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ZAP!

Zoo Activity Packet

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**Going, Going, Gone**

A Teacher's Resource for  
Grade 3

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## Zoo Activity Packet

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## Learning Objectives

The work sheets and activities in this Zoo Activity Packet are suggested to help students learn that:

1. Certain species of animals have become extinct because they failed to produce enough young to keep pace with the death rate.
2. Extinction may have occurred as a result of natural conditions (for example, the dinosaurs) or as a result of human intervention.
3. Those species that are declining in numbers are classified according to their danger of extinction:

Endangered	
Threatened	(This classification system is used by
Special Concern	the Indiana Department of Natural Resources;
Extirpated	definitions are found in the vocabulary list)
4. Most endangered species are protected by law and a plan is made to help the plant or animal recover.
5. Humans have caused animals to become extinct or endangered by:
  - destroying natural habitats
  - using pesticides
  - over hunting
  - using skins, feathers, or other animal parts for clothing or fashion accessories
  - keeping exotic animals as pets
6. Individuals CAN make a difference in helping endangered species.

# Going, Going, Gone

## Background Information for the Teacher

From 1 BC to 1800 AD, on the average, one animal species became extinct every 55 years. From 1800 to 1900, one species disappeared every year and one-half. From 1900 to the present, one species has become extinct each year. If the current rate of habitat destruction around the world continues, 1,100 species will be lost each year by the turn of the century.

Extinction is really a natural process, and occurs because a species can't adapt to changing environmental conditions. If more offspring die than are born, the species will eventually die out completely. Changes in climate, violent storms, droughts, disease, and lack of food are among the natural causes of extinction; however, these account for only three percent of those species that are extinct or on the endangered list.

The extinction process has been accelerated as human populations increase and compete with wildlife for basic needs. Animals require shelter, food, clean air, and water, and safe sites to raise young. When humans interfere with these needs, the species' very survival is threatened. Needless to say, people are responsible for the remaining 97 percent of endangered animals.

### How Do Humans Interfere?

Animal and plant species are dependent upon each other in a very complex web of relationships. The primary producers, plants, are eaten by herbivores, who are in turn eaten by carnivores. This transfer of energy from one species to another is called a food chain. The disturbance of only one link can adversely affect species along the entire chain.

Humans have broken the chain in a number of ways:

Environmental Pollution. Humans use an incredible amount of energy to power appliances, cars, and machines to keep our society going. Much of the energy comes from nonrenewable resources such as coal, oil, and nuclear reactors. Not only do we pollute the land when we search for coal and oil, but we pollute the air when these fuels are burned (for example, car exhaust produces both carbon monoxide and lead, which can approach hazardous levels in large cities.) Acid rain, a result of carbon monoxide and sulfur deposits in the air, has destroyed the life in whole lakes, as well as countless trees in Canada and the eastern United States.

Industries have long used rivers and lakes as dumping grounds for their wastes. Polychlorinated biphenyls (PCBs), by-products of the manufacture of electrical equipment, paints, and plastics, are just one example of the chemicals dumped into waterways. PCBs are known to cause deformities in water birds and fish; fortunately, it is now illegal to dispose of PCBs in water.

Liquid nitrogen fertilizer used on crops eventually runs off into lakes and rivers, causing algae blooms and an increase in water weeds. This clogs the water so that fish and water-dwelling animals (and the animals that depend on them) cannot survive.

Oil spills can harm fish, marine mammals, and water birds, by coating the water surface and the animals' bodies. Factory output often heats nearby water to such a degree that fish die of thermal pollution. Detergents, garbage, and other waste products make lakes and rivers unfit for supporting life.

Pesticides. In an effort to improve crops, humans have tried to eliminate agricultural pests with chemicals, called pesticides. In all cases, the results have been disastrous. The use of DDT was effective in reducing the gypsy moth population, but it also wiped out moth-eating birds. With no natural predators, the gypsy moths made a comeback, and are now eating their way west, destroying millions of trees.

DDT was also implicated in the decline of birds of prey such as peregrine falcons and bald eagles. Eating highly concentrated forms of the chemical disrupted the birds' ability to metabolize calcium. This resulted in their laying eggs with thin shells that broke easily during incubation. The use of DDT was finally banned, but not until the birds' populations were severely reduced. The bald eagle and other predatory birds are making a comeback, due to efforts by state departments of natural resources and zoos to breed and release the animals into the wild.

Habitat Destruction. People require land - lots of it - for homes, businesses, cars, agriculture, and recreation. As the human population increases, more and more land is developed, and wildlife is pushed from its natural habitats. Some animals can adapt quickly to new conditions, but most are unable to find new homes or new sources of food. Loss of habitat is the primary reason that animals are endangered.

Tropical rain forests are home to approximately 3,000,000 species of plants and animals, more than in any other environment on Earth. These rain forests are being cleared at the rate of one acre EVERY SECOND. At this rate, all rain forests will disappear in just a few short decades. It is estimated that many hundreds of tropical species will become extinct before they are even discovered and described.

Introduced Species. Wild animals have often been introduced into areas by mistake, or to remind people of their native lands. Without natural predators, the animals have sometimes taken over, crowding out the native species. When the first white people came to Hawaii, rats from the ships came ashore and began eating the eggs of defenseless ground-nesting birds. To combat the rats, people brought in mongooses, which were turned loose on the islands. The plan backfired, though, as the mongooses didn't eat the rats, but instead ate the birds' eggs, too.

Over Hunting. Few people alive today remember when vast herds of bison and flocks of passenger pigeons could be found in the United States. Seeing those huge numbers of animals, many settlers had the idea that the populations were limitless and there for the taking. Today, the bison is making a comeback from near extinction (less than 1,000 were alive in 1903); the passenger pigeon unfortunately didn't fare as well, and became extinct in 1914.

"Sport" hunting takes its toll of many larger animals, including gorillas, bighorn sheep, tigers, elephants, and rhinos. Some animal parts are also sought after as souvenirs (giraffe tail fly swatters and ivory carvings, for example) or for their supposed medicinal powers (the aphrodisiac powers of the rhino horn, though unfounded, are legendary; horns sell for \$6,000 a pound). Fortunately, international treaties like the one banning the importation of ivory have had an impact on the problem.

The human quest for beauty has often involved the use of animal parts for adornment. Hundreds of thousands of egrets, spoonbills, hummingbirds, birds of paradise, and herons were slaughtered to provide feathers for fashionable hats in the 1800s. Mammals with spotted or striped fur have long been hunted for coats, and many species of reptiles are killed to make handbags, shoes, belts, boots, and wallets. Sea turtles are also prized for leather, as well as meat, oil, and shells (for jewelry). Eight species of whales are endangered because their oil, blubber, meat, and ambergris are used in cosmetics, as fertilizer, or as dog food.

**Exotic Pets.** Many people are unwittingly contributing to the endangerment of animals by buying exotic pets. Birds are particularly sought after, especially parrots. These beautiful birds are caught in nets, jammed into tiny cages, and transported thousands of miles, sometimes without enough food or proper care. It is estimated that of every ten birds that are caught, only one survives to become a pet. The survival rate for monkeys is even worse: only one out of twenty makes it. Although most countries ban the exportation of these animals, dealers continue to smuggle them out because the demand for wild pets remains high.

Wild animals generally make very poor pets, and their owners are usually not prepared to take care of them properly. The unfortunate animals often die or are given to zoos when their owners tire of them.

## **Legislation**

The first legislative effort to protect animals in the United States came in 1966 with the Endangered Species Preservation Act. It authorized funds for research and to acquire habitats for animals on a newly compiled list of native species threatened with extinction. The Endangered Species Conservation Act of 1969 broadened the provisions of the 1966 act, eliminating the importation of virtually all foreign endangered species into the United States. New York state banned the import of puma, spotted cat, and crocodilian hides with the Mason Smith Act in 1970; cheetah, leopard, snow leopard, tiger, jaguar, ocelot, and margay fur were included in 1972. The federal government enacted the Endangered Species Act of 1973, which provided for a list of “threatened” species (those likely to become endangered), prohibited action that would damage habitats of endangered animals, and encouraged individual states to prepare plans for local species. The act of 1973 has been reauthorized and updated several times. In 1996, a battle raged in the U.S. Congress over proposed changes that some felt threatened the integrity of the Endangered Species Act. When this packet was published, the debate was unresolved.

The United States has been the leader in endangered species legislation, but other nations have realized the importance of giving animals legal protection. In 1973, 80 countries met in Washington, D.C., to attend the Convention on International Trade in Endangered Species of Wild Fauna and Flora, and sign the CITES treaty. Another worldwide organization, the International Union for Conservation of Nature and Natural Resources (IUCN), includes scientists, governments, nongovernmental organizations, conservation experts, and others who monitor the status of ecosystems and species.

## **Success Stories**

Are the laws working? Many animals headed for extinction have been saved because of governmental efforts. The American bison, American alligator, whooping crane, wildebeest (gnu), and giant panda are all examples of animals whose numbers are on the increase because of their protected status.

Several species of animals, such as Przewalski’s horse, the Arabian oryx, and Pere David’s deer, are extinct in the wild, but have been kept alive in zoos. Careful breeding programs at zoos around the world have ensured that captive populations of many endangered animals remain healthy. Projects to return captive born animals to the wild have been undertaken with some success. Several golden lion tamarins (a small monkey) have been reintroduced to the jungles of Brazil, and have given birth to offspring in the wild.

## **How You Can Help**

Individuals CAN make a difference, just by changing their own attitudes about wildlife. Listed below are

some of the many ways people can help save endangered species.

- Learn more about wildlife by reading books, watching TV programs about nature, and visiting zoos and nature preserves.
- Join a wildlife organization.
- Write letters to representatives in government.
- Don't buy animals that have been taken from the wild.
- Don't buy products made from wild animals.
- Recycle whenever possible. Recycling reduces the need to harvest raw materials, thereby saving wild habitat.
- Help others learn about endangered species by writing articles, drawing posters, making bulletin boards, or starting a nature club.
- Support zoos that are breeding endangered species.
- Don't disturb wildlife or their homes.

### **Why Should We Save Endangered Species?**

Many people would argue that the survival of a small fish should not take precedence over the completion of a multimillion dollar dam. The Tellico Dam in Tennessee is a classic and early example of environmental concerns taking precedence over development projects: this project stalled because the snail darter, an endangered species, would have become extinct if the dam was built.

Why save the snail darter, or any other endangered species for that matter? There are many reasons, not the least of which is that as living things, plants and animals have the same right to exist as humans do. All living things are part of an ecosystem: a complex, interrelated web that can be disrupted if even one species is removed. The role that an animal plays in keeping the balance of nature may not be realized until it is gone. Also, having a large number of species in an ecosystem maintains its diversity, and ensures that the system will be able to adapt to changes in the environment.

Humans depend on wild animals and plants for food, medicine, and other products that can't be manufactured. Scientists are only beginning to realize how complex various ecosystems are, and of the potential they hold for future technology. Many species will become extinct before they are even discovered, described, and studied.

Humans also rely on wild things to enrich their lives. It would be hard to imagine a world without the songs of birds, butterflies fluttering in the sunlight, or deer grazing at dusk.

## Vocabulary

Students can be expected to understand and properly use the vocabulary words listed below:

**Adaptation:** changes in the behavior or structure of plants and animals that help them adjust to changes in their surroundings

\* **Endangered:** plant or animal species in immediate danger of extinction; protected by law

\* **Extinct:** plant or animal species no longer in existence

\* **Extirpated:** a species that is extinct in an area where it was once found, but still exists in other areas

**Habitat:** the natural environment (home) of an organism which provides food, water, shelter, and space

**Pesticides:** chemicals that are used to kill various pests

**Pollution:** that which causes the environment to become unclean or unsafe

\* **Special Concern:** a species that has some problems of limited numbers or habitats, and that needs to be closely watched

**Species:** a group of animals that have similar characteristics and can produce offspring

\* **Threatened:** a species that is likely to become endangered in the near future; protected by law

\* *Terms used by the Indiana Department of Natural Resources to classify animals and plants.*

# Endangered Animals at the Fort Wayne Children's Zoo

## Mammals

Bobcat  
 Sumatran tiger\*  
 Cotton-top tamarin\*  
 Ring-tailed lemur\*  
 White-handed gibbon  
 Siamang  
 Orangutan\*  
 Flying fox fruit bat  
 Dama gazelle  
 Red panda\*  
 Binturong  
 North American river otter\*\*  
 African Wild Dog\*  
 Leopard\*

## Classification

Endangered in Indiana  
 Endangered  
 Endangered  
 Endangered  
 Endangered  
 Endangered  
 Threatened  
 Endangered  
 Endangered  
 Threatened  
 Extirpated in Indiana, recently reintroduced  
 Endangered  
 Threatened

## Birds

Military macaw  
 Scarlet macaw  
 Black-footed penguin\*  
 Scarlet ibis  
 Chilean flamingo  
 Bali mynah\*  
 Ostrich

Endangered  
 Endangered  
 Threatened  
 Threatened  
 Threatened  
 Endangered  
 Threatened

## Reptiles

Komodo dragon  
 Aldabra tortoise  
 Reticulated python

Endangered  
 Threatened  
 Threatened



\*The zoo participates in a Species Survival Plan (SSP) for these animals. An SSP encourages responsible, planned captive breeding of these critically endangered animals to assure a healthy gene pool.

\*\*The Indiana Department of Natural Resources has planned reintroduction of otters on some of Indiana's wild rivers.

Only species listed in CITES Appendix I (Endangered) are identified as endangered on zoo exhibit labels.

Please Note:  
 The list of species exhibited is  
 subject to change without notice.

## Extinct Animals from Around the World

### Mammals

Aurochs (extinct in 1627)  
 Steller's sea cow (1769)  
 Blue buck (1799)  
 Atlas bear (1870)  
 South African quagga (1880)  
 Sea Mink (1894)  
 Merriam (Arizona) elk (1906)  
 Armagosa meadow mouse (1908)  
 Gull Island meadow mouse  
 Badlands bighorn sheep (1914)  
 Florida red wolf (1917)  
 Plain's wolf (1930)  
 Tasmanian wolf (1933)  
 Bali tiger (1937)

### Number of Extinct Birds and Mammals

Year	Birds	Mammals
1600-1649	3	2
1650-1699	6	3
1700-1749	4	3
1750-1799	4	8
1800-1849	22	5
1850-1899	48	22
1900-1949	65	59

### Birds

Elephant bird (extinct in 1650)  
 Dodo (1681)  
 Moa (1773)  
 Cooper's sandpiper (1833)  
 Townsend's finch (1833)  
 Scops owl (1837)  
 Great auk (1844)  
 Black-fronted parakeet (1844)  
 Norfolk Island kaka (1851)  
 Cuban red macaw (1864)  
 Washington Island gadwall (1874)  
 Labrador duck (1875)  
 Newton's parakeet (1875)  
 New Zealand quail (1875)  
 Mamo (1898)  
 Quelili (1900)  
 Seychelles parakeet (1906)  
 Carolina parakeet (1914)  
 Passenger pigeon (1914)  
 Madagascar coucal (1930)  
 Virginia heath hen (1932)  
 Dusky seaside sparrow (1990)

### Prehistoric Animals

Giant sloth  
 Trilobite  
 Sabre-tooth tiger  
 Dire wolf  
 Teratorn  
 Giant ox  
 Short-faced bear  
 Woolly mammoth  
 Woolly rhinoceros  
 Mastodons  
 Dinosaurs (300+ species)

## Pre-Visit Activities

☞ Have groups of students choose an animal from the endangered species list, and find out as much about the animal as possible (habitat, diet, behavior, why it is endangered, etc.). Using the information gathered, students can:

design posters or murals depicting the habitats of the animal.

make a bumper sticker using contact paper to advertise the plight of their endangered species.

write letters to government officials and local newspapers in support of legislation protecting endangered species (addresses enclosed).

☞ Read one or more of the *Extinction is Forever* quotes to the class (enclosed). Have the students express their own feelings about endangered species through poetry, haiku or cinquain (five-line oriental poetry forms), or short stories.

☞ Use the *Extinction is Forever* quotes to do the Exploring Extinction exercise (enclosed)

☞ Play the *Bluebird Habitat* game (instructions enclosed).

☞ Complete the *Circles of Doubt* work sheet (enclosed).

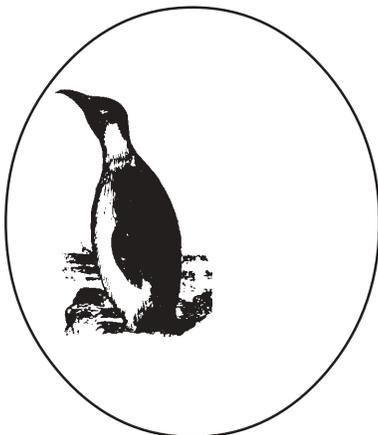
☞ Have students complete the *Endangered Today...Extinct Tomorrow* work sheet (enclosed).

☞ Ask each student to select an endangered animal. Before they conduct any research, have them write down everything they know or feel about the animal. Try this exercise again after the students have researched their animal and have seen the animal at the zoo. Have students compare their original ideas with their researched information.

☞ Complete the work sheet entitled *Are Dinosaurs Really Extinct?* to explore how living animals can be our connection to extinct animals.

☞ Make badges with slogans and pictures of endangered animals.

Examples:



## BLUEBIRD HABITAT GAME

### Background:

Bluebirds, an endangered species in many states, are very particular about the habitat that they live in and the type of food that they eat. Starlings, however, are very adaptable. They can eat many foods and nest in many places.

### How to Play:

The game format is similar to musical chairs. Use two different colors of carpet squares or chairs to represent habitat for the birds to nest in and find food in. (Or, tape one of two colors of paper to each chair.) The squares/chairs are set up in two rows with backs together. Designate half of the class as starlings, and the other half bluebirds (have the students wear name tags, or count off). The starlings can nest on **any** carpet square/chair, while bluebirds can only nest on **one** color. (For example, you have orange and brown chairs. Bluebirds can nest only on the orange chairs, while starlings can nest on orange chairs **and** brown chairs.)

Students walk around the square/chairs, and when some signal is given (e.g., teacher clapping hands), they must find a spot to nest and eat. Any students without a square/chair, or on the wrong color, did not make it through that year. At some point, remove some carpet squares/chairs, explaining that the land was cleared for a farm or shopping mall. Continue year after year.

### Discussion:

At the end of the game, how many bluebirds are left? How many starlings? Which is more successful in adapting to changing conditions? Why are bluebirds endangered?

The end result of the game will vary somewhat, depending on what colors of carpet squares/chairs you remove each year. Try taking away only bluebird habitat, stating that starlings can still live on the land that is turned into suburbs.

### Extension:

In a variation of the game, begin with only two bluebirds and two starlings. Use three carpet squares, one for bluebirds and starlings, and two for just starlings. Play the game again, but this time, add one bird for every bird that successfully nests that year (i.e., after the first round, if one bluebird and two starlings survived, then add one more bluebird and two more starlings). Also add some habitat. Which reproduces faster, the starlings or the bluebirds?

Build a bluebird nest box (instructions enclosed). Bluebird trails, with several nest boxes along a fence row or other area, are proving successful in attracting and protecting bluebirds.

# Blue Bird Nestbox

(information provided by the North American Bluebird Society)

## Materials:

- 3/4 inch wooden boards or PVC pipe with attachable wooden roofs are commonly used for bluebird boxes. Peterson boxes often use 2 x 4 inch boards
- Do not use pressure treated wood because they include toxic compounds
- Paper milk carton style or corrugated cardboard boxes are unacceptable
- Woods such as redwood and cedar are long-lasting even when left natural

## Entry Holes:

- Eastern Bluebirds use 1 1/2 inch round holes, 1 3/8 x 2 1/4 inch vertical oval holes, or 1 1/8 inch horizontal slot entrances
- Western and Mountain Bluebirds use 1 9/16 inch round openings
- Where the ranges of the species overlap use 1 9/16 inch round openings
- Oval holes should only be used in eastern bluebird boxes with moderate to small dimensioned boxes to reduce the possibility of starling use

## Access:

- It is imperative that all bluebird nest boxes open readily from the top, side, or front to facilitate box monitoring and cleaning
- If box sides or front pivot to allow access to the box, they should do so at as high a point as possible to ensure that you can observe tall nests without the door obstructing your view
- A screw or angled nail in a pre-drilled hole should be provided to ensure that mammalian predators can not readily open the nest box

## Colors:

- Natural wood is acceptable
- If painted or stained, use light colors to minimize having the box overheat during warm weather in areas where overheating is likely

## Water-resistance/drainage:

- Drainage holes must be provided in the box bottom to allow any rain entering the box to drain from the box and to provide air circulation to keep nesting material dry
- The box should be water-tight
- The roof should provide sufficient overhang beyond box entrance or vent holes to minimize possibility of rain entering these openings
- The roof should cover top edge of the box back unless other features eliminate any possibility of rain entering the joint between back and roof of box even if the wood warps

## Heat/cold protection:

- Vents providing cross ventilation should be present near the box peak. These openings should be protected from rain by having the box roof overhang a sufficient amount to minimize precipitation entering the box.
- Dark colors should be avoided to minimize overheating
- It should be possible to plug or cover vent holes during cold weather periods early in the nesting period
- Long roof overhangs minimize the possibility of sun, rain, or snow entering the box

## Perches:

- Perches should never be used on any bluebird boxes because they are not needed by bluebirds and only facilitate harassment by non-native species such as House Sparrows

## Inner walls:

- Interior walls should not be painted or stained
- The front wall below the entrance hole should feature a rough surface to facilitate chicks climbing to the entry hole

**Predator deterrence:**

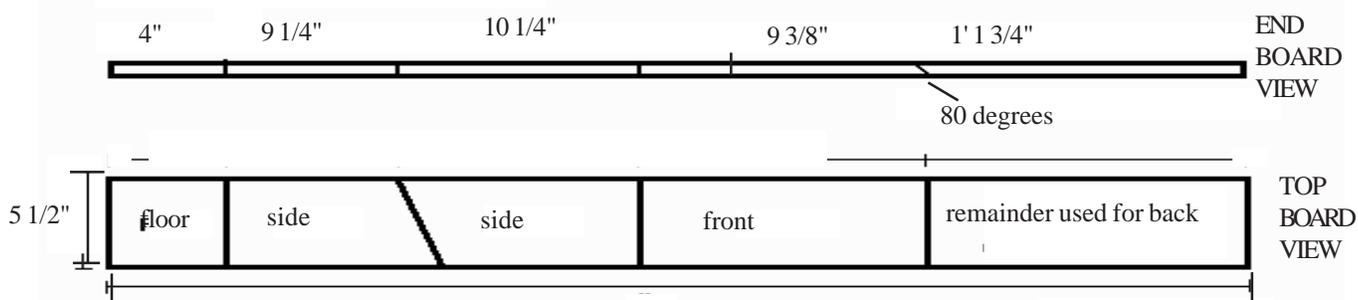
- The box should be easy to mount on a predator-resistant post in areas with raccoons or cats
- A 5 inch roof overhang above the entrance hole reduces the possibility of raccoon or cat predation
- Wooden guards placed over the entry hole are not effective in eliminating raccoon predation
- Boxes mounted on heavily greased pipes or on waxed metal electrical conduits will deter many climbing predators
- Mounting boxes less than 5 feet from the ground increases the opportunities for climbing or jumping predators to raid the nest
- Wooden posts, ungreased pipes, PVC pipes are readily climbed by nest predators such as raccoons

**Mounting:**

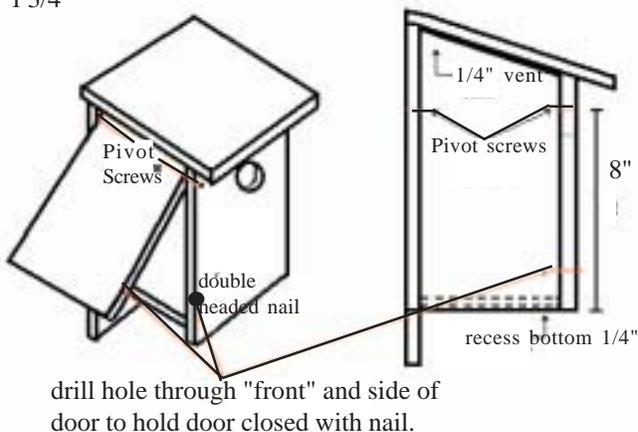
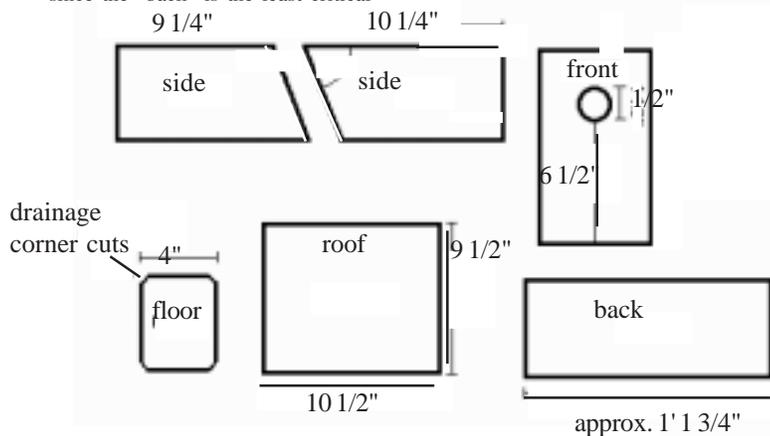
- Boxes should be designed so that they may readily and securely be mounted on a support post such as water pipe or electrical conduit
- Fence posts are acceptable mounts in areas where raccoons are rare
- Having the back extend beyond the main box body below or above the box will allow you to attach the box with screws, nails, pipe clamps, wires, or u-bolts

**Eastern/Western Bluebird Nest Box Plans**

*(plans provided by the North American Bluebird Society)*



start cutting at the "floor" and work toward the "back" 4" since the "back" is the least critical



## Extinction is Forever Quotes

When the sky has been swept clean of eagles  
And the winds carry echoes of the past,  
What will you answer when the children ask,  
“Where are the animals? Did you see them go?”

*-Tom Knothe*

The beauty and genius of a work of art may be reconceived, though its first material expression be destroyed; a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again.

*-William Beebe*

My chief motive, my most earnest underlying wish, has been to stop the extermination of harmless wild animals; not for their sakes, but for ours, firmly believing that each of our native wild creatures is in itself a precious heritage that we have no right to destroy or put beyond the reach of our children.

*-Ernest Thompson Seton*

What is a man without beasts? If all the beasts were gone, man would die from great loneliness of spirit, for whatever happens to the beasts also happens to man. All things are connected.

*-Chief Seattle, 1855*

Destroyed buildings can be rebuilt; destroyed works of art may possibly be replaced by new creations; but every animal and every flower which becomes extinct is lost forever in the most absolute of all deaths.

*-Joseph Wood Krutch*

In the end, we will conserve only what we love.  
We will love only what we understand.  
We will understand only what we are taught.

*-Baba Dioum*

The blame will lie with us if the world becomes empty of many of the lovable creatures who not only have the same right to live as ourselves, but who are of vital importance to the balance of nature.

*-Joy Adamson*

## Exploring Extinction

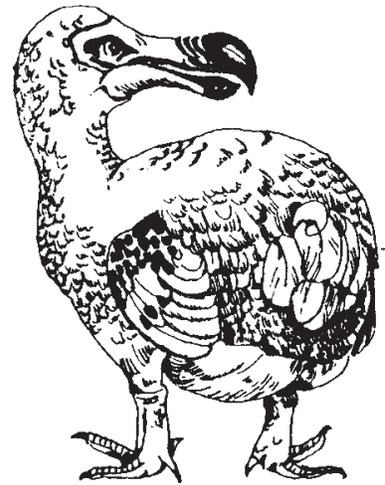
Discuss with your students the following quote (or any other from the Extinction is Forever quotes enclosed):

“In the end, we will conserve only what we love.  
We will love only what we understand.  
We will understand only what we are taught.”      Baba Dioum

After your class discussion, ask students to examine the enclosed list of extinct animals. Have students select an extinct animal that sparks their interest and explore the reasons for its extinction.

### Questions might include:

- \* did it become extinct due to climate changes, lack of food sources, habitat destruction, overpredation?
- \* what was the animal’s range when it was alive?
- \* when did it become extinct?
- \* did any human activities play a part in its demise, either directly or indirectly?
- \* was the animal over sensitive to changes in its environment?
- \* did it have specific food or nesting requirements?
- \* did it have limited reproduction specifications, e.g. small broods, long care, lifelong pair-bonding, limited access to suitable mates, etc.?
- \* how might its extinction have been prevented?



*Dodo*

### Extinction Extensions

The following endangered species activities can be used as an extension to your zoo visit:

- \*Contact a Department of Natural Resources representative to find out what programs your state has for protecting endangered plants and animals. (See enclosed list of conservation organizations for addresses.)
- \*Design a bumper sticker or a bookmark calling attention to the plight of a chosen endangered species.
- \*Find out how a plant or animal gets on the endangered species list by writing to the Department of Interior for a copy of the Endangered Species Act.

## Economics and the Environment

In this exercise, students will learn about the group processes involved in solving environmental/economic conflicts. Ask your students to read or role-play the following situation.

These arguments were presented before the County Board of Supervisors in support of or against a proposal to lease county land to a lumber company:

Lumber Company President: “My company is expanding its operation. We want to build a sawmill north of town and lease the timber rights to the 100 square miles you recently incorporated. With this land, we will be able to establish a permanent base of operation that would employ at least 150 people in your county. The money that the county receives from the lease and taxes will pay for more community services. A lumber mill in the area will bring other companies that use wood to make their products. The owner of a large furniture company has already told me he would be interested in building a small factory next to one of our sawmills.”

Wildlife Biologist: “This land has the most wintering bald eagles in the world. Since our national symbol is an endangered species, this area is important habitat. This means that the government could make this area a bald eagle refuge. Buildings and operating this refuge will create at least 75 jobs. If the timber operation is allowed in the area, logs jamming the river will destroy fishing grounds. When trees are cut, silt will run off into the rivers, decreasing stream quality and killing fish. The fish are an important food source for wintering eagles. There will be destruction of eagle roosting sites, and the general noise of a logging operation would disturb the eagles. I strongly urge you to establish a bald eagle wildlife refuge in this area so that future generations will still be able to view our majestic national symbol.”

Use the following questions to discuss this dilemma with your class. Stress that there are no easy or proper answers, only that much thought must go into forming opinions on intricate, controversial issues.

- Do you feel you have enough information to make a decision? If not, how would you gather the necessary facts?
- How would each side benefit if their proposal is the one chosen?
- How do you know which statements are facts and which are opinions?
- Can you give examples of situations that have occurred near your home which were similar to this one? What were the results?
- Would it be possible to compromise and have the eagle refuge and the lumbering operation coexist on the same land? What additional information about timbering practices and the habitat needs of bald eagles would you need in order to make this decision? You might also have members of the class act as the Board of Supervisors and make an actual decision.

This activity may be more appropriate for advanced classes.

## Circles of Doubt

Many animal and plant species throughout the world are on the brink of extinction. A species is considered **endangered** when its population is so low that it is in danger of becoming extinct. A **threatened** species is one that is likely to become endangered if the problems affecting it continue.

To add to the confusion, if the current rate of habitat destruction is not drastically curbed, over 1,000 species of animals may become extinct *each year* by the year 2000. Which animal will be next? One way to reduce that figure is to become aware of which animals are currently *endangered*.

Read the clues about each endangered animal. Then arrange the letters inside the circles to spell the animal's name.

1. These parrots are endangered because they are captured and smuggled in to be sold as pets.



2. These large, tailless members of the primate family are losing their homes in the rain forests of Asia.



3. Although it's one of the most powerful predators in the jungle, it still is losing the race that's destroying natural habitat.



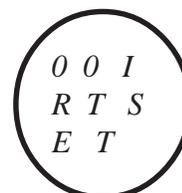
4. This raccoon-faced, bamboo eater is not related to a cuddly black and white "bear".



5. This primate is native to Madagascar and sports a banded tail for communication, but has no known predators except man.



6. This giant, slow-moving reptile can live for more than 100 years.

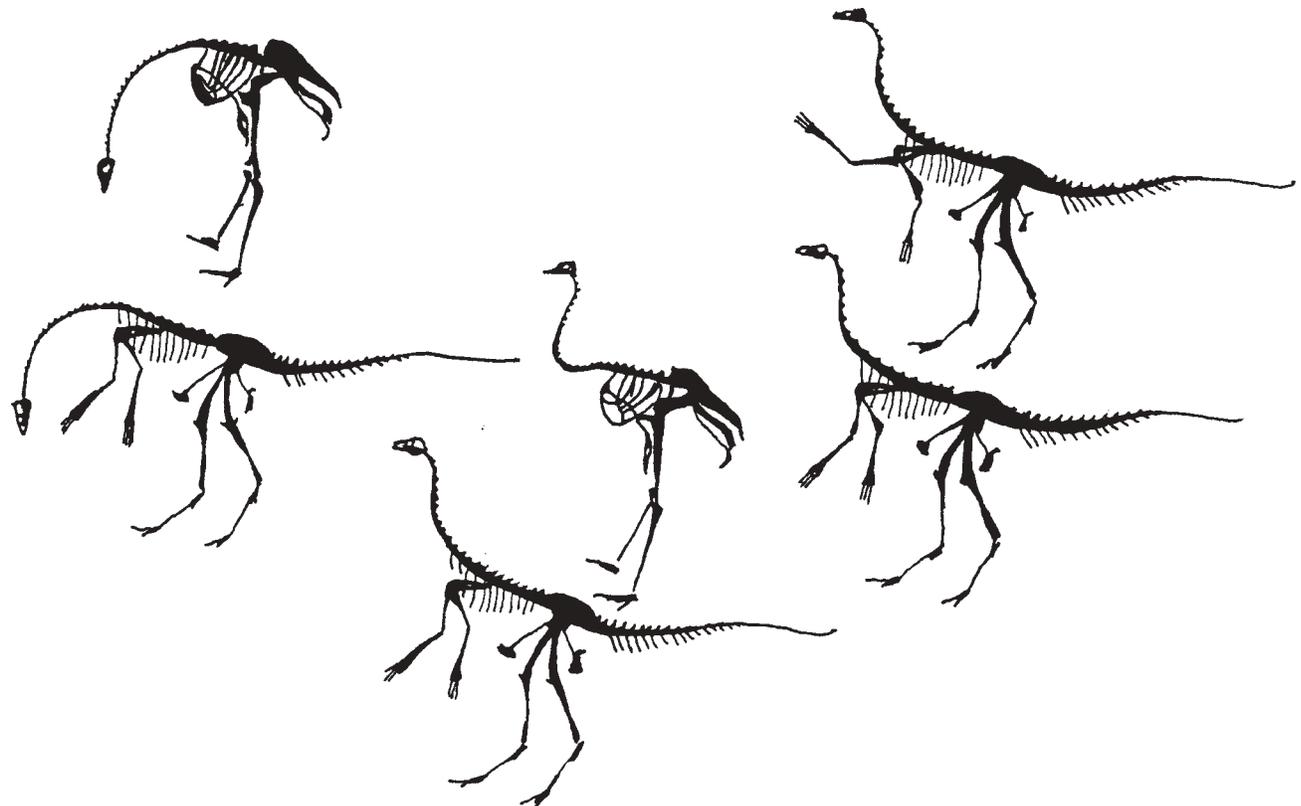


## Are Dinosaurs Really Extinct?

As scientists uncover more and more bones of ancient animals, they discover that some animals they once thought were extinct seem to have distant relatives who are alive today! One such animal is the dinosaur *Struthiomimus*, which, in Latin, means “ostrich copier” because it looked and acted like an ostrich.

Look carefully at the skeletons below. Follow the problem-solving steps to see if you can discover which two skeletons are the real ostriches.

- Step 1: Cross out the two that look exactly the same.  
 Step 2: Cross out all that have their heads down and have a long tail.  
 Step 3: Cross out all that have their heads up, a straight neck, and one limb raised.  
 Step 4: Circle all that are left. These should be the real ostriches.



## Endangered Today...Extinct Tomorrow!

An endangered species is an animal or plant that is in immediate danger of becoming extinct. It needs protection in order to survive.

One way to protect an endangered species is to become aware of what put it in danger in the first place. Pick the name of an animal at the zoo that is listed as endangered. Do some research on your chosen animal.

Design several interesting questions you might ask your animal during a T.V. interview. Include such items as: special needs; special diet; special conditions to reproduce; ability to change with changes in the environment; ability to move to another location, etc. Finally, answer your questions as if you were the animal.

### QUESTIONS

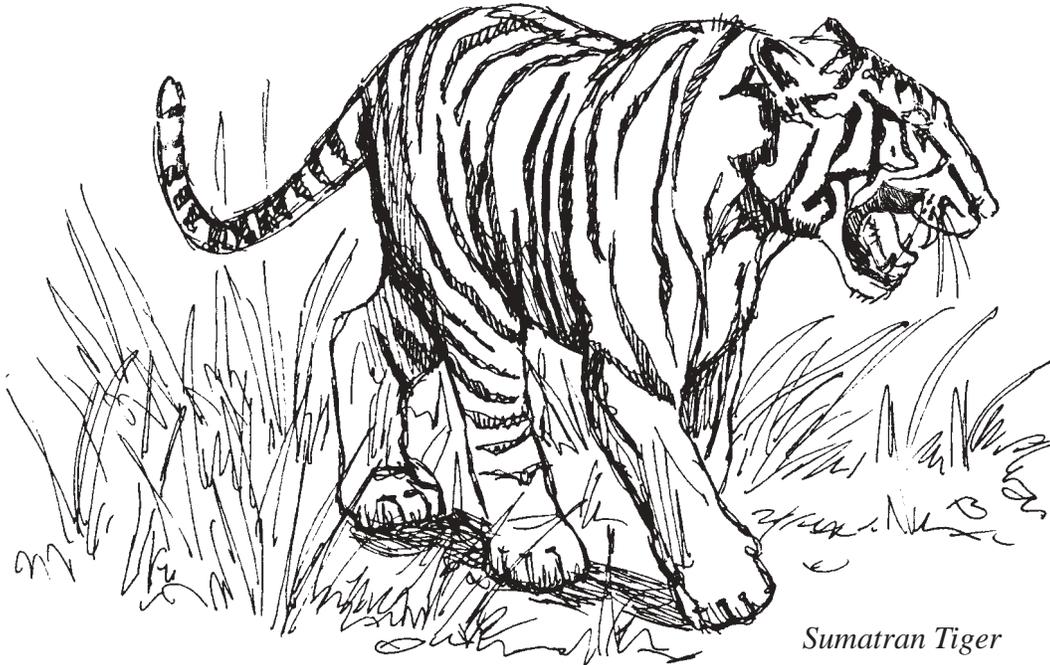
### ANSWERS

1.	<hr/> <hr/>	<hr/> <hr/>
2.	<hr/> <hr/>	<hr/> <hr/>
3.	<hr/> <hr/>	<hr/> <hr/>
4.	<hr/> <hr/>	<hr/> <hr/>
5.	<hr/> <hr/>	<hr/> <hr/>
6.	<hr/> <hr/>	<hr/> <hr/>

Why do you think your animal is endangered? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## At the Zoo Activities

- ☞ Have students or groups of students choose an endangered animal. Have them complete the *A Closer Look* animal observation sheet while at the zoo (enclosed). Have an adult group leader assist the students in recording their observations. Have the students compare their observations back at school.
- ☞ Have students complete *Penguin Pride* work sheet or *Tracking Down Endangered Species* work sheet.
- ☞ Give each group of students (with an adult group leader) a *Bobcat Bingo* sheet to complete while at the zoo.



*Sumatran Tiger*

## Penguin Pride

The black-footed penguins at the zoo are on the endangered species list. They live along rocky coastlines in southern Africa. All penguins are found in the Southern Hemisphere. Although penguins have few natural predators (maybe a leopard seal or killer whale), increased fishing and pollution of the seas could seriously threaten their long-term survival.

Carefully observe the black-footed penguins in their zoo habitat . Place an “X” on the line above the best answer to each observation. Then answer the question at the bottom of the page.

- |   |     |                  |  |   |
|---|-----|------------------|--|---|
|   | 1.  | beak             | ___ [ V ]<br>pointed                     | ___ [ W ]<br>round                        |
|    | 2.  | body covering    | ___ [ A ]<br>fur                         | ___ [ I ]<br>feathers                     |
|   | 3.  | feet             | ___ [ T ]<br>webbed                      | ___ [ F ]<br>not webbed                   |
|   | 4.  | tail             | ___ [ A ]<br>short & fat                 | ___ [ E ]<br>long & skinny                |
|   | 5.  | food             | ___ [ R ]<br>seeds & fruit               | ___ [ M ]<br>fish                         |
|   | 6.  | body shape       | ___ [ I ]<br>round & fat                 | ___ [ S ]<br>thin & bony                  |
|   | 7.  | walk             | ___ [ F ]<br>quick & lively              | ___ [ N ]<br>waddles                      |
|   | 8.  | classification   | ___ [ I ]<br>mammal                      | ___ [ P ]<br>bird                         |
|  | 9.  | wings            | ___ [ I ]<br>flippers                    | ___ [ S ]<br>flight feathers              |
|   | 10. | purpose of wings | ___ [ L ]<br>swim                        | ___ [ H ]<br>fly                          |
|   | 11. | coloration       | ___ [ E ]<br>white -top<br>black - belly | ___ [ L ]<br>black - top<br>white - belly |
|   | 12. | reproduction     | ___ [ S ]<br>eggs                        | ___ [ Y ]<br>live birth                   |

**What do zoo keepers put inside the penguins' fish to keep them healthy?** ( Copy and unscramble the letters beside each “X”.)



# Tracking Down Endangered Species (Before They Disappear!)

Today hundreds of plants and animals are in danger of becoming extinct (endangered). As people change the wilderness into towns and cities, plants and animals are often left homeless.

Zoos can serve as refuges for these endangered species. As you stroll around the zoo, look for signs like the one at the top of the page. It identifies many zoo animals which are endangered.

To help you on your search for endangered species, look at the clues below:

### Central Zoo

### This animal has...

### Name of Animal



tufted ears for keen hearing

\_\_\_\_\_



webbed feet

\_\_\_\_\_



flippers that are modified wings

\_\_\_\_\_



special bill for cracking seeds, nuts, or fruit

\_\_\_\_\_



“fingernail-like scales on its back called “scutes”

\_\_\_\_\_



a banded tail that is used for communicating

\_\_\_\_\_

### Indonesian Rain Forest



grasping, humanlike fingers; arms longer than its body

\_\_\_\_\_



long, forked tongue for smelling prey

\_\_\_\_\_



name means “Man of the Jungle”

\_\_\_\_\_

### African Veldt



tail tipped with white

\_\_\_\_\_

## Take a Closer Look

### Advanced Animal Observation

Before you visit the zoo, choose an endangered animal that you plan to observe. While at the zoo, visit your animal and fill out this observation sheet.

1. Guess how much your animal weighs (in pounds or kilograms). \_\_\_\_\_

If it has a tail, guess the length of the tail (in feet or meters). \_\_\_\_\_

2. How does the animal move from place to place? \_\_\_\_\_

How many arms does it have? \_\_\_\_\_

How many legs? \_\_\_\_\_

How many wings? \_\_\_\_\_

How many fins? \_\_\_\_\_

3. Watch your animal for 10 minutes. Make tally marks to show how often it does the following:

A. Walks \_\_\_\_\_

B. Runs \_\_\_\_\_

C. Lies down \_\_\_\_\_

D. Eats \_\_\_\_\_

E. Drinks \_\_\_\_\_

F. Grooms itself \_\_\_\_\_

G. Grooms another animal \_\_\_\_\_

H. Makes a sound \_\_\_\_\_

I. Yawns \_\_\_\_\_

K. Looks at people \_\_\_\_\_

Take a Closer Look (continued)

4. If there are several animals in a group, can you tell which ones are the leaders?  
How can you tell? \_\_\_\_\_

\_\_\_\_\_

5. What kind of body covering does the animal have (scales, fur, etc)

\_\_\_\_\_

What color is the body? \_\_\_\_\_

What color is the face? \_\_\_\_\_

Any patterns or markings? \_\_\_\_\_

6. What color are the eyes? \_\_\_\_\_

Are the eyes large or small? \_\_\_\_\_

Are the eyes on top of the head, on the side of the head, or facing to the front?

\_\_\_\_\_

7. Describe the ears. \_\_\_\_\_

\_\_\_\_\_

8. Describe any sounds made by the animal. \_\_\_\_\_

\_\_\_\_\_

9. How is the animal like you? \_\_\_\_\_

\_\_\_\_\_

How is it different? \_\_\_\_\_

\_\_\_\_\_

## Bobcat Bingo

**Directions:**

Cut out each Bobcat square and paste on a heavy piece of paper. Each square shows the behavior of the bobcat. Whenever you spot one of the pictured behaviors, place an "x" on the square. The first person to mark three pictures in a row, either across, down, or diagonally, is the winner.

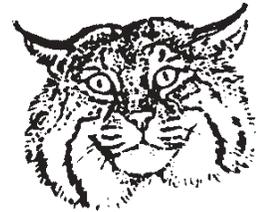
However, the bobcat is the real winner! With its spotted brown coat, the bobcat can hide well among the leaves and litter on the forest floor. Endangered in Indiana, the bobcat may someday make a comeback.



Sitting



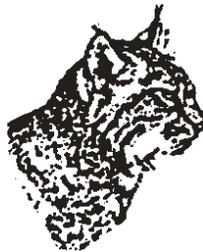
Stalking



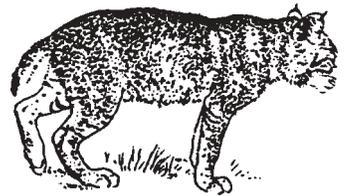
Threatening



Climbing



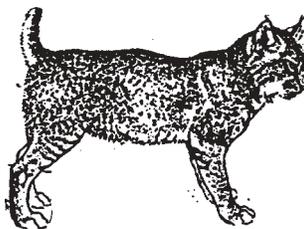
Turning ears  
to hear



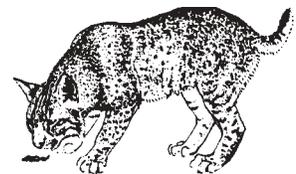
Scraping  
or scratching



Attacking



Wagging "bobbed"  
tail



Marking  
territory

## Post-Visit Activities

- ☞ Complete the Orangutans Take Aim, or Gibbons - Gymnasts of the Forest work sheet included in this packet.
- ☞ Have students create a bookmark featuring their favorite endangered or threatened animal. Laminate or use contact paper to make them durable.
- ☞ Have the students poll their classmates for opinions on conservation issues using the What Do You Think work sheet.
- ☞ Complete the Wild Dog Challenge, Orangutans Take Aim, or Gibbons - Gymnasts of the Forest work sheet included in this packet.
- ☞ Have students create a bookmark featuring their favorite endangered or threatened animal. Laminate or use contact paper to make them durable.
- ☞ Have the students poll their classmates for opinions on conservation issues using the What Do You Think? work sheet included in this packet.
- ☞ Play “yes” or “no” by attaching a picture of an endangered animal to each child’s back. They may then ask yes or no questions of their classmates and try to correctly identify the animal.
- ☞ Read *The Lorax* by Dr. Seuss (also available on video). This story demonstrates that one person can make a difference.
- ☞ Write to a conservation organization to find out its goals and methods of operation. Compile a resource file to include in the school library.
- ☞ Use the enclosed form to have students write a cinquain about their favorite endangered animal. Cinquain (sing-KANE) is a five-line oriental poetry that will help students capture the essence of an animal in just a few words. For example:

Ostrich  
Long-necked  
Always looking confused  
You seem so silly  
"Stretch"

Polar Bear  
Shaggy, white  
Swims in ice-water  
Brrr, a cold life  
Arctic

- ☞ Conduct an aluminum can or paper recycling drive. Discuss the connection between recycling and the preservation of wildlife habitat. Consider donating any funds you raise to one of the conservation organizations you investigate.
  
- ☞ Have students design a logo or poster to help publicize endangered species. Work in groups and display in library.
  
- ☞ Choose an endangered species and design a zoo exhibit for it. Consider such aspects as diet, range (how much space does it need?), social grouping (does it live in large groups, with a mate, by itself?), climate, locomotion (does it move around by walking, swinging, hopping, swimming?), and predators.

## ANIMAL CINQUAIN

-----  
(1 word - an animal)

-----  
(2 words that describe it)

-----  
(3 words expressing action)

-----  
(4 words telling what you feel about it)

-----  
(sum up with 1 word)

This activity courtesy of the Staten Island Zoo Education Department.

## What Do You Think?

In this exercise, students will conduct a survey of their classmates' opinions. Results will be compiled and then analyzed by the students, or you can use the questions for classroom discussion.

1. Which do you think its more important to save: endangered plants or endangered animals? Why?
2. Your town is thinking about building a recreation center in your neighborhood, but the proposed site is the home of an endangered insect, and building the center might wipe out the insect. Do you think it's OK for the recreation center to be built on that site? Explain your answer. Would you feel differently if an endangered bird lived on the site where the center might be built? Why or why not?
3. Which of the following do you think it's most important to save?
  - a. animals that are very beautiful
  - b. large animals, such as whales, giant pandas, and grizzly bears
  - c. all types of animals
  - d. animals that provide people with food or clothing
  - e. animals that live in the United States
4. You have just been put in charge of a team that will be working to save 10 endangered species listed below, but you have only enough money and materials to work with one species at a time. Number the plants and animals in the order you would try to save them, with #1 being the most important species to save. What other information would you need to make your decision?

- \_\_\_ cheetah
- \_\_\_ California condor
- \_\_\_ mission blue butterfly
- \_\_\_ salt marsh harvest mouse
- \_\_\_ red wolf
- \_\_\_ gray bat
- \_\_\_ pygmy rattlesnake
- \_\_\_ lady slipper orchid
- \_\_\_ bald eagle
- \_\_\_ giant panda

## Orangutans Take Aim

If you happen to be walking in a dense rain forest in Indonesian and hear the cracking of a tree branch overhead, be on guard! A shy orangutan may scare you away by dropping an unusual object from the treetops. To find out what that object is, read each sentence below and **cross out all letters** in front of sentences that are **not true**. Unscramble the remaining letters to discover the unusual object.

- A** 1. An orangutan has thumbs on both its hands and its feet.
- C** 2. An orangutan uses its strong jaws and teeth to eat small rodents and snakes.
- E** 3. Sometimes an orangutan will stay up in a tree for 20 days without coming down.
- G** 4. The word orangutan means "One Who Flies."
- O** 5. Orangutans love to live in large groups with other orangutans.
- D** 6. An orangutan is the second largest primate next to a gorilla.
- T** 7. Sometimes poachers shoot adult orangutans to sell their babies to zoos.
- E** 8. Orangutans can live an average of 35 years.
- M** 9. Because an orangutan spends most of its life in a tree, it has powerful claws for climbing.
- E** 10. Fossil remains of orangutans show that they were once much larger.
- D** 11. A mother orangutan takes very good care of her babies.
- R** 12. Orangutans live in nests.

Answer: \_\_\_\_\_

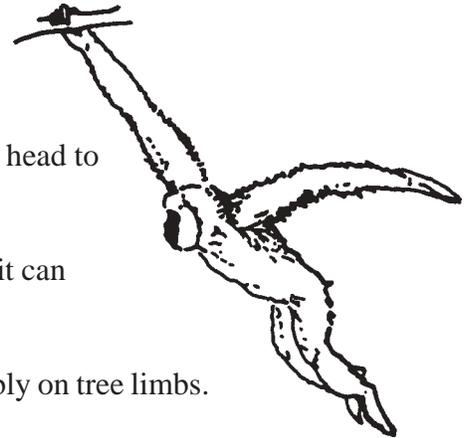
## Gibbons - Gymnasts of the Forests

Gibbons hold a special place in the hearts of rain forest peoples. Because of their resemblance to man and their intelligent expressions, they are considered a “good spirit of the forest” by native people and are rarely hunted or killed.

However, as forest is cleared to make way for farms, roads, and cities, the gibbons are in danger of losing their habitat.

To find out how much land the average gibbon family needs to survive, read the gibbon facts below and cross off all numbers on the left of the sentences that are not true. Then add up the remaining numbers to complete the sentence at the bottom of the page.

- 20 Gibbons walk on all fours when they are on the ground.
- 18 A loud, songlike communication is used by gibbons to set the limits of their territory.
- 42 Gibbons have “thumbs” on both their hands and their feet.
- 33 Swinging through trees in the rain forests of South America is a favorite activity of gibbons.
- 20 Insects top the diet of most gibbons.
- 37 The gibbon's eyes are located on the front of its head to give it stereo vision.
- 28 A gibbon's legs are longer than its arms so that it can climb trees easily.
- 12 Special rump pads help the gibbon sit comfortably on tree limbs.
- 3 Because of its opposite thumb, a gibbon is able to carry objects around.
- 45 A gibbon takes a drink of water by lapping its tongue like a dog.
- 6 Gibbons move rapidly through trees using a hand-over-hand motion.
- 29 The gibbon uses its tail for balancing and grabbing hold of tree limbs.
- 7 The life span of a gibbon is 25 to 30 years.



*A gibbon family needs from 75 to \_\_\_\_\_ acres of land to survive.*

# Leopard Maze Challenge

Help the leopard find a safe habitat!

The maze is a complex path of black lines on a white background. It begins in the top-left corner with a leopard illustration and the word "Start". The path winds through several rooms and corridors. One room contains a coiled whip and the word "poachers". Another room contains a withered plant and the word "drought". A third room shows a fenced-in farm with cows and the word "farmers". A fourth room shows a person on a horse and the word "ranchers". A fifth room contains a leafy branch and the word "food". The path ends in the bottom-right corner with a tree illustration and the word "Finish".

## Teacher's Answer Key

**Are Dinosaurs Really Extinct?** the skeletons without long tails

**Circles of Doubt:** 1. macaws 2. gibbon 3. cheetah 4. red panda 5. ring-tailed lemur  
6. tortoise

**Orangutans Take Aim:** dead tree

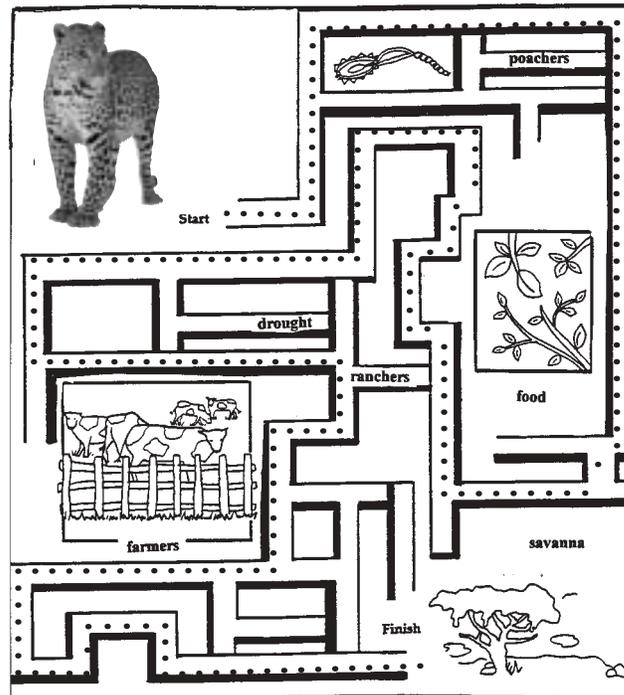
**Tracking Down Endangered Species:** bobcat; river otter; penguin; macaw; Aldabra tortoise; lemur;  
gibbon; komodo dragon; orangutan; African wild dog

**Silence of the Snow Leopard:** camouflage: 1, 4; balance: 2; earmuffs: 2; leaping: 3;  
defense: 7; climbing: 6; snowshoes: 5; recognizing another leopard: 8

**Penguin Pride:** Vitamin Pills

**Gibbons - Gymnasts of the Forest:** 125 acres

**Leopard Maze Challenge:**



# Animal Facts: Black-footed Penguin

**Class:** Aves (birds)

**Scientific Name:** *Spheniscus demersus*

**Range:** Southern Africa

**Habitat:** Rocky coastline

**Natural Diet:** Small fish, crabs, squid

**Zoo Diet:** Fish

**Physical characteristics:** About 1.5 to 2 feet tall; white breast, black back and head. Wings are paddle-like flippers. Feathers are tightly packed to protect from cold waters; thick fat layer under skin.

**Behavior:** Penguins live in huge flocks of up to a thousand or even ten thousand. They are excellent swimmers, reaching speeds up to 18 mph underwater. Penguins "waddle" when they walk on land. They make a loud braying call when they meet.



**Reproduction:** Penguins nest on land. They make their nests in small holes found on the rocky coastline. The female usually lays two eggs, which are incubated for 32-36 days. Both parents feed the chick with regurgitated food.

**Conservation:** Penguins were slaughtered by the thousands to be used as food by passing sailors in the eighteenth century. Today, people fish in the penguins habitat, reducing the number of fish available for the penguins to eat.

# Animal Facts

## Komodo Dragon

**Class:** Reptilia

**Scientific Name:** *Varanus komodensis*

**Range:** Several small islands, including Komodo Island, in the country of Indonesia

**Habitat:** Grasslands, open forests near water

**Natural Diet:** Carrion (dead animals), deer, pigs, eggs, young of their own species. Young dragons eat insects, birds, rodents

**Zoo Diet:** Mice

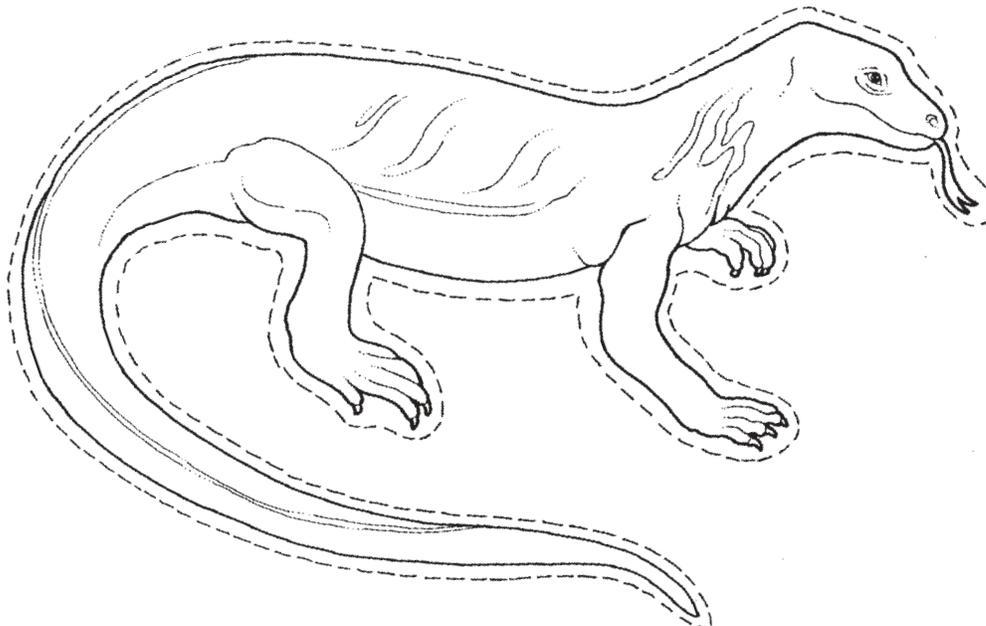
**Physical Characteristics:** Largest of all lizards, the Komodo dragon can reach a length of 10 feet and weigh 330 pounds. They have a heavy body, large head, long

neck, and five-toed feet with sharp claws. The dragon's teeth are jagged and can inflict painful wounds. The saliva is septic and can cause infection in a bite victim. They reach adult size in about five years.

**Behavior:** Komodo dragons are fast-moving, as well as good climbers and swimmers. They hide and wait for prey. A lash from the tail can cause bone fractures in victims; their bites are powerful.

**Reproduction:** Clutches of 7 to 60 eggs are laid in hollow trees or termite mounds. The incubation is usually 130 to 220 days.

**Notes on the zoo's Komodo Dragon:** Hatched in February 1994 at the Cincinnati Zoo, our dragon was one of a clutch of 18, and part of the third clutch to be hatched in the United States. The zoo is part of a breeding/conservation program administered by the National Zoo in Washington, D.C., and supports studies of the 3,000 - 5,000 Komodo dragons remaining in the wild.



# Animal Facts: Orangutan

**Class:** Mammalia

**Scientific Name:** *Pongo pygmaeus*

**Range:** Islands of Borneo and Sumatra  
(located in Indonesia and Malaysia)

**Habitat:** Tropical rain forests

**Natural Diet:** Fruits, seeds, leaves

**Zoo Diet:** Fruits, vegetables, sunflower seeds, oatmeal, primate biscuits

**Physical Characteristics:** A large, heavy-bodied great ape covered with long, shaggy, reddish-brown fur. Male orangutans may reach 4 1/2 feet in height and weigh up to 200 pounds. The orangutan is built for moving through the treetops: its arms are long and powerful; fingers and toes are extremely long (the hand of an adult male can be more than 17" long); both the thumb of the hand and the big toe of the foot are opposable like a human thumb so the orangutan can grasp objects and make small or fine movements.

**Behavior:** Orangutans are active during the day. They are solitary creatures that spend most of their time alone, except for females and their young. Orangutans gather food, eat, and rest for most of the day. They seem to have excellent memories which help them locate fruiting trees within the forest. Orangutans are known to make and use tools: for example, a hooked branch may be used to bring a fruit-laden branch within reach. At night, orangutans make a leafy

nest of branches about 30-70 feet off the ground.

**Reproduction:** Females begin to bear young at about 8 to 10 years of age. They may have one young every three to four years. Baby orangutans spend the first year of life clinging to their mother's chest or back. The orangutan does not leave its mother until it is about 6 to 8 years old.

**Conservation:** Orangutans are critically endangered. Poaching and destruction of the rain forest have caused this decline. Scientists estimate that there are fewer than 10,000 orangutans left in the wild.

It is now illegal to sell, kill, or keep wild orangutans in Indonesia. Zoos around the world have agreed not to remove any orangutans from the wild; instead, zoos are making efforts to breed orangutans in captivity. Former pet orangutans are rehabilitated and released into the wild.



# Animal Facts: Gibbons

**Class:** Mammalia

**Scientific Name:** *Hylobates* species

**Range:** Southeast Asia and Indonesia

**Habitat:** Tree dwelling in evergreen tropical forests; usually found at 25-30 meters in the trees

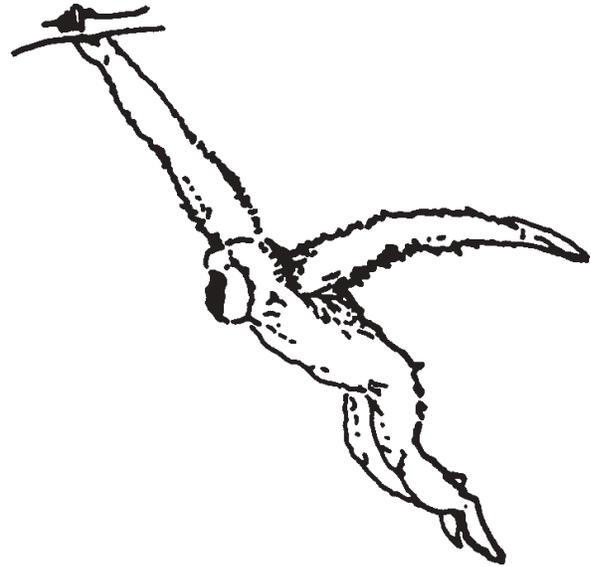
**Natural Diet:** Leaves, fruits, sometimes insects, bird eggs, small vertebrates

**Zoo Diet:** Apples, oranges, carrots, bananas, sweet potatoes, sunflower seeds, spinach, grapes, pears, melon, tomatoes, broccoli

**Physical Characteristics:** Largest of the gibbons; arm spread up to 1.5 meters. As a member of the ape family, gibbons lack a tail. Weight 10 - 30 lbs., depending on species. Thumb of hand and great toe of foot are opposable for grasping. Life span about 25 years.

**Behavior:** Diurnal. Feed in trees about 10.5 hours daily. Family group will hoot in unison in early morning to establish its claim to a feeding area, and again at night to mark home territory.

All gibbons move by brachiation, a hand over hand movement through the treetops. When moving on the ground will walk



upright with arms held high for balance.

Live in groups consisting of a mated pair and their offspring. Groups stay close together throughout the day. Social bonds reinforced by mutual grooming.

**Reproduction:** Monogamous. Single young clings to its mother's body like a belt.

**Conservation:** Wild gibbons have suffered severe losses through destruction of habitat. Gibbons are still fairly widespread throughout their range but are classified as endangered.

**Note:** *Hylobates* means "dweller in the trees."

# Animal Facts

## Leopard

**Class:** Mammalia

**Scientific Name:** *Panthera pardus*

**Range:** Western Turkey and Arabian Peninsula to southeastern Siberia and Malay Peninsula, Sri Lanka, Java, Kangean Islands; most of Africa

**Habitat:** Leopards occupy almost any habitat with sufficient food and cover, such as lowland forests, mountains, grasslands, brush country, and deserts.

**Natural Diet:** Deer, wildebeest, gazelles, antelope, domestic livestock, monkeys, rodents, rabbits, birds, and even arthropods.

**Zoo Diet:** Prepared meat diet

**Physical Characteristics:** The leopard's fur is golden with dark spots arranged in rosettes. Black leopards (often called black panthers) are common in dense forests. Leopards weigh 100-200 pounds and are surprisingly strong for their size. They can easily climb a tree while carrying a carcass larger than themselves. The leopard's eyesight, vision, and sense of smell are exceptional.

**Behavior:** The leopard is the most widely adapted of all the big cats. Their strength enables them to capture prey larger than themselves; if their preferred prey is not

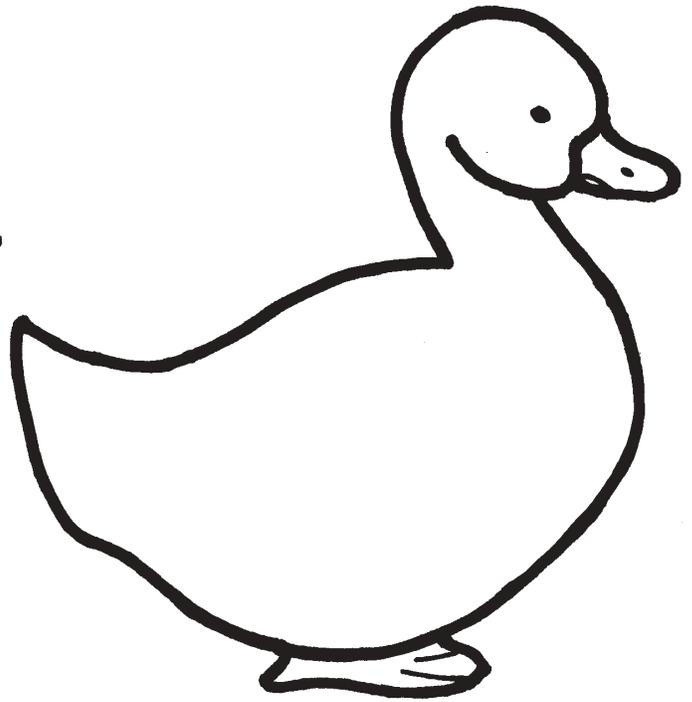
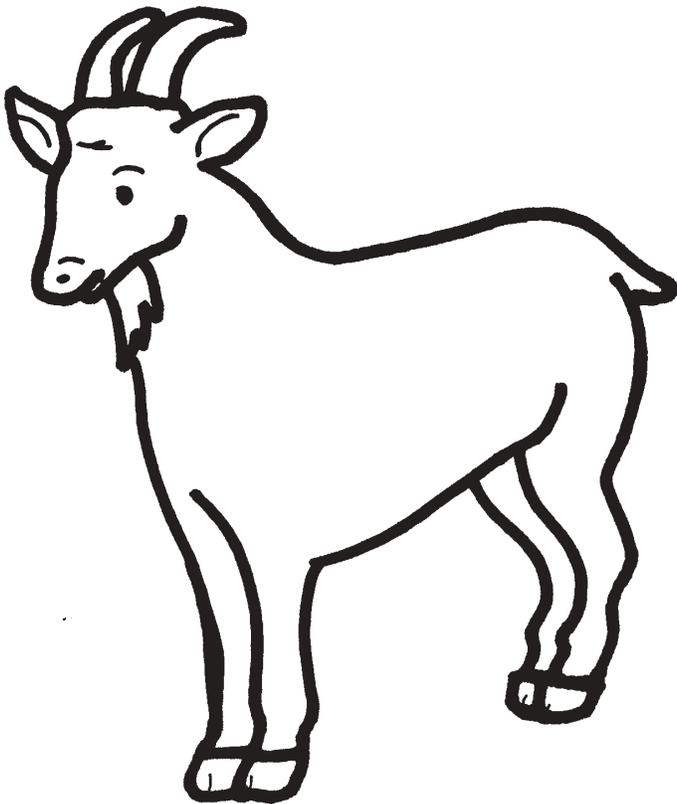
available, they will resort to eating spiders and insects. Leopards are excellent climbers, able to leap 10 feet into a tree or 18 feet over an obstacle. Leopards usually hunt at night by stalking their prey. The cats approach as close as possible before seizing their prey by the throat and killing by strangulation.

**Reproduction:** Leopards usually bear two or three cubs every one to two years. Cubs remain with their mother for about two years, learning to hunt at her side.

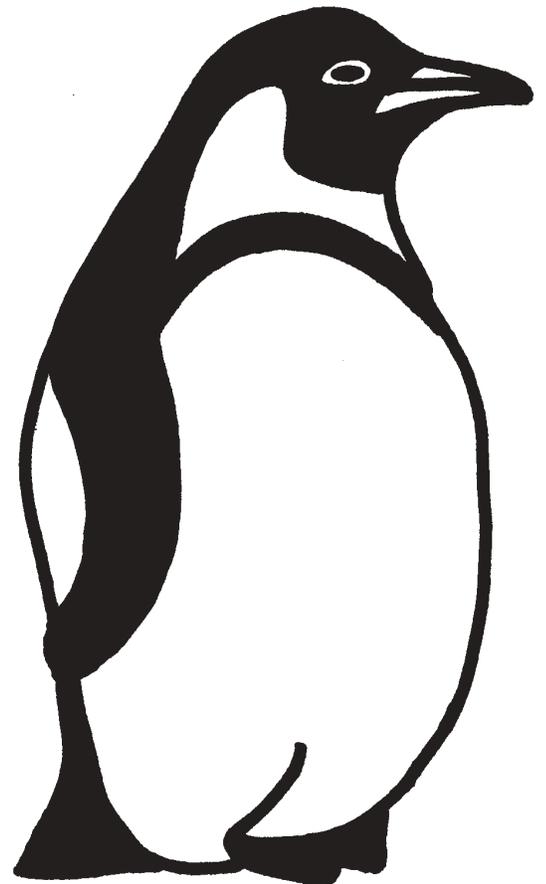
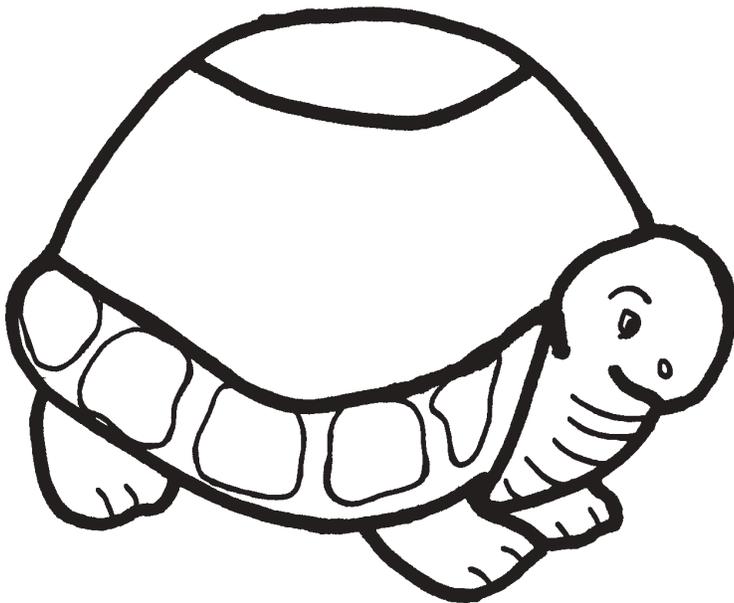
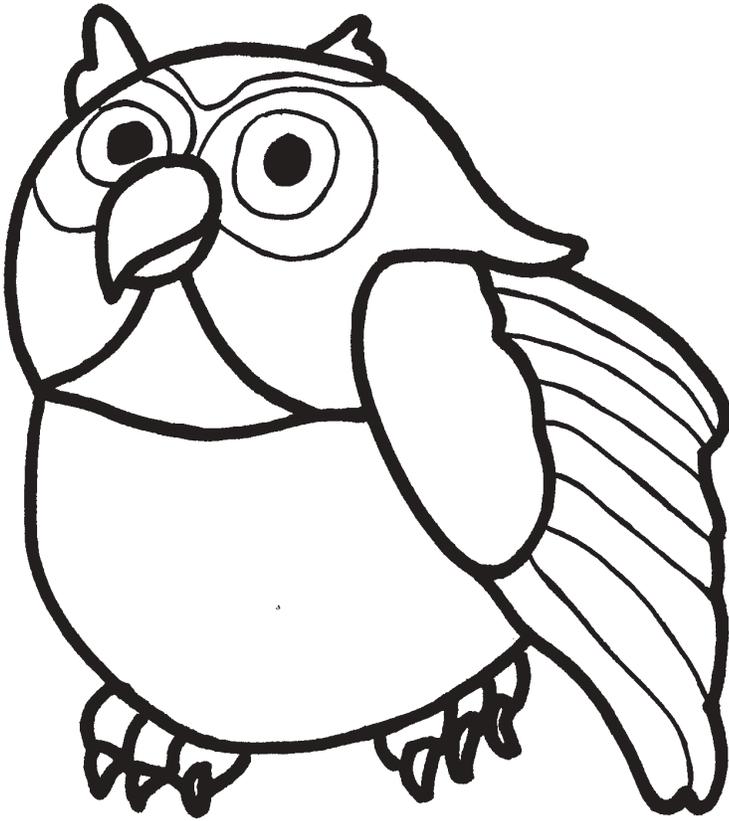
**Conservation:** Leopards are threatened with extinction in all parts of their range, although they are still fairly common in some parts of Africa. At one time, they were hunted for their beautiful spotted fur. Today, laws protect the leopard in some countries. Preserving the leopard's habitat is the best hope for saving these cats.



# Name Tag Patterns



# Name Tag Patterns



## Resources for Going, Going, Gone/Grade 3

### Children's Books

- Endangered Animals: 140 Species in Full Color. George S. Fichter. Golden Press. 1995.
- Endangered Species. Jean F. Blashfield. Children's Press. 1992.
- For Kids Who Love Animals: A Guide To Sharing the Planet. Linda Koebner. Berkley Books. 1993.
- Just A Dream. Chris Van Allsburg. Houghton. 1990.
- No Dodos: A Counting Book of Endangered Species. Amanda Wallwork. Scholastic. 1993.
- Rescuing Endangered Species. Jean Blashfield. Children's Press. 1994.
- The Roadside. David Bellamy. Clarkson N. Potter, Inc. 1988.
- There's An Owl In The Shower. Jean Craighead George. HarperCollins Publishers. 1995.
- Urban Roosts: Where Birds Nest in the City. Barbara Bash. Little, Brown and Company. 1990.
- "V" Is For Vanishing. Patricia Mullins. HarperCollins. 1994.
- Very Last First Time. Jan Andrews. Atheneum. 1985.

### Resources: Videos / Software

- Orangutans of the Rainforest. Best of *Nature*. Baylor Productions. 1989.
- Prehistoric Animals in the Modern World. Books 'N Bytes. CPI Software.

### Resources: Teaching Kits

- Environmental Awareness Activities for Librarians & Teachers. Martha Seif Simpson. Mc Farland & Company, Inc. 1995.
- Guess What's For Dinner?. North Carolina Division of Parks & Recreation, PO Box 27687, Raleigh, NC, 27611-7687.
- K-2 At The Zoo. (1991). Education Services Division, Washington Park Zoo, 4001 SW Canyon Rd, Portland, OR, 97221.
- Threatened and Endangered Species Tour Packet. (1991). Education Services Division, Washington Park Zoo, 4001 SW Canyon Rd., Portland, OR, 97221.
- What Adventures Can You Have In Wetlands, Lakes, Ponds, and Puddles. (\$3. 00). Northern NE Marine Education Project, University of Maine @ Orono, 206 Shibles Hall, Orono, ME, 04469.

## Resources: Conservation Organizations

Below are several organizations dedicated to the conservation of wildlife and wild places. You are encouraged to write for detailed information before sending money to any organization.

### **Fort Wayne Children's Zoo**

Conservation Fund  
3411 Sherman Boulevard  
Fort Wayne, IN 46808

*Supports several projects aimed at preserving habitat for critically endangered animals and captive breeding programs.*

### **Indiana Department of Natural Resources**

Division of Fish and Wildlife  
607 State Office Building  
Indianapolis, IN 46204

*Nongame and Endangered Wildlife Program works to protect Indiana's endangered native wildlife species.*

### **Acres Land Trust Inc.**

2000 North Wells Street  
Fort Wayne, IN 46808

*Acquires and preserves natural areas in northeast Indiana. Administers more than 30 nature preserves, including the Bicentennial Woods.*

### **World Wildlife Fund - U.S.**

1250 24th Street NW  
Washington, DC 20037

*Works worldwide to protect endangered wildlife, especially in tropical forests of Africa, Asia and South America.*

### **Wildlife Conservation Society**

2300 Southern Boulevard  
Bronx, NY 10460

*The conservation arm of the Bronx Zoo, supporting hundreds of field researchers and habitat preservation projects around the world.*

### **Natural Resources Defense Council**

40 West 20th Street  
New York, NY 10011

*Dedicated to protecting American natural resources and improving the quality of the human environment.*

### **Conservation International**

1015 18th Street NW  
Washington, DC 20036

*Dedicated to the preservation of tropical ecosystems in partnership with indigenous peoples.*

## General Resources for Students and Teachers

### BOOKS:

- All About Alligators. Jim Arnosky. Scholastic Inc. 1994.
- Amazing Animal Disguises-Eyewitness Jr. Sandie Sowler. Alfred Knopf. 1992.
- Amazing Armored Animals-Eyewitness Jr. Sandie Sowler. Alfred Knopf. 1992.
- Amazing Cats-Eyewitness Junior. Alexandra Parsons. Alfred Knopf Co. 1990.
- Amazing Wolves, Dogs, & Foxes-Eyewitness. Mary Ling. Alfred Knopf Co. 1991.
- And Then There Was One. Margaret Facklam. Little Brown & Co. 1990.
- Animals A to Z. David McPhail. Scholastic. 1988.
- Animal Homes- Jungles. Shirley Greenisky. Newington Press. 1991.
- Animal Inventors. Thane Maynard. Franklin Watts. 1991.
- Animals of the Night. Lionel Bender. Gloucester Press. 1989.
- Animal Specialists. Nathan Aaseng. Lerner. 1987.
- Big Animals. Anne Priestley. Random House Look and Learn. 1987.
- Big Birds. Denise Casey. Cobblehill Books. 1993.
- Big Book of Amazing Animal Behavior. Tison and Taylor. Grosset and Dunlap. 1987.
- Big Cats. Bobbie Kalman. Crabtree Publishing Co. 1994.
- Big Cats - Picture Library. N.S. Barrett. Franklin Watts. 1988.
- Changing Shape - Nature's Secrets. Paul Bennett. Thomson Learning. 1994.
- Cheetah. Caroline Arnold. Morrow Junior Books. 1993
- Cheetahs - Nature's Children. Alia Smyth. Grolier. 1989.
- Conserving Rainforests. Martin Banks. Steck-Vaughn Co. 1990.
- Egg, A Photographic Story of Hatching. Robert Burton. Dorling Kindersley Inc. 1994.
- Flightless Birds - Picture Library. Norman Barrett. Franklin Watts. 1991.
- Frogs and Toads. Helen Riley. Thomson Learning. 1993.
- Gazelles - Nature's Children. Sheila Dalton. Grolier. 1990.
- Giraffe. Caroline Arnold. Morrow Junior Books. 1993.
- Giraffes - Nature's Children. Merebeth Switzer. Grolier. 1990.
- Here Is the Tropical Rain Forest. Madeleine Dunphy. Hyperion Books. 1994.
- How Speedy Is a Cheetah? Fascinating Facts About Animals. Knapp. Grosset and Dunlap. 1987.
- I Spy at the Zoo. Maureen Roffey. Four Winds. 1988.
- Journey Through A Tropical Jungle. Adrian Forsyth. Simon & Schuster. 1988.
- Kangaroo. Caroline Arnold. Morrow Junior Books. 1993.
- Kangaroos and Other Marsupials. Lionel Bender. Gloucester Press. 1988.
- Kids' World Almanac of Animals & Pets. Deborah Felder. Pharos Books. 1989.
- Llama. Caroline Arnold. Morrow Junior Books. 1993.
- Making A Nest -- Nature's Secrets. Paul Bennett. Thomson Learning. 1994.
- Mammal Eyewitness Books. Steve Parker. Alfred Knopf. 1989.
- Midnight Animals. Christopher Tunney. Random House All-About Books. 1988.
- Monkey. Caroline Arnold. Morrow Junior books. 1993.
- Nature Close-Up, The Turtle. Hidetomo Oda. Raintree Publishers. 1986.
- New Zoos. Madelyn Anderson. Watts. 1987.
- Old World Monkeys - Nature's Children. Bill Ivy. Grolier. 1990.

- One-Hundred Words About Animals. Harcourt Brace. 1987.
- Orangutan. Caroline Arnold. Morrow Junior Books. 1993.
- Orangutan. Carl Green. Crestwood House. 1987.
- Orangutans. Sheila Dalton. Grolier. 1990.
- Penguin. Caroline Arnold. Morrow Junior Books. 1993.
- Rain Forest. Rene Mettler. Scholastic. 1994.
- Rain Forest. Gallimard Jeunesse. Cartwheel Books-Scholastic. 1992.
- Rain Forest. Barbara Taylor. Dorling Kindersley. 1992.
- Rain Forests - Eco Zone. Lynn Stone. Rourke Enterprises Inc. 1989.
- Rainforest Secrets. Arthur Dorros. Scholastic Inc. 1990.
- Really Radical Reptiles & Amphibians. Leslie Elliott. Sterling Publishing. 1994.
- Sea Otters, Jane Goodall's Animal World. Ruth Ashby. Atheneum. 1990.
- Secrets of the Animal World. National Geographic Society. 1986.
- Snake. Caroline Arnold. Morrow Junior Books. 1991.
- Snakes. Helen Riley. Thomson Learning. 1994.
- Strange Animals of Australia. Toni Eugene. National Geographic Society. 1991.
- Tasmanian Devil On Location. Kathy Darling. Lothrop, Lee, and Shepard Books. 1992.
- The World of Fishes. Hiroshi Takeuchi. Raintree Publishers. 1986.
- Tigers - Nature's Children. Bill Ivy. Grolier. 1990.
- Visit to the Zoo. Sylvia Tester. Children's Press. 1987.
- Weird & Wonderful Fish. Colin Milkens. Thomson Learning. 1994.
- Where's That Reptile - Hide & Seek Science. Barbara Brenner. Cartwheel Scholastic Books. 1993.
- Wonders of the Jungle. National Wildlife Federation. 1987.
- Zebra. Caroline Arnold. Morrow Junior Books. 1993.
- Zoo. Gail Gibbons. Crowell. 1987.
- Zoos. Miriam Moss. Bookwright Topics. 1987.

[www.kidszoo.org](http://www.kidszoo.org)

**MAGAZINES:**

National Geographic World  
National Geographic Society  
P.O. Box 2330  
Washington, D.C. 20013-23

Wildlife Conservation

Available as part of Fort Wayne Zoological Society membership or from Bronx Zoo/Wildlife Conservation Park  
Bronx, NY 10460

Science and Children

National Science Teachers Assoc.  
1742 Connecticut Ave., N.W.  
Washington, D.C. 20009-1171

Ranger Rick

National Wildlife Federation  
8925 Leesburg Pike  
Vienna, VA 22184-0001

Your Big Backyard

National Wildlife Federation  
P.O. Box 777  
Mt. Morris, IL 61054-0777

Owl Magazine

25 Boxwood Lane  
Buffalo, NY 14227

Dolphin Log

The Cousteau Society  
870 Greenbrier Circle, Suite 402  
Chesapeake, VA 23320

3-2-1 Contact

Children's Television Workshop  
P.O. Box 53051  
Boulder, CO 80322-3051

Scienceland

Scienceland Inc.  
501 Fifth Ave., Ste. 2108  
New York, NY 10017-6165

Project Learning Tree

American Forest Council  
1250 Connecticut Ave., N.W.  
Washington, D.C. 20036

Project WILD/Aquatic Project WILD

Western Regional Environmental  
Education Council  
Salina Star Route  
Boulder, CO 80302

*Going, Going, Gone/Grade 3*

Ranger Rick's Naturescope  
National Wildlife Federation  
1400 16th Street, N.W.  
Washington, D.C. 20036-2266

3-2-1-Contact

E=Mc Square  
P.O. Box 51177  
Boulder, CO 80322-1177

ZOOBOOKS.

P.O. Box 85384  
San Diego, CA 92103.

**VIDEOS**

3-2-1 Classroom Contact: Australian Mammals - Life Down Under. 3-2-1 Contact Classroom Video Series. 1991. 15 min.

3-2-1 Classroom Contact: Social Behavior -- Living Groups. 3-2-1 Contact Classroom Video Series. 1991. 15 min.

African Animals -- Nature Series, Educational Favorites. Trans Atlantic Video. 1988. 30 min.  
African Wildlife. National Geographic Society. 1990. 60 min.

Animals of the Night, Children's Series Animal in Action. Kodak Video Programs. 1988. 30 min.

Big Cats of the World. Aims. 1994. 19 min.

Cool Creatures: Reptiles. Rainbow. 1994. 22 min.

Dive to the Coral Reefs. Reading Rainbow. 1990. 30 min.

Food Chains -- Eat and Be Eaten. 3-2-1 Contact Classroom Video Series. 1991. 15 min.

Giraffes and How They Live. Aims. 1994. 19 min.

How We Classify Animals. Aims. 1990. 14 min.

Lions of the African Night. National Geographic Society. 1986. 60 min.

Mountain Animals, Children's Series Animals in Action. Kodak Video Programs. 1988. 30 min.

Penguins, Nature Series, Education Favorites. Trans Atlantic Video. 1988. 30 min.

Rain Forest: More Complicated Than You Thought. Aims. 1993. 15 min.

Reptiles, Nature Series, Educational Favorites. Trans Atlantic Video. 1986. 30 min.

**VIDEOS, continued**

Shooting Africa, A Photo Safari Video. Questar Travel Network Productions. 1988. 60 min.

Snakes and How They Live. Aims. 1988. 12 min.

Stellaluna. Reading Rainbow. 1990. 30 min.

The Turtle Family, Children's Series Animals in Action. Kodak Video Programs. 1988. 30 min.

Tree Living Animals, Children's Series Animals in Action. Kodak Video Programs. 1988. 30 min.

You Can't Grow Home Again. 3-2-1 Contact Classroom Video Series. 1991. 60 min.

Zoo, Zoo, Zoo: Animal Groups. Agency for Instructional Technology (AIT). 1993. 15 min.

**SOFTWARE**

<b>TITLE</b>	<b>GRADE</b>	<b>TYPE</b>	<b>PUBLISHER</b>
ABC's Wide World of Animals	4 - 12	MAC/CD/Windows	Creative Wonders
Destination Rain Forest	K - 6	MAC/CD	Edmark
Discovering Endangered Wildlife	4 - 12	CD/Windows	Queue
ECO Adventures in the Rainforest	3 - 12	MAC/Windows	Chariot Software
How Animals Move	4 - 12	MAC/CD/Windows	Discovery Channel
How We Classify Animals	3 - 6	MAC/CD/Windows	ClearVue
Introduction to Vertebrates	3 - 6	MAC/CD/Windows	ClearVue
Learning All About Animals	3 - 6	MAC/CD/DOS	Queue
Mammals of Africa	4 - 12	MAC/CD/Windows	RE Media (Sunburst)
Ocean Explorers and Zoo Explorers	K - 5	CD	Compton's
Ocean Life -- Great Barrier Reef	4 - 12	MAC/CD	Sumeria
Odell Down Under -- Great Barrier Reef	3 - 12	MAC/Windows	MECC
Rainforest Bundle	4-8	MAC/Windows	Sunburst
Rainforest Explorer	4 & up	MAC/CD/Windows	Orange Cherry
San Diego Zoo Presents The Animals 2.0	2 - 12	MAC/CD	Mindscape
Scavenger Hunt Adventure Series: Africa	3 - 12	MAC/CD/Windows	Swe
The Great Ocean Rescue	5 - 8	MAC/Windows	Tom Snyder Prod.
The World of Reptiles	3 - 6	MAC/CD/Windows	ClearVue
Virtual Reality Bird	4 - 12	CD/Windows	DK Multimedia
Virtual Reality Cat	4 - 12	CD/Windows	DK Multimedia
Zoo Keeper	3 - 8	MAC/Windows	Davidson
Zootopia	3 - 12	MAC/CD/Windows	Lawrence
Zurk's Rainforest Lab	K - 3	MAC/CD/Windows	Soliel Software

# Evaluation Form

## Zoo Activity Packet

Dear Teacher:

Please take a few minutes to fill out and return this evaluation form. Your input will help us improve our teacher resource materials in the future.

Return in the envelope provided or mail to Education Department, Fort Wayne Children's Zoo, 3411 Sherman Blvd., Fort Wayne, IN 46808. Thank you for your time and effort!

SCHOOL or GROUP NAME: \_\_\_\_\_

GRADE LEVEL: \_\_\_\_\_ DATE OF VISIT: \_\_\_\_\_

1. Were the materials and activities appropriate for your grade level? \_\_\_\_\_

\_\_\_\_\_

2. Which work sheet did you use? \_\_\_\_\_

\_\_\_\_\_

3. Which activities did you try? \_\_\_\_\_

\_\_\_\_\_

4. Which of these were enjoyed most by your students? \_\_\_\_\_

\_\_\_\_\_

5. Did you create or modify any activities to supplement this packet? If so, we would appreciate receiving a copy to include in future packets or to distribute to teachers on request.

6. What other materials would you like to see included in the packet? \_\_\_\_\_

\_\_\_\_\_

7. Additional comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_