

Animals in Danger

ZOOGUIDES volume 7

TEACHERS NOTES



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INTRODUCTION

The ZooGuide™ series of software from REMedia provides a resource for K-12 teachers and librarians on life science topics. This Teacher's Guide offers suggestions, activities, and references for integrating the Animals in Danger ZooGuide into your curriculum. Other titles in the series include:

- Butterflies of the World
- Whales and Dolphins
- Mammals of Africa
- The Rainforest
- World of Reptiles
- Life in the Desert
- Natural History of Yellowstone

Use this program:

- as an encyclopedic reference;
- to teach major biological concepts such as Ecology, Biodiversity, Zoology, and Evolution; and
- to understand and appreciate the delicate balance between man and the rest of nature.

What is in this Guide

The Animals in Danger Teacher's Guide offers suggestions for incorporating the accompanying CD-ROM into Life Science and Biology classes. These ideas are divided into two general levels, K-6 and 7-12. Feel free to adapt any of the activities to meet your specific curricular goals (eg, you may want to use a suggestion for a K-6 group that was written at a 7-12 level or vice versa).

In addition, this guide provides information on how to use the various sections of the program to complete activities, making the CD-ROM more useful than a mere reference tool. Read from a chapter, look at and listen to movies and use the chapters on the different groups of endangered animals to get a more complete picture of why they are endangered.

Finally, use this Teacher's Guide as a quick reference for the data provided in the ZooGuide. A list of helpful reference materials is provided so that your students can do more in-depth research once the program has sparked their imagination and interest.

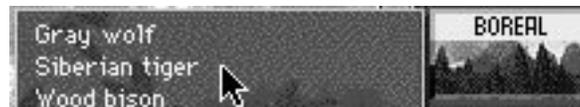
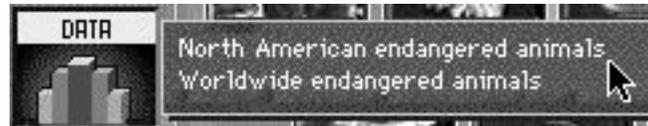
Note that the chapter on habitats has detailed information on the different biomes of the world. This CD-ROM is not just about endangered animals, but also contains valuable information on why their habitats are also threatened.

USING THE ANIMALS IN DANGER ZOOGUIDE

Navigating

There are “chapter” buttons on the left and right hand sides of your screen. Click on any of them to access various kinds of information. To see the contents of a chapter or biome:

1. Click on a chapter button and a list of subtopics will appear. Click on a Biome button to access the first species listed in that habitat.



2. Click on the topic or species you are interested in and the information, including text and graphics will appear in the center of the window.
3. To choose a different topic, chapter, or biome; repeat steps 1 and 2 above.

Playing Movies/Animations

Chapter topics have text and are accompanied by a movie, animation, or still pictures and narration.



To access these enhancements, click once on the picture and press the play button. Use the other buttons located under the picture to control the volume, to pause, or to jump forward or backward in the movie.

Viewing Photographs and Pictures



There are photographs or pictures accompanying the text for many of the individual animal species. Photographs can be expanded by clicking on any of the small thumbnail versions on a page. To return to the smaller view of the picture, click on it again. To access a map showing where this species lives click on the globe button at the end of the title bar containing the animal's name. The map also has a button which accesses a list of zoos in the US that have examples of this animal species.

Click here for places
to see these animals

Use this feature to find endangered species at your local zoo.

The pictures, photographs and text contained in the Animals in Danger ZooGuide can be printed using the print button (see next section). Use the pictures with the activities described in this Teacher's Guide or for other class projects.

Getting Help



There is on screen help available in the ZooGuide. To access it, click once on the button next to the title of the ZooGuide. It uses text and graphics to explain the functions of the different sections of the program. Click on the same area again to return to the program. In addition, the Introduction chapter of the ZooGuide explains the parts and basic functions of the window.

Other Buttons

There are four other buttons in the viewing window. Click once on a button to activate it. They allow you to:



print the current page of the ZooGuide, or a photograph if the photograph is expanded to fill the center of the screen.



get an index of all the topics and endangered species contained in the program,



take a quiz for the current chapter of the ZooGuide, and



exit the program.

INTEGRATING PARTS OF THE ZOOGUIDE

The Animals in Danger ZooGuide has several zones of student-program interaction. They can be used singly or integrated to create more in-depth explorations of the program. For example, if students are interested in finding out which animals listed in the Data chapter live in a certain biome, they can use the Biome buttons on the right side of the page to find out. This provides more in-depth information than if you use only one part or the other of the ZooGuide. It also provides a context for launching into additional research using references listed at the end of this Teacher's Guide.

K-6 classes may want to use the parts of the program individually especially with younger students, increasing the integration with more interested or older students. The pictures, movies, and animation are probably the most useful parts of the program at this level. They provide interesting facts and attention grabbing footage.

7-12 classes can explore the chapters, text, graphics and individual habitat information separately or together depending on your focus. The activities included in this guide give other examples of how to integrate the parts of the ZooGuide to create projects and lessons that will motivate your students. It also provides suggestions for integrating Animals in Danger into your Life Science or Biology curriculum.

In addition to the activities described below, the Animals in Danger ZooGuide contains a chapter called Projects which has six different projects for your students to do. All the information needed to complete these activities is given in the ZooGuide or referred to. Try some of these activities to spark your students' interest in learning more about endangered animals around the world.

ACTIVITIES FOR K-6 TEACHERS

This section of the Teacher's Guide offers 15 activities and ideas for integrating the Animals in Danger ZooGuide into your life science curriculum. The activities range from an impact debate to creating a story about an endangered animal.

Each activity lists the topic covered, the sources of information it will use, materials you will need, a step-by-step description of the activity, and discussion questions to help you conclude and find out what your students have learned in the process.

Modify or edit these activities to tailor them to your specific needs. Also look at the 7-12 activities for other ideas and ways to use the ZooGuide with your students.

K-6 Activity 1:

TOPIC: Getting to Know the Animals in Danger CD

SOURCE: Animals in Danger ZooGuide

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will answer questions about endangered species by searching the Animals in Danger ZooGuide. Looking up answers to these questions will also enable students to become familiar with the parts and function of the ZooGuide.

- a. What is a species?
- b. What does it mean if a species is endangered?
- c. Name 3 endangered species found in grasslands.
- d. How can you help endangered animals?
- e. Use the index to look up DDT. What is it? How does it effect animals?
- f. What are the 11 types of habitats discussed in this ZooGuide?
- g. What is a habitat?
- h. Name three zoos in the USA where you can see brown pelicans.
- i. What are the four main negative impacts on animals?
- j. Go to the Data chapter. Enter the name of your favorite animal. Is it endangered?

The answers to the above questions are as follows:

- a. A species is a group of animals that can mate with each other and have offspring that can reproduce.
- b. A species is endangered if it is likely to die out if steps are not taken to improve its chances for survival.
- c. African wild dogs, black-footed ferrets, bonteboks, cheetahs, giant elands, maned wolves, ocelots, Przewalski's horses.
- d. To help endangered animals, you can write to your government, learn about them, volunteer to clean up habitats, and so on.
- e. DDT is a plant pesticide. It gets into the water supply where fish ingest it. Birds that eat the fish also get the DDT. When these birds lay their eggs the DDT makes their shells weak and many baby birds never hatch.
- f. Boreal, Chaparral, Desert, Grasslands, Islands, Oceans, Mountains, Polar, Rainforests, Wetlands, Woodlands.
- g. A habitat is where an organism lives (home).
- h. A list of zoos with brown pelicans can be found by selecting the Ocean biome button. Click on the globe button and click on the "Click here for places to see these animals" button at the bottom right of the map screen.
- i. The four main negative impacts are habitat destruction, pollution, logging, and collecting and hunting.
- j. Answers will vary.

DISCUSSION: Review the answers to the questions listed above. If your students had any trouble finding a particular answer, show them where to look it up. They should be ready to use the ZooGuide for more specific projects now.

Name:

Date:

Getting to Know the Animals In Danger ZooGuide

1. What is a species?
2. What does it mean if a species is endangered?
3. Name three (3) endangered species found in grasslands.
4. How can you help endangered animals?
5. Use the Index to look up DDT. What is it?

How does it affect animals?
6. What are the 11 types of habitats discussed in this ZooGuide?
7. What is a habitat?
8. Name three zoos in the USA where you can see brown pelicans.
9. What are the four main negative impacts on animals?
10. Go to the Data chapter. Enter the name of your favorite animal. Is it endangered?

K-6 Activity 2:

TOPIC: Animals in Danger Vocabulary

SOURCES: Animals in Danger ZooGuide
Introduction - Some Definitions and Extinction chapter in the Animals in Danger ZooGuide

MATERIALS: Several sheets of paper made into a book
Pen or pencil
Colored pens or pencils for illustrations (optional)

ACTIVITY: In this activity students will create a dictionary of terms from the Animals in Danger ZooGuide. They can use this dictionary to look up words they are not sure of as they complete other activities in the Guide.

Use the information in the ZooGuide to define the following terms.

- a. Extinct
- b. Woodlands
- c. Threatened
- d. Rare
- e. Habitat
- f. Biodiversity
- g. Islands
- h. Species
- i. Pollution
- j. Ecosystem
- k. Boreal forest
- l. Chaparral
- m. Desert
- n. Grasslands
- o. Biome
- p. Oceans
- q. Mountains
- r. Polar
- s. Endangered
- t. Wetlands
- u. Rainforests

Students should list their entries in alphabetical order just like a real dictionary would. They can add illustrations for some or all of their terms to make the dictionary more colorful and interesting to use.

DISCUSSION: When your students have finished making the dictionary, discuss the following questions.

1. How many words did you know before you made the dictionary?
2. What words were new to you?
3. What else can you do with this dictionary?

K-6 Activity 3:

TOPIC: Drawing Habitats

SOURCES: Habitats - A place to call home and Habitats and Biomes chapter in the Animals in Danger ZooGuide.
The Biome buttons on the right side of the Animals in Danger ZooGuide.
Other references listed in this Teacher's Guide.

MATERIALS: Drawing paper
Pens, colored pencils, or crayons
Construction paper
Glue and scissors

ACTIVITY: In this activity students will draw the habitat of an animal they choose from a list you provide. Use the sections of the ZooGuide mentioned above to accurately depict each habitat.

Divide the class into three to five groups, depending on the number of animals you have chosen. Let each group choose the animal they want to work on or assign them an animal. Include humans as one of the listed animals.

Each group should look up its animal in the ZooGuide using the Index feature or by searching the lists from each biome. Use the Habitats and Biomes section of the Habitats chapter to see a picture of each biome. (The map on this page includes a picture of the selected biome that can be enlarged by clicking on it. To select a different biome, click on its name in the map legend.)

Once the groups have viewed their animal and its habitat, they can make their drawings. If they want to print a picture from the ZooGuide, they can use the Print button at the lower left of the ZooGuide window.

Students can display their completed pictures on a bulletin board or around the room.

DISCUSSION: Discuss the following questions when you have completed the activity.

1. How are the habitats similar?
2. How are they different?
3. Why do people live in many different habitats when most animals only have one?

K-6 Activity 4:

TOPIC: Comparing Humans and Other Animal Populations

SOURCES: Habitats-Habitats and Biomes chapter in the Animals in Danger ZooGuide.
Biome Chapters in the Animals in Danger ZooGuide.
References listed in this Guide.

MATERIALS: Printer
Paper
World map
Pens, colored pencils or crayons
Glue and scissors

ACTIVITY: In this activity students will compare human population centers with the habitats where other animals live. This activity requires a human population map that students can overlay with the biomes shown on the map in the Habitats and Biomes section of the Habitats chapter in the ZooGuide.

Students should begin this activity by printing the map in the Habitats and Biomes section of the Habitats chapter. They can either draw the different biomes onto a human population map or overlay the two maps if they are the same size.

Next, students can print and paste or draw animals that live in each of the biomes onto the merged map. Use the Biome buttons on the right side of the ZooGuide to get lists of the animals that live in each. Click on the globe button for an individual species to see a map of where it lives.



DISCUSSION: Once students have completed the human population/biome map, they can discuss the following questions as a group.

1. In which types of biomes do most people live?
2. In which types of biomes do most animals live?
3. Are these biomes the same or different? Why?

K-6 Activity 5:

TOPIC: Negative Impacts Debate

SOURCES: Debates - Habitat Destruction, Pollution, Logging, and Collecting and Hunting chapter in the Animals in Danger ZooGuide. References listed in this Guide.

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will form arguments for or against one of the negative impacts on animals and their habitats listed in the Debates chapter in the Animals in Danger ZooGuide. They will then have a mock debate to demonstrate their position.

Begin this activity by discussing what a debate is. Explain what debates are used for and their basic structure. Then divide your class into two groups, one for the issue and one against it. As a whole class read about the four issues in the Debates chapter of the ZooGuide and choose one you want to work with. Discuss any parts of each kind of impact that are not clear before you begin developing arguments.

Students should come up with at least 5 arguments, using the ZooGuide and other reference materials, that support their view of the issue. Once they have finalized these arguments, meet with them to try and poke holes in their evidence.

When both sides are ready have the debate. You can act as arbitrator or ask another teacher or administrator to do so. Flip a coin to see which team will start and begin the debate. Ask a panel of students and teachers to watch the debate and decide which side presented the better argument.

DISCUSSION: When you have completed the above activity, discuss the following questions.

1. What is the purpose of a debate?
2. Why is it important to debate issues like the one you chose?
3. How does the government use debates to decide important issues like the one you chose?
4. Which side had the easier argument? Why?

K-6 Activity 6:

TOPIC: Environmental Organization Letter

SOURCES: Debates-Organizations chapter in the Animals in Danger ZooGuide
General information from the Animals in Danger ZooGuide

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will compose a letter to one of the environmental organizations listed in the ZooGuide. The letter will request information on what the students can do to help animals in danger.

Begin this activity by looking up the environmental groups listed in the Organizations section of the Debates chapter. Choose two or three that sound interesting and use other references to find out more about them. To help do this answer the following questions:

1. Is this organization national or international?
2. What is the objective of this group?
3. Is there a local chapter of this group in your town?
4. How long has this group been around?

Once you have gathered information about the environmental group you are interested in, gather data from the ZooGuide about which to write them. Compose your letter as a class or have students write individual letters (you could divide the class into groups and have each one write a different organization).

When you get a response from the organization(s) you have written, add this information to what you have learned from the ZooGuide.

DISCUSSION: When you have completed the above activity, answer the following questions as a group.

1. Which organization gave you the most information?
2. What have you learned from the organization you wrote to that you didn't know before?
3. How do these organizations get money to run?

K-6 Activity 7:

TOPIC: What You Can Do

SOURCES: Debates - What can you do? chapter in the Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: 2 large sheets of paper
2 different colored markers
Paper
Pen or pencil

ACTIVITY: In this activity students will develop a list of ways in which they impact their habitat on a daily basis. These impacts will be divided into positive and negative ones and ways to reduce negative ones will be considered.

Begin this activity by reading and listening to the information presented in the What can you do? section of the Debates chapter in the ZooGuide. Put together the puzzle on this page to see a list of 10 things you can do to help animals in danger.

Once students have absorbed the information presented ask them to make a list of things they (or their families) do everyday that impact animals. Use two pieces of large paper, one for positive impacts and one for negative impacts. As students brainstorm activities related to the environment, ask them if they are positive or negative. Place each item on the appropriate paper.

Look at the list of negative impacts. Discuss what students and their families can do to reduce or eliminate the factors that harm animals and their habitats. Choose from among the 10 suggestions made in the ZooGuide to help solve these negative impacts.

DISCUSSION: When you have finished the above activity, discuss the following.

1. Which list had more items, the positive or negative one? Why?
2. What can you do to make things better?
3. Implement one of the 10 suggestions from the What can you do? section of the Debates chapter at home or at school and discuss how this change has helped animals and their habitats.

K-6 Activity 8:

TOPIC: Improving a Habitat

SOURCES: Debates - Involving Local People chapter in the Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Poster paper
Markers, colored pens, or pencils
Tape, scissors, and glue

ACTIVITY: In this activity students will start a school or community based project to improve a habitat for the plants and animals that live there. They will need to involve local volunteers and environmental organizations in the effort. They may need to contact the local or state government to get approval to make changes to a site.

Begin this activity by watching and reading the information presented in the Involving Local People section of the Debates chapter in the ZooGuide. It explains the importance of getting local people interested in preserving the natural habitats around them.

Next, make a list of local habitats that need improving. This list could include small or large areas such as the school yard or a local creek. Include in this list what needs to be done to improve the habitat; planting trees, cleaning up garbage, etc. Discuss which of these habitats you want to help and begin organizing.

You will need to get and coordinate volunteers, advertise your project with posters and letters to the community, choose a date or series of dates on which to make the improvements, and check with local and state government agencies to make sure what you are doing is legal.

Once all of this is done, you can begin to refurbish the place you have chosen. Take pictures of it before and after you have done your work. Make a bulletin board display showing the changes and how they took place.

DISCUSSION: When you have completed the project, discuss the following as a group.

1. How did you involve local people in your project?
2. Was your project a successful one?
3. What more could you do to improve this habitat?

K-6 Activity 9:

TOPIC: Gathering Data

SOURCES: Data - North American Endangered Animals chapter in the Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Paper
Pen or pencil
Graph paper
Poster paper

ACTIVITY: In this activity students will use the North American Endangered Animals database in the ZooGuide to collect data on endangered animals in your state. In addition, students will compare total numbers of endangered animals in several states and graph the number of endangered birds in ten US states.

Begin this activity by familiarizing your class with the parts of the database in the Data chapter of the ZooGuide. It allows you to make the following selections of criteria to do a search:

1. Select a specific animal by name, phylum (mammal, bird, reptile, etc.), or all animals;
2. Select a category: endangered, threatened, or both; and
3. Select a region or state to search.

Then click on the Search button and the two scroll boxes on the right will display all matching animals that fit your selections above. Beneath each scroll box is a print button that allows you to print the information you have gathered.

For your first search, find a representative of each animal phylum that is endangered or threatened in your state. If there are some phyla not included make a note of it. Next, use the all animals button to find out how many endangered and threatened species there are in your state. Print this data.

Now compare the results from your state with those of several other states in the USA. Choose states in different regions to see how geography effects endangerment (if it does). Print this information and compile it into a chart listing each state, the animals endangered by phylum, and the total number for each state.

As an extra activity, students can use the database to graph the number of endangered birds in ten US states. An alternative to this would be to find the numbers of endangered birds by region.

DISCUSSION: When you have completed the above activity, gather your data and answer the following questions.

1.
 - a. Is there any correlation between region and number of endangered species?
 - b. What is it?
2. Does your state have lots of endangered species compared with other states? Why or why not?
3. Which of these endangered species would you like to help save?

K-6 Activity 10:

TOPIC: Zoo Field Trip

SOURCES: Biome Chapters in the Animals in Danger ZooGuide
Index in the Animals in Danger ZooGuide

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will plan a trip to an area zoo which has specific endangered animals that they can observe. Make a photo-log of the trip or give students a list of questions to answer at the zoo.

Begin this activity by brainstorming a list of endangered animals you are interested in seeing in person. Your list could include animals such as the bald eagle, the timber wolf, or the desert tortoise to name a few. Once you have compiled a list of interesting animals, use the Biome chapter buttons located on the right side of the ZooGuide to find them. Alternatively, you can use the Index button to find the animals you are interested in. When you come to a name you want, click on it and the ZooGuide will automatically open the correct page of information.

When you have found an animal you are interested in, click on the globe button to see a world map showing where it lives. Next, click on the "Click here for more information" button to see a list of zoos in the US which have examples of this animal. Keep searching the ZooGuide until you find an animal at a zoo near you.

Make a list of questions you want to answer at the zoo and take them with you when you go. If you have a camera available, use it to take pictures of the trip so that students can make a photo-log or bulletin board of the trip.

DISCUSSION: Discuss the following questions when you return from the zoo trip.

1. What did you learn about the animal you chose that you didn't know before?
2. Did the animal look the same as pictures you had seen?
3. What observations did you make about the animal as you watched it?
4. What other endangered animals did the zoo have?

K-6 Activity 11:

TOPIC: Your Habitat

SOURCES: Biome chapters in the Animals in Danger ZooGuide
Habitats - Habitats and Biomes chapter in the Animals in Danger ZooGuide

MATERIALS: Paper
Pen or pencil
Drawing paper
Colored pens, pencils, or crayons

ACTIVITY: In this activity students will identify the type of biome they live in and what plants and animals they share it with. They will draw a picture showing their habitat with representative plants and animals included and labeled.

Begin this activity by finding your biome type on the map of the world in the Habitats and Biomes section of the Habitats chapter in the ZooGuide. If you click on the name of your biome, the map will display only that biome. There are R/F° buttons on the map which give rainfall and temperature information about different parts of this biome.

Now that you know what biome type you live in, use the appropriate Biome chapter button to find examples of animals that live there. Use the Globe button on an individual animal's page to see where it lives. If it isn't a native of your area of the world don't include it in your drawing.

Students can print pictures of animals from the ZooGuide, color them and include them in their drawings. They can also draw the animals and plants they see in the ZooGuide to make an interesting picture of their biome habitat.

DISCUSSION: Once students have completed their drawings they can display them around the room and answer the following questions as a group.

1. What kind of temperature and rainfall does your biome get?
2. Is this more or less than a desert biome?
3. Is this more or less than a rainforest biome?
4. What is special about your biome/habitat?

K-6 Activity 12:

TOPIC: Index Search

SOURCES: Index in the Animals in Danger ZooGuide
Data chapter in the Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will use the Index in the ZooGuide to find an animal they have never heard of before. They will do research on it and write a report about it.



Begin by clicking on the Index button found below the chapter buttons on the left side of the ZooGuide page. It lists all of the animals found in the ZooGuide. Move through the list using the up and down arrow buttons until you find an animal you have never heard of before. Look it up in the ZooGuide by clicking on its name and write a report that includes the following information:

1. Where the animal lives,
2. Its status (endangered, threatened, rare, etc.),
3. Which zoos have specimens,
4. Draw or print a picture of the animal in its native habitat, and
5. Give reasons why it is in danger (hunting, loss of habitat, poison from the environment, etc.).

The Data chapter also includes information about specific animals. Look up some of your information there too. Use at least 2 other sources to add to the information gathered in the ZooGuide. Some helpful books are listed at the end of this Teacher's Guide that your students can use.

DISCUSSION: Students can present their reports to the class and answer questions about the animal they chose as a way to wrap up this activity.

K-6 Activity 13:

TOPIC: Environmental Newsletter

SOURCES: Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Paper
Pen or pencil
Typewriter or computer word processor
Printer
Copier

ACTIVITY: In this activity students will create a school newsletter with articles on topics they found most interesting in the ZooGuide. It can be four or more pages and be a one time event or a monthly production depending on your time constraints.

Begin this activity by brainstorming topics for the newsletter. Its focus should be animals in danger and the contents of the ZooGuide. Some possible suggestions for content include:

- a. Picture drawing contest
- b. Crossword puzzle
- c. Articles about local and national problems facing animals
- d. Poems about the environment
- e. Matching vocabulary words with their meaning

You and your class can develop as many ideas as you want for your newsletter. Use the Animals in Danger ZooGuide as a reference for facts and interesting trivia. Make the newsletter look professional by studying published newsletters from other sources.

Assign groups of students different tasks for completing the newsletter: writers, layout people, editors, typists, printers, and distributors. This project can be a fun and creative way for your students to learn more and apply what they have learned about endangered animals.

DISCUSSION: Get feedback from other classes in your school about the content and effect of your newsletter. Is there enough interest to do another one? Maybe other classes would like to start their own newsletter. Have your students teach them how to get started.

K-6 Activity 14:

TOPIC: Animal in Danger Story

SOURCES: Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Paper
Pen or pencil
Markers, colored pencils, or crayons

ACTIVITY: In this activity students will use their imaginations to write a story about an animal in danger. They should make it a personal story told from the animal's point-of-view, but include facts from the ZooGuide and other references to make it authentic.

Begin this activity by selecting a book or story about an endangered animal. Read it to the class and discuss its content.

1. Did you like the story? Why?
2. What was the problem in the story?
3. How was it resolved?
4. How did the story make you sympathetic to the animals in it?

Now that your students have analyzed a story about an endangered animal, they are ready to write their own. They should choose an animal that they are familiar with or have discovered in the ZooGuide. They can include facts and pictures from the ZooGuide or other references. Stories can focus on a family, their life in a troubled world, or their interaction with the humans that are helping or harming them, just to name a few ideas. Let students' imaginations flow to create interesting and creative stories that will entertain and teach.

You can work with students to help them edit their stories to make them more interesting, concise, etc. Then they can put the story together with pictures and bind it to make it look like a book.

Additional Activity:

Have students exchange stories and write sequels to them.

DISCUSSION: Students can read their books to the class or make them available in your class library for other students to read. Discuss the following questions with the class as a whole.

1. What did you learn by writing this story?
2. Why did you choose the animal you did to write about?
3. Would you choose to write about the same animal again? Why?

K-6 Activity 15:

TOPIC: Animals in Danger Project

SOURCES: Projects chapter in the Animals in Danger ZooGuide
References listed in this Guide

MATERIALS: Paper
Pen or pencil

ACTIVITY: In this activity students will contribute additional projects to the Projects chapter in the ZooGuide. These will be used by subsequent classes that explore the ZooGuide.

Begin this activity by looking at the projects shown in the Projects chapter of the ZooGuide. There are six of them with focuses ranging from animals to habitats to the internet.

Students should choose a project to complete, paying attention to its content. Once they have completed a project, they can add to it, change it, or create a new one. Use references from the ZooGuide and other sources to include facts in each project. Students can work alone, in pairs, or small groups to complete this activity.

The finished product should look professional (e.g., well written, illustrated with pictures where appropriate, and interesting to do). Save these projects with the ZooGuide for future classes or other groups of students to complete.

DISCUSSION: When students have completed their projects, discuss the following with them.

1. Why did you choose a particular project topic?
2. What did you learn as you created your project?
3. What do you hope other students will learn by doing your project?

ACTIVITIES FOR 7-12 TEACHERS

This section of the Teacher's Guide offers 15 activities and ideas for integrating the Animals in Danger ZooGuide into your Biology curriculum. The activities range from hosting a panel discussion to exploring a database .

Each activity lists the topic covered, the sources of information used, a step-by-step description of the activity, and a conclusion section with questions to help you find out what your students have learned in the process. Modify, delete, or edit these activities to tailor them to your specific needs. You can also look at the K-6 activities for other ideas and ways to use the ZooGuide with your students.

7-12 Activity 1:

TOPIC: Using the Animals in Danger CD

SOURCE: Animals in Danger ZooGuide

ACTIVITY: In this activity students will answer questions about endangered species by searching the Animals in Danger ZooGuide. Looking up answers to these questions will also enable students to become familiar with the parts and function of the ZooGuide.

Use this activity when studying Biodiversity, Ecology, or Environmental studies.

- a. What is a species?
- b. What does it mean if a species is endangered?
- c. Name 3 endangered species found in deserts.
- d. How can you help endangered animals?
- e. Use the index to look up Exxon Valdez. What is it? How did it affect the Alaska coastline?
- f. What are the 11 types of biomes discussed in this ZooGuide?
- g. What is a habitat?
- h. Name three zoos in the USA where you can see Gaurs.
- i. What are three of the positive ways to save animals in danger?
- j. Go to the Data chapter. Find the name of a reptile on the Worldwide Endangered Animals list.

The answers to the above questions are as follows:

- a. A species is a group of animals that can mate with each other and have offspring that can reproduce.
- b. A species is endangered if it is likely to die out if steps are not taken to improve its chances for survival.
- c. Arabian Oryx, Desert Gazelle, Desert Tortoise, Devil's Hole Pupfish, Grevy's Zebra, Mexican Blindcat, and Pakistan Sandcat.
- d. To help endangered animals, you can write to your government, learn about them, volunteer to clean up habitats, and so on.
- e. The Exxon Valdez is an oil tanker whose hull ruptured spilling 10 million gallons over 2,400 miles of coastline killing birds, fish, and other sea creatures. Although this disaster occurred in 1989, the repercussions are still being felt today.
- f. Boreal, Chaparral, Desert, Grasslands, Islands, Oceans, Mountains, Polar, Rainforests, Wetlands, Woodlands.
- g. Where an organism lives (home).
- h. A list of zoos with Gaurs can be found by selecting the Rainforest biome button. Click on the globe button and click on the "Click here for places to see these animals" button at the bottom right of the map screen. States with zoos containing Gaurs include: CA, NY, MI, TX, NE, TN, FL, and OK.
- i. The positive impacts are protective laws, organizations, CITES, animals in captivity, habitat and species preservation, involving local people, and getting involved yourself.
- j. Answers will vary.

CONCLUSIONS:

Review the answers to the questions listed above. If your students had any trouble finding a particular answer, show them where to look it up. They should be ready to use the ZooGuide for more specific activities now.

Name:

Date:

Using the Animals In Danger CD

1. What is a species?
2. What does it mean if a species is endangered?
3. Name three (3) endangered species found in deserts.
4. How can you help endangered animals?
5. Use the Index to look up Exxon Valdez. What is it?

How did it affect animals the Alaska coastline?
6. What are the 11 types of habitats discussed in this ZooGuide?
7. What is a habitat?
8. Name three zoos in the USA where you can see Gaurs.
9. What are three of the positive ways to save animals in danger?
10. Go to the Data chapter. Find the name of a reptile on the Worldwide Endangered Animals list.

7-12 Activity 2:

TOPIC: Comparing Populations

SOURCES: Habitats - Habitats and Biomes chapter in the Animals in Danger ZooGuide.
Biome Chapters in the Animals in Danger ZooGuide.
Photocopies of an outline map of the world (see page 50).
References listed in this Guide.

ACTIVITY: In this activity students will compare human population centers with the habitats where other animals live. This activity requires a human population map that students can overlay with the biomes shown on the map in the Habitats and Biomes section of the Habitats chapter in the ZooGuide.

Use this activity when studying Habitats, Populations, and Ecology.

Students should begin this activity by studying the map in the Habitats and Biomes section of the Habitats chapter, and reproducing the different biomes onto the photocopy of the map that can be found at the end of these Teacher's Notes.. They can either draw the different biomes onto a human population map or overlay the two maps if they are the same size.

Next, students can print and paste or draw animals that live in each of the biomes onto the merged map. Use the Biome buttons on the right side of the ZooGuide to get lists of the animals that live in each one. Click on the globe button for an individual species to see a map showing where it lives.

CONCLUSIONS: Once students have completed the human population/biome map, they can discuss the following questions as a group.

1. In which types of biomes do most people live?
2. In which types of biomes do most animals live?
3. Are these biomes the same or different? Why?
4. How does this combined map help clarify the conflict between man and other animals for space?

7-12 Activity 3:

TOPIC: Understanding Biodiversity

SOURCES: Habitats - Biodiversity chapter in the Animals in Danger ZooGuide
Biome chapters in the Animals in Danger ZooGuide

ACTIVITY: In this activity students will define biodiversity as it applies to specific habitats and the role of biodiversity in complex ecological systems.

Use this activity when studying Ecology, Food Chains, and Biomes.

Begin this activity by reading and watching the information presented in the Biodiversity section of the Habitats chapter in the ZooGuide. It gives examples of how animals and plants are intimately connected to form a complex we call a habitat.

Answer the following questions related to this information.

1. What is biodiversity? Why is it important?
2. Give an example of a forest food chain.
3.
 - a. What types of animals do we tend to focus on when we think of endangered animals?
 - b. What is wrong with this limited perspective?
4. If habitat destruction continues as it has over the last few hundred years, what kinds of damage will it do (other than reduce the kinds and numbers of animals and plants alive)?
5. Which biomes are currently suffering the most destruction? Why?

CONCLUSIONS: Discuss students' answers to the questions above and debate any controversial answers. What can be done to change the way we view our world so that more habitats aren't destroyed?

Name:

Date:

Understanding Biodiversity Questions

1a. What is biodiversity?

1b. Why is it important?

2. Give an example of a forest food chain.

3a. What types of animals do we tend to focus on when we think of endangered animals?

3b. What is wrong with this limited perspective?

4. If habitat destruction continues as it has over the last few hundred years, what kinds of damage will it do (other than reduce the kinds and numbers of animals and plants alive)?

5. Which biomes are currently suffering the most destruction? Why?

7-12 Activity 4:

TOPIC: Current Events

SOURCES: Debates chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will gather newspaper articles pertinent to the issues discussed in the Debates chapter of the ZooGuide. They will create an eye-catching and informative bulletin board to display their findings with summaries and questions related to the articles.

Use this activity when studying Ecology, Politics and science, or Current events in science.

Begin this activity by viewing the Debates chapter in the ZooGuide. Students can work in groups or individually on one or more issues raised in the sections of the chapter. Try to insure coverage of both negative and positive impacts on habitats with this project.

Once students have chosen a topic, they should gather information about it in current events periodicals such as newspapers, news magazines, and other journals. Summaries of each article or group of articles should be prepared for display. Students can come up with creative ways to engage other students to read the articles and retain their content. Examples include: crossword puzzles with clues from the articles, trivia questions, colorful photographs, etc.

The bulletin board should be centrally located so that as many students as possible can see it. You could coordinate the timing of the bulletin board with Earth Day festivities to create even more enthusiasm and interest.

CONCLUSIONS: Evaluate how effective the bulletin board was in conveying current events information about habitat destruction and environmental efforts around the world. To do this, brainstorm ways to check general student body knowledge about the issues. Then answer the following questions.

1. How effective was your bulletin board in getting people's attention?
2. What could you have done to make it more appealing?

7-12 Activity 5:

TOPIC: Negative Impacts Debate

SOURCES: Debates - Habitat Destruction, Pollution, Logging, and Collecting and Hunting chapter in the Animals in Danger ZooGuide. References listed in this Guide.

ACTIVITY: In this activity students will form arguments for or against one of the negative impacts on animals and their habitats listed in the Debates chapter in the Animals in Danger ZooGuide. They will then have a mock debate to demonstrate their position.

Use this activity when studying Ecology, and Human Impacts.

Begin this activity by discussing the purpose of a debate. Divide your class into two groups, one for the issue and one against it. As a whole class read about the four negative impact issues in the Debates chapter of the ZooGuide and choose one you want to work with. Discuss any parts of each kind of impact that are not clear before you begin developing arguments.

Students should come up with at least 5 arguments, using the ZooGuide and other reference materials, that support their view of the issue. Once they have finalized these arguments, meet with them to try and poke holes in their evidence.

When both sides are ready have the debate. You can act as arbitrator or ask another teacher or administrator to do so. Flip a coin to see which team will start and begin the debate. Ask a panel of students and teachers to watch the debate and decide which side presented the better argument.

CONCLUSIONS: When you have completed the above activity, discuss the following questions.

1. What is the purpose of a debate?
2. Why is it important to debate issues like the one you chose?
3. How does the government use debates to decide important issues like the one you chose?
4. Which side had the easier argument? Why?

7-12 Activity 6:

TOPIC: Writing a Proposal

SOURCES: Debates - CITES and Organizations chapter in the Animals in Danger ZooGuide
Biome chapters in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will write a proposal to address one issue facing a specific biome. They will send this proposal to the appropriate government and environmental agencies that are directly involved with this issue and ask for current information on projects in place or being planned to address the situation.

To begin this activity, have your students read the information presented in the CITES and Organizations sections of the Debates chapter in the ZooGuide. They help explain how governments and environmental organizations work to make changes where animals are threatened. The Organizations section includes a list of environmental groups that work in the US and internationally. Students can use this list to get the address(es) of the appropriate organizations to send their proposals to.

Next, students should choose a biome from the Biome chapters to focus their proposal on. They can choose an entire biome or a habitat of a particular country such as the rainforests of Madagascar.

Now that students have an idea of the organizations and government agencies involved in deciding environmental issues and have chosen a biome or global location, they are ready to develop a proposal. To help them do this, they should answer the following questions.

1. What are the issues involved in saving the habitat you have chosen?
2. How can they be addressed and changed?
3. What government agencies are involved in legislating these changes?

Students can use the ZooGuide and other references to gather information to include in their proposal. Each proposal should address only one issue to keep it from becoming too expansive. Make at least two suggestions for ways to improve the situation, being careful to word them sensitively. Send the proposals to the government agencies involved and to at least one environmental organization. Along with the proposal include a letter of introduction and ask for information on what this group is already doing to address the situation.

CONCLUSIONS: When students have gotten information back from the agencies they have written to discuss the following.

1. What was the response to your proposal? Was it taken seriously?
2. What did you learn by doing this activity?
3. What would you do differently next time? Why?

7-12 Activity 7:

TOPIC: Global Warming

SOURCES: Debates - Habitat Destruction, Pollution, Logging, and Collecting and Hunting chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will define global warming in the larger context of habitat destruction and other negative impacts on our environment. They will discuss the impact of our short sightedness in the name of "progress".

Use this activity when studying Ecology, Environmental Issues, or Global Warming.

Begin this activity by reading and watching the information presented in the Habitat Destruction, Pollution, Logging, and Collecting and Hunting sections of the Debates chapter in the ZooGuide. Make notes about the impact these issues have on the environment, habitats, and humans. Then answer the following questions.

1. How is global warming related to these four issues?
2. When we destroy habitats and organisms that live there, what effects do we have on ourselves?
3. When and where will habitat destruction end?
4. Will we destroy ourselves in the process?

CONCLUSIONS: Discuss the answers to these questions and debate the issues involved if there is a difference of opinion among students. Then brainstorm some of ways to avoid further environmental destruction and see how your list compares with those listed in the Debates chapter.

7-12 Activity 8:

TOPIC: Acting Locally

SOURCES: Debates - Involving Local People chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will develop an awareness campaign to involve local people in thinking about and trying to improve the local environment.

Use this activity when studying Ecology or Environmental Activism.

Begin by reading the Involving Local People section in the Debates chapter of the ZooGuide. It explains the importance of getting native people of a habitat interested in saving the animals and plants around them. Make note of ideas given for doing this.

Brainstorm as a class or in small groups ways to involve the people of your local community in saving a habitat (e.g., a stream that runs by the school, or a nearby beach). Your ideas should answer this question:

What can you do to save habitats and endangered species by the choices you make everyday?

Students can choose one idea from their list and develop an awareness campaign at school. They can make posters, pass out informational pamphlets, organize clean-up crews and so on. Make the programs a five week school project and gather results as you go.

CONCLUSIONS: Answer the following questions about the success of your campaign(s).

1. Can you measure the impact of your program? How?
2. What kinds of activities most interested other students and staff?
3. Write a survey questionnaire to pass out to students and staff that participated in your campaign. Write questions to help you answer questions 1 and 2 above.

7-12 Activity 9:

TOPIC: Database Search I

SOURCES: Data - North American Endangered Animals chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will use the North American Endangered Animals database in the ZooGuide to collect data on endangered animals in their state. In addition, students will compare total numbers of endangered animals in several states and graph the number of endangered birds in ten US states.

Use this activity in conjunction with studies of Endangered Species and Habitats.

Begin this activity by familiarizing your class with the parts of the database in the Data chapter of the ZooGuide. It allows you to make the following selections of criteria to do a search:

1. Select a specific animal by name, phylum or all animals;
2. Select a category: endangered, threatened, or both; and
3. Select a region or state to search.

Then click on the Search button and the two scroll boxes on the right will display all matching animals that fit your selections above. Beneath each scroll box is a print button that allows you to print the information you have gathered.

For your first search, find a representative of each animal phylum that is endangered or threatened in your state. If there are some phyla not included make a note of it. Next, use the all animals button to find out how many endangered and threatened species there are in your state. Print this data.

Now compare the results from your state with those of several other states in the USA. Choose states in different regions to see how geography effects endangerment (if it does). Print this information and compile it into a chart listing each state, the animals endangered by phylum, and the total number of endangered animals per state.

Students can use the database to graph the number of endangered mammals in 10 US states. Choose the states from the different regions (East, west, central, and mountain) listed in the database. Can you make any general statements about the correlation between human populations in these regions and the number of endangered species?

CONCLUSIONS: When you have completed the above activity, gather your data and answer the following questions.

1.
 - a. Is there are correlation between region and number of endangered species?
 - b. What is it?
2. Does your state have lots of endangered species compared with other states? Why or why not?
3. How does the human population in your state compare with that of other states?

7-12 Activity 10:

TOPIC: Database Search II

SOURCES: Data - Worldwide Endangered Animals chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: This activity is a continuation of Activity 9 above with the exception that students will make comparisons between regions of the world instead of focusing only on the US.

Use this activity when studying Endangered Species and Habitats.

Use the Worldwide database in the Data chapter of the ZooGuide to compare animals in danger in three areas of the world. Use human population maps and compare them with regions containing large numbers of endangered species. Make a chart or graph showing your results.

Do some research outside the ZooGuide on the three regions you chose. Answer the following questions.

1. Which region has the strongest laws protecting endangered species?
2. Is this region in the most trouble environmentally or is it taking a pro-active versus a reactive stand on species protection?
3. What are some of the issues (social, political, economic) facing these regions as they struggle to save habitats?
4. How is CITES (see Debates - CITES chapter in the ZooGuide) connected to worldwide efforts to save endangered species?

CONCLUSIONS: Students can coordinate the answers to these questions with their maps and graphs from above and write a paper summarizing what they have learned.

7-12 Activity 11:

TOPIC: The Endangered Species List

SOURCES: Introduction - Endangered Species List chapter in the Animals in Danger ZooGuide
Projects-Endangered Animals on the Internet chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will compare the endangered species list from 10 years ago with the current one. They will also write the appropriate government agency to find out how the US Endangered Species List is compiled, who regulates its use, and what effect it has on environmental issues in this country.

This activity can be used when studying Environmental issues and politics. The most recent version of the Endangered Species List is out as of August 1996. Get a copy from your local US Fish and Wildlife Service along with one from 1986. If you have internet access, it may be available on-line as well.

Once you have received the two copies of the list compare them. Answer the following questions to help you do this.

1. Are there more organisms listed now than 10 years ago? Why or why not?
2. How many animals and plants have been removed?
3. Why were they removed?
4. What other changes do you notice between the two lists?

Next, write the US Fish and Wildlife Service to find out how the list is compiled, who regulates its use, and what effect it has on logging, pollution and other environmental restrictions. What do you think the answers to these questions will be?

CONCLUSIONS: Discuss the results of the above questions and the information you received from the US Fish and Wildlife Service regarding environmental regulations. Answer the following questions.

1. What happens when a species is placed on the endangered list?
2. How does this impact jobs, habitat protection, building permits, etc.?
3. Do you think the Endangered Species List has been effective in saving organisms on the brink? Why?

7-12 Activity 12:

TOPIC: Create a Project

SOURCES: Projects chapter in the Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will create projects to add to the existing ones found in the ZooGuide. They will use the information from the ZooGuide and other sources to make interesting and imaginative activities for future classes to do.

Use this activity when studying Ecology, Habitats or Endangered Species.

Look at the projects already set up in the Projects chapter. They cover a wide range of topics and activity types. Divide students into small groups or work as a whole class to brainstorm ideas for additional projects. They can be aimed at an elementary, middle or high school populations.

Once groups have decided on a project and its target audience, they can begin working on content. Make sure facts are verified and that the activity is engaging to the participants. Use a computer aided layout program or word processor, if available, to make it look professional.

Save the new projects with the ZooGuide for future groups of students to try. Your students can “test market” their projects to a few classes to see how well they work.

CONCLUSIONS: Discuss answers to the following questions to wrap up this activity.

1. Which projects seem to be the most popular? Why?
2. What was the most challenging part of this activity? Why?
3. What did you learn by doing this activity?

7-12 Activity 13:

TOPIC: Trivia Game

SOURCES: Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will develop a trivia game based on information they gather in the ZooGuide and other references pertaining to endangered species.

Use this activity when studying Ecology, Habitats and Endangered Species.

Divide your class into two teams, each of which will gather 20-40 questions from the ZooGuide on the following topics: Habitats, Animal Phyla, Laws, Geography and Debates. When they have compiled sufficient questions for each of these categories they can type them up and print them on 3"x5" cards.

Students can use a generic game board or create their own and play the game as a review of the ZooGuide or Ecology. Each team will try to stump the other team with the questions they have gathered. The team that answers the most questions wins.

CONCLUSIONS: To conclude this activity discuss the following questions.

1. Which questions were the most difficult to answer? Why?
2. What did you learn about endangered animals that you did not know before you created and played this game?
3. Was the game a good review of Ecology concepts in general? Why, why not?

7-12 Activity 14:

TOPIC: Panel Discussion

SOURCES: Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will select experts to address them on some of the issues presented in the ZooGuide in the form of a panel discussion.

Use this activity when studying Ecology, Environmental Law and Endangered Species.

Use the ZooGuide and other references to find names of environmental groups, government agencies, zoos and other people involved in decision making about endangered species. Invite representatives from 3-5 of these groups to address your class in a panel discussion. You may also want to invite representatives from industries that are effected by environmental law such as loggers and land developers.

As a class develop a list of questions for the panel to answer, focusing on local efforts to save habitats and endangered animals. Questions should be as unbiased as possible and include as many facts and details as possible to back them up.

Set a date for the discussion, send out letters inviting your panelists and host the panel discussion. When the discussion is finished, thank your guests and send them a summary of the event.

CONCLUSIONS: Conclude this activity by discussing the following.

1. What did you learn from the panelists that you did not know before?
2. Why are environmental issues so complex?
3. What can you do to effect change in your local environment?

7-12 Activity 15:

TOPIC: Research Paper

SOURCES: Animals in Danger ZooGuide
References listed in this Guide

ACTIVITY: In this activity students will summarize the main idea of a chapter from the ZooGuide and write a research paper on it.

Use this activity when studying Ecology, Endangered Species or Habitats.

Students should look over the ZooGuide and choose the chapter in which they are most interested. They should review its content thoroughly then do the following.

1. Summarize it, assessing the main point;
2. Choose at least 3 other sources for more information on this subject;
3. Gather information, including facts, supporting details and opinions about the topic; and
4. Write a well organized research paper to explain their findings.

CONCLUSIONS: Once students have written their papers they can present their findings to the class in presentations. They can use visual aids to make it more interesting or simply summarize their research in a 5-10 minute talk. They should ask if there are any questions at the end of their presentation.

References:

The references listed in this section are divided into two parts: K-6 activity references, and 7-12 activity references. The references listed here were found in a local public library and represent a small portion of the books that are available on this topic. If you cannot find a specific reference listed below, try to find a book with similar content in your school or local library.

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