a local organization dedicated to recovering species.

Adopt a species or adopt a habitat in your area. Join the National Wildlife Federation's Backyard Wildlife Habitat (<http://www.nwf.org/Get-Outside/Outdoor-Activities/Garden-for-Wildlife.aspx>) program.

ENDANGERED SPECIES CURRICULUM

GRADES 5 – 12

Focus on an Endangered Species/Region

(<http://www.fieldtripearth.org/strategy.xml?id=37>)

Students develop an integrated project through the comprehensive study of a species, a region, or both. This long-term project requires students to explore fiction, history, cultural attitudes, and government. The scientific data students can collect and analyze may include GIS information, climate and weather, satellite tracking/mapping, and observations from research scientists' journals. This lesson is best suited for grades 5-12 and adheres to National Science Education Standards.

Context

Students develop an integrated project through the comprehensive study of a species, a region, or both. This long-term project requires students to explore fiction, history, cultural attitudes, and government. The scientific data students can collect and analyze may include GIS information, climate and weather, satellite tracking/mapping, and observations from research scientists' journals.

The final product may take the form of conservation or action plans since the focus of the study will be on endangerment and the human effect on a species/region.

This strategy provides numerous activities that can be used separately or joined together as a long-term unit to study an endangered species/region.

Curriculum

Standards for the English Language Arts

Sponsored by NCTE and IRA (<http://http://www.ncte.org/about/over/standards>)

7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (*e.g.*, print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

8. Students use a variety of technological and information resources (*e.g.*, libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

12. Students use spoken, written, and visual language to accomplish their own purposes (*e.g.*, for learning, enjoyment, persuasion, and the exchange of information).

The National Science Education Standards

Sponsored by NSTA

6.3 Life Science Standards

Levels 5-8: Structure and function of living systems; Reproduction and heredity; Regulation and behavior; Populations and ecosystems; Diversity and adaptations of organisms.

Levels 9-12: Interdependence of organisms and Behavior of organisms.

Attachments

None

Other materials

The materials needed depend upon the activities (or combination of activities) listed below. This is a basic list of materials that could be used with the activities:

1. Reference materials (especially reference materials about endangered species)--These materials are needed to find information about the species, the people of the region, conservation efforts, population data, etc. This could include material from the internet. Students could select an animal on the Field Trip Earth site and take a virtual field trip to learn more about the animal.
2. Population data for the species and/or human population of the region.
3. Information about conservation plans for the species. See the <http://www.wwf.org> site to locate sample conservation plans.
4. Art supplies--construction paper, glue, scissors, markers, etc.
5. Graph paper

Instructional sequence

Most of the activities listed below could be taught as separate activities, or combined in a variety of ways to create an entire unit focused on a particular species.

1. Assign students to a heterogeneous mixed of groups and give each group a list of endangered animals or regions. Allow the groups to choose their focus of research.
2. Before researching, students should develop a list of questions they want to answer in their final product. These questions could include: What do we want to know about the animal's daily life? Why is the animal/region endangered? If measures are not taken to preserve the animal/region, what will happen? Why is it important to study this species/region? At this stage students should also be given the criteria for creating the final product. This will allow them to determine the organization of topics and individual assignments within each group. The criteria for the final product could include many of these expectations depending on each group's focus: Introduction, Purpose Statement, Culture, Education/Literacy Levels, Economy, Population Structure, Health, Maps, Data, Government, Physical Description, History, Climate, Current Research Projects, Analysis of Resources, Adaptations, Habitat, Diet, Reproduction, Social Behavior, Risks to the Species, Proposed Action Plan, etc.
3. Research and gather basic information about the species. There are several strategies that may help in the research process:

Data Collection (<http://www.fieldtripearth.org/strategy.xml?id=35>),
Data Analysis (<http://www.fieldtripearth.org/strategy.xml?id=38>),
Graphing Data (<http://www.fieldtripearth.org/strategy.xml?id=28>),
Informative Writing (<http://www.fieldtripearth.org/strategy.xml?id=40>),
Persuasive Writing (<http://www.fieldtripearth.org/strategy.xml?id=39>),
Critical Writing (<http://www.fieldtripearth.org/strategy.xml?id=41>), and
Writing a Technical Research Paper (<http://www.fieldtripearth.org/strategy.xml?id=33>).

Students may display their information in posters, booklets, brochures, Multi-media presentations (<http://www.fieldtripearth.org/strategy.xml?id=34>), etc.

4. After researching, students will be able to determine some of the major problems that the human population is facing. Discuss any possible correlations between those problems and the decline in the region or species' population. A Socratic seminar (<http://www.fieldtripearth.org/strategy.xml?id=3>) could be held to discuss the impact humans have had on the species/region.
5. Research the importance of the species to its ecosystem. Discuss why we should be concerned with the decline of the species and what impacts its decline is having. For example, determine if the organism is considered a "keystone species" (<http://www.fieldtripearth.org/strategy.xml?id=754>) and what role it plays in its ecosystem, or if the species is an important prey species for another organism and how its decline is affecting other populations. Have students create a flow chart (<http://www.fieldtripearth.org/strategy.xml?id=8>) demonstrating the species' role in the ecosystem or write a paragraph summarizing the class discussion.
6. Create maps that show the past and present ranges of the species. Investigate and create maps showing the past and present land cover and land use in those ranges. Discuss any evident changes and possible reasons for any changes. Discuss connections between the maps. Have students write paragraphs explaining what they have learned by comparing the maps or have them complete Venn diagrams comparing the various maps. The Map Interpretation (<http://www.fieldtripearth.org/strategy.xml?id=9>) strategy offers further suggestions for map use and analysis.
7. Gather population data for the species and for the human population in the region (preferably data that has been collected over an extended period of time). Graph (<http://www.fieldtripearth.org/strategy.xml?id=28>) and analyze the data. Discuss patterns in each graph and any connections between the two. Have students write paragraphs explaining what they have concluded from the graphs.
8. Research and gather information (similar to that listed above) about other threatened or endangered species in the same region (or regions that are nearby). Each student or small group of students can be assigned a species. Again, this information can be displayed visually (<http://www.fieldtripearth.org/strategy.xml?id=14>). Compare the risks and threats of the different species, and discuss possible causes for any similarities and

differences.

9. Research how the people of the region feel about the species and what their relationship with the species is. Study how the organism is reflected in the art and literature of the region. Students can create their own works of art or literature (<http://www.fieldtripearth.org/strategy.xml?id=4>) to symbolize their relationship with the species. Their work could be modeled after the works of the people native to the region. The Prose and Poetry (<http://www.fieldtripearth.org/strategy.xml?id=23>) strategy and the Using Visual Arts (<http://www.fieldtripearth.org/strategy.xml?id=14>) strategy will provide further instructions.
10. Investigate conservation efforts that have been implemented to help the species recover. Discuss the progress, success, and/or failure of these efforts. Contact people involved in the programs for more information, to invite them to be a guest speaker in your class, and to learn how students can help assist in their efforts.
11. Have students develop their own conservation plans for the species. They can use an existing plan as a foundation and develop ways to improve it, or they can create an entirely new plan. They should include all of the information that they have gathered about the species: basic information and pictures, information about the region and the people of the region, why the species is an important part of the ecosystem, an explanation of the source(s) of the problem, an analysis of previous or current conservation efforts, and what they plan to do to improve upon those efforts. This plan may be developed into a research document or multimedia presentation.

Extension

1. Have students study endangered species from other regions across the world. Discuss common threats to the species and common conservation efforts that transcend geographic borders.
2. Share the final projects with students of other grade levels or with parents in the library or a more formalized gathering.

Assessment

1. Rubrics can be used to assess all of the activities listed above.
2. A checkpoint system can be implemented for long-term projects, such as the conservation plan or the species research project.
3. Self-assessment and peer assessment are also appropriate, particularly for large projects, such as the conservation plan. If groups are used, students may be assessed on the individual section of the plan they were responsible for writing.

Literacy advancement

1. Assessing the value and validity of information while researching
2. Collecting information from a variety of sources and creating an original document
3. Analyzing graphs and maps and writing statements that summarize students' analysis

Author: West, Reagan

ENDANGERED SPECIES CURRICULUM

GRADES K – 12

Endangered Symbols

In this lesson, students explore the importance of protecting endangered species, the historical and social significance of animals as cultural symbols in various countries around the world, as well as the effect that humans have made on the population and natural habitats of these animals. It is appropriate for all ages and adheres to McRel Academic Content Standards.

Academic Content Standards

This lesson plan may be used to address the academic standards listed below. These standards are drawn from Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education: 2nd Edition.

Objectives

Students will:

1. Explore the use of animals in cultures around the world.
2. Understand the importance of protecting endangered species.
3. Investigate the ways in which animals have been used as traditional symbols in cultures around the world; analyze the current status of these animals in their native habitats.
4. Create an "Animals around the World" exhibit to display research findings both artistically and textually.

Resources / Materials:

pens/pencils

computer access to www.glogster.com

resource materials in which information and images of "symbolic animals" can be found (geography-related periodicals such as National Geographic, computers with Internet access, global history textbooks, mythology books, library reference books)

Activities / Procedures

1. WARM-UP/DO-NOW: brainstorm a class list of endangered species and the countries in which they live.
2. Explain to students that they will be exploring the ways in which certain animals have been important to different cultures and societies around the world, as well as analyzing the current status of these animals in their native habitats. They will then create posters of endangered animals to display in the classroom for other classes to visit.
3. Divide students into pairs or small groups of three, and have each select one of the endangered animals listed on the board. Then, using all available resources, each group researches the significance of their assigned animal as a cultural and historical symbol in as many cultures as they can, addressing the following for each culture that they identify (written on the board for easier student access):

- Characteristics that the animal represents

- History of this animal as a cultural symbol
- One example of a myth, story or legend associated with the animal
- The environmental and economic benefits of protecting the animal
- The population status of the animal in the native habitat of this culture
- How human interaction with the environment in which this animal lived or lives has impacted the status of the animal (including past and current preservation efforts)

4. WRAP-UP/HOMEWORK: After completing their research, each student group develops a poster on www.glogster.com about the cultural and historic importance of their animal around the world. The display should address all of the above criteria for each example of a culture in which this animal is a symbol, and should include, for each culture, an artistic and a written component in order to expound upon these criteria. Encourage students to adhere to the aesthetic standards and methods of each culture they explore. In a later class, have students present their artwork and display as an "exhibit" around the classroom, and invite other classes to visit your "Animals Around the World" exhibit.

Further Questions for Discussion

- Do you think animals are protected today more/less than the past?
- Do you think animals are treated differently in different parts of the world?
- Why do you think that animals revered by one culture might be feared or loathed by another (such as western versus eastern perceptions of the mythical dragon)?
- Is there a connection to ancient cultural animal symbols and our modern tradition of assigning animals or birds to cities and states? Why or why not?
- Are there certain animals that appear in different cultural traditions or myths around the world?
- Do you think an animal's cultural or historical significance affects its status in the modern world in terms of its population and conservation efforts? Why or why not?
- What are the environmental, medicinal, economic and cultural benefits of protecting endangered species?
- Why is it important to recognize Endangered Species Day?

Evaluation / Assessment

Students will be evaluated based on participation in class discussions, group research, and thoughtful artistic and written pieces exploring the cultural and historic significance of animals around the world.

Vocabulary

revered, symbolizes, mythical, folklore, wetlands, paddies, stragglers, expanse, habitat, tally, extinct, reintroduction, surveyors, irrigation, itinerant, lumber, hummock, eking, proximity, comeback, endangered, egalitarian, descendants, bodes, plight

Standards

Grades 6-8

Geography Standard 10 - Understands the nature and complexity of Earth's cultural mosaics.

Benchmark: Knows ways in which communities reflect the cultural background of their inhabitants.

Geography Standard 14 - Understands how human actions modify the physical environment.
Benchmarks: Understands the environmental consequences of people changing the physical environment; understands the environmental consequences of both the unintended and intended outcomes of major technological changes in human history.

Geography Standard 18 - Understands global development and environmental issues.
Benchmarks: Understands how the interaction between physical and human systems affects current conditions on Earth; understands why different points of view exist regarding contemporary geographic issues.

Language Arts Standard 1 - Demonstrates competence in the general skills and strategies of the writing process. Benchmarks: Uses style and structure appropriate for specific audiences and purposes; writes expository compositions.

Language Arts Standard 4 - Gathers and uses information for research purposes. Benchmarks: Uses a variety of resource materials to gather information for research topics; determines the appropriateness of an information source for a research topic; organizes information and ideas from multiple sources in systematic ways.

Grades 9-12

Geography Standard 8 - Understands the characteristics of ecosystems on Earth's surface.
Benchmarks: understands how relationships between soil, climate, and plant and animal life affect the distribution of ecosystems; knows ecosystems in terms of their biodiversity and productivity; knows the effects of biological magnification in ecosystems; knows the effects of both physical and human changes in ecosystems.

Geography Standard 10 - Understands the nature and complexity of Earth's cultural mosaics.
Benchmarks: Knows how cultures influence the characteristics of regions; understands how human characteristics make specific regions of the world distinctive; understands how evolving political and economic alliances may affect the traditional cohesiveness of world culture regions; knows the role culture plays in incidents of cooperation and conflict in the present-day world.

Geography Standard 14 - Understands how human actions modify the physical environment.
Benchmarks: Understands the role of humans in decreasing the diversity of flora and fauna in a region; understands the global impacts of human changes in the physical environment.

Geography Standard 18 - Understands global development and environmental issues.
Benchmarks: Understands why policies should be designed to guide the use and management of Earth's resources and to reflect multiple points of view; understands contemporary issues in terms of Earth's physical and human systems.

Language Arts Standard 1 - Demonstrates competence in the general skills and strategies of the writing process. Benchmarks: Writes compositions that are focused for different audiences; Writes compositions that fulfill different purposes; writes expository compositions.

Language Arts Standard 4 - Gathers and uses information for research purposes. Benchmarks: Uses a variety of news sources to gather information for research topics; synthesizes information from multiple research studies to draw conclusions that go beyond those found in any of the individual studies.

Adapted by Cathy Sheafor from a lesson plan in the New York Times.

ENDANGERED SPECIES CURRICULUM

GRADES 10 – 12

Topic

Endangered Species and the U.S. Endangered Species Act

Goals/Objective

Educate students about endangered species. This includes their habitat, threats to their survival, and ecological and social value.

Educate students about the U.S. Endangered Species Act. This includes a brief history, its purpose and success stories as well as factors both threatening and strengthening this piece of legislation.

Show students how to get involved. This includes information on letter writing, public art displays and habitat awareness.

Suggested Time Allowance: 1 hour

Materials

- Handout 1- Endangered and Extinct Species—two copies, cut up one for class. (<http://www.fws.gov/arkansas-es/esday.html>)
- Handout 2- Understanding the Endangered Species Act & reading materials (<http://www.fws.gov/arkansas-es/esday.html>)
- The Citizen’s Guide to the Endangered Species Act
- On the Endangered Species Day site, link from (www.stopextinction.org)
- Salon.com article “*Inside the secretive plan to gut the Endangered Species Act*” (http://www.salon.com/news/feature/2007/03/27/endangered_species/index_np.html)
- Letter writing material, envelopes with senator’s addresses (link below)

CLASSROOM PRESENTATION

Introductory Vocabulary

Biodiversity: The variety of all life on earth

Biologist: A person who studies living organisms

Native species: A species that naturally occurs in an ecosystem

Invasive species: A species that has been introduced into an ecosystem that it does not naturally inhabit

Extinct species: A type of animal or plant that no longer exists

Habitat: The place or environment where a plant or animal naturally lives and grows, the essential elements it needs to survive including water, food, shelter and space

Stewardship: Responsible management and care of the environment
Endangered Species Act: A law passed to ensure the survival and recovery of endangered and threatened species by protecting the species and the ecosystems they depend upon.

- What does **Extinct** mean?
- Extinct means an animal is gone **forever!** For example, the passenger pigeon was hunted to extinction in the United States. Extinct means there is a big hole in the ecosystem effecting all plants and animals in that ecosystem.
- What does **Endangered** mean?
- Endangered means a species is **in danger** of extinction in the near future. It means that something is attacking its home, its food source, or directly attacking that species. *Ask students to think of examples of how species are being attacked.* For example, Elephants in Africa are endangered because people hunt them for their tusks.
- What does **Threatened** mean?
- Threatened means a plant or animal is likely to become endangered soon. This is a good time to take actions to make sure these plants and animals don't get on the threatened list.

Interactive Game

This game demonstrates the *great loss of plants and animals* around the world. Scientists estimate that over 500 species of plants and animals have gone extinct in the US in the past 200 years. Biodiversity is essential to planetary health.

- Start by handing out cards to students with names of extinct and endangered animals and plants (See Handout 1 - <http://www.fws.gov/arkansas-es/esday.html>).
- Ask students to stand up as the attribute of their species is read off until the entire class is standing.
- Explain that the world has lost a tremendous number of plants and animals from habitat destruction, pollution, non-native species and overharvesting.
- Have students to sit down if their species is extinct.
- The remaining standing students represent the plants and animals the Endangered Species Act is working to protect!

Why is plant and animal diversity important?

Read and discuss the following paragraphs written by Edward O. Wilson, research professor emeritus from Harvard University. Part of an editorial published in *The Washington Post* in August 28, 2003, describes what he calls “the four horsemen of environmental ruin” and discusses the effect on biodiversity.

“Each kind of forest or any other natural ecosystem is a masterpiece of evolution, exquisitely well adapted to the environment it inhabits. The fauna and flora of the world are, moreover, the cradle of humanity, to which we, no less than the rest of life, are closely adapted in our physical and psychological needs. Each species and its descendant species live, very roughly, a million years before suffering natural extinction. Worldwide, habitat destruction combined with the other three of the four horsemen of environmental ruin -invasive species, pollution, and unsustainable logging- have increased the rate of extinction by as much as a thousand-fold, thereby shortening the average life spans of species by the same amount.

At least one percent of America’s native plant and animal species has vanished, mostly during the past century, and a third are classified as vulnerable or endangered. Most native species,

including those still relatively safe, have undergone large reductions in abundance, geographic range and most likely, genetic diversity.”

Create a brainstorm on the board with students highlighting the uses and value of plants and animals. How does biodiversity affect the local economy? Discuss how they are interconnected.

Here are just a few ideas:

- Food
- Clothing
- Medicine - The rosy periwinkle provides the cure for Hodgkin’s disease and certain forms of leukemia, while the Pacific yew helps with the treatment of cancer. A cure for many diseases may lie in a plant or animal waiting to be discovered.
- Healthy Environment – plants and wildlife maintain natural ecosystems for drinking water, flood protection, open space, and recreation.
- Personal Recreation - hiking, fishing, hunting, wildlife watching

The Endangered Species Act

What is the Endangered Species Act?

The Endangered Species Act is a federal law and is the safety net for wildlife, plants and fish that are on the brink of extinction. Upon signing the Endangered Species Act (ESA) on December 28, 1973, President Nixon stated "Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed." This statement defines the ESA's ultimate purpose, which is to conserve the nation's natural heritage for the enjoyment and benefit of current and future generations.

Why do we need the Act?

We need the Endangered Species Act in order to ensure our children and grandchildren can experience the environment as we have known it, and leave behind a legacy of protecting endangered species and the places they call home. The Endangered Species Act prevents the extinction of fish, plants and wildlife, an important responsibility to uphold because once they are gone they are gone forever.

How does the Act work?

One of the most effective ways to protect species is to protect the places where they live. Species need their habitat as much as you need your house in order to survive. The Endangered Species Act protects the critical habitat that is needed to prevent the extinction of endangered fish, plants and wildlife. We live in this habitat as well and by preserving and keeping it clean we create a healthy environment for ourselves. The Endangered Species Act provides common sense solutions for government agencies, landowners, and concerned citizens to protect and restore endangered species and their habitat. It is based on three key elements:

- **Listing** species as threatened or endangered
- **Protecting habitat** essential for their survival and recovery
- **Restoring healthy populations** of the species

The bald eagle, the peregrine falcon, and the gray wolf have all benefited from the Endangered Species Act; once on the edge of extinction, they have rebounded to the point where populations

are more stable. The Act does more than just protect threatened species; it protects a habitat supporting the greater web of life.

Listing: A declining species has to be added to the official list of endangered and threatened species before it receives any federal protection. Government scientists may propose a species is listed because of the threats to its survival such as habitat loss, pollution, invasive species and overharvesting. Any person may petition the government to list a species as either endangered or threatened. The decision to list a species is supposed to be based solely on the best available science. The Fish and Wildlife Service maintains a current list of endangered and threatened species at endangered.fws.gov.

Critical Habitat: The ESA requires the designation of critical habitat for all endangered and threatened species. Critical habitat is an area "essential to the conservation of the species", including areas that are not currently occupied by the species. Simply put, critical habitat is habitat necessary for the recovery of an endangered or threatened species. Since habitat loss is the most prevalent cause of endangerment -- affecting more than 95% of all listed species according to one study -- critical habitat must be protected if endangered and threatened species are to be conserved.

Recovery Planning: Recovery plans, as part of the Fish and Wildlife Service's Recovery Program, are designed to reverse the decline of a threatened or endangered species and eventually bring the population to a self-sustaining level. Each plan should include:

- a description of the species' current situation, including any relevant scientific data;
- a recovery objective (for example, a target population number), and a list of criteria for indicating when the objective has been achieved;
- an implementation schedule, including priorities of tasks and cost estimates;
- an appendix identifying appropriate external reviews of the plan, and any additional pertinent information.

A recovery plan may include a myriad of different options including reintroduction, habitat acquisition, captive propagation, habitat restoration and protection, population assessments, research and technical assistance for landowners, and public education. Unfortunately, implementation of a recovery plan is not mandatory, so it is up to concerned citizens to make sure the actions are taken to save endangered species

EXERCISE

Reading

- The Citizen's Guide to the Endangered Species Act
- Read one or more Success Stories Species Profiles

Essay/Discussion Questions

1. Species are put on the endangered list if they are likely to become extinct in "the foreseeable future." What are some threats to species that could cause them to go extinct?

2. What is critical habitat? Why is critical habitat so important to the recovery of a species?
3. Why is it important for both state and federal agencies to manage recovery programs? What might happen if only state agencies managed the recovery? What might happen if only national agencies managed the recovery? How does a species range (the entire area it lives and roams in) relate to this issue?
4. Many local economies thrive because of the wildlife and wild places in the community, for example salmon supports both commercial and recreation fishing. How does the Endangered Species Act protect local economies?
5. Many projects can cause habitat destruction that in turn leads to loss of species. Currently the Endangered Species Act does not allow such projects. Why is this important?

Getting Involved

Here are a few ideas of how to get involved

- Pictures and murals to post up around your school and community
- Art, music, and activities always pique interest. Brainstorm ideas about how to spread awareness through your community through art.
- Adopt an endangered species
- "Adopt" an endangered species native to your area, find out how you can help conserve it, and inform the citizens in your community about your adopted plant or animal with speeches, newspaper articles, art, signs etc.
- Contact a local conservation group about habitat restoration projects you can get involved in. For a list of endangered species groups, visit www.stopextinction.org.
- Letter writing to senators
- A simple statement by each student about why they want a particular species protected will make a meaningful impact. Maybe include pictures of your favorite endangered species.
- Sample letters can be found on the Endangered Species Coalition website at www.stopextinction.org
- Senators contact information can be found at: <http://www.senate.gov/>

For More Information:

U.S. Fish and Wildlife Service – Arkansas Ecological Services Office
<http://www.fws.gov/arkansas-es/esday.html>

Endangered Species Day website www.stopextinction.org/endangeredspeciesday

Endangered Species Coalition Citizen's Guide to the ESA and 30 Endangered Species success stories report www.stopextinction.org/

U.S. Fish and Wildlife Service Endangered Species Program
<http://www.fws.gov/Endangered/>

U.S. Fish and Wildlife Service Kids Corner
<http://www.fws.gov/endangered/kids/index.html>

Endangered Species Glossary for students
<http://www.fws.gov/endangered/kids/pdf/glossary.pdf>

The Endangered Species Act of 1973
<http://www.fws.gov/Endangered/esa.html>

Environmental Protection Agency endangered species coloring book
<http://www.epa.gov/espp/coloring/>

Union of Concerned Scientists Science in the Endangered Species Act is Threatened
http://www.ucsusa.org/scientific_integrity/restoring/science-in-theendangered.html

Prepared by the Endangered Species Coalition www.stopextinction.org