

**Focused Learning Lesson**  
**Life Science**  
**Grades 9-12**  
**SE-H-B2**

**Overview:**

Students will examine the methods, findings, and effectiveness of attempts to preserve and conserve specific species and their habitats. They will differentiate between conserving resources by using them wisely, and preserving resources by protecting, isolating, and not using them at all.

**Approximate Duration:** 45 minutes

**Benchmark:**

**SE-H-B2** comparing and contrasting conserving and preserving resources

**SE GLE:** 14. Analyze data to determine the effect of preservation practices compared to conservation practices for a sample species.

**Benchmark:**

**SI-H-A4** formulating and revising scientific explanations and models using logic and evidence

**SI GLE:** 7. Choose appropriate models to explain scientific knowledge or experimental results (e.g., objects, mathematical relationships, plans, schemes, examples, role-playing, computer simulations)

**Objectives:**

1. The student will explain the difference between conserving and preserving species and other natural resources.
2. The student will examine evidence of conservation and preservation practices to determine their effectiveness.

**Teacher Preparation:**

1. The teacher or students should locate articles concerning endangered species. The teacher can make enough copies of a few articles, or locate enough so that each small group of students within the class can discuss at least one. Articles can be found daily in newspapers, or printed from the Internet. Suggested websites can be located in the Links and References section of this lesson.
2. The teacher should create a two-column “T” chart on the blackboard or overhead, and label the two sides: *Conservation* and *Preservation*.

**Materials:**

- Copies of articles featuring endangered species (Attachment 1, 2, & 3)
- Pencil or pen
- Markers or chalk

**Lesson Procedures:***Set or Opener:*

Ask the class, “Does anyone have a collection of objects they hold valuable?” Some responses may include baseball cards, dolls, coins, stamps, etc. “Is it better to just preserve what you have, or to trade and interact with other collectors?” Again, the students will probably take sides. Some will hold on to their collection alone, and others will try to strengthen their collection by interacting. Have them discuss the advantages and disadvantages of each approach. The single collector does not lose, but may not improve. The interacting collector may lose or gain through trades. Say, “These two approaches are at the heart of protecting our natural resources for the future.”

*Body of the Lesson:*

1. Give the students the definition of conservation and preservation. *Conservation* is the practice of using natural resources sensibly and carefully, while *preservation* includes the setting aside of natural areas so that they may remain undisturbed by human use. Preserved areas are restricted and protected.
2. Divide the students into small groups of three or four. Give each group a copy of an article concerning an endangered animal and the practices being employed to protect that species.
3. Instruct the students to read their article within their group and decide if the practices are conservation or preservation. In addition, have groups analyze to determine if the practices show success or regression.
4. Each group should present their findings to the class and add the name of their species under the title of conservation or preservation.

*Closure:*

After all groups have presented, have the students discuss the advantages and disadvantages of the two approaches. On the chalkboard or a transparency, list the class consensus on advantages and disadvantages of each approach. Once the debate has subsided, ask if we should choose one method over the other, or continue to utilize both. Students should now recognize the concept that although humans can intervene and succeed in conservation methods, preservation is also vital to the continuation of habitats and wildlife.

**Attachments:**

1. *Alligator's Last Stand* and *Back to Mongolia*
2. *New Roo* and *Thick Shells Don't Break*
3. *Glad That's Settled* and *Whale Boom*

**Assessment:**

Have the students address the following questions either orally or in written responses.

1. Does the article describe conservation or preservation? Explain your reasoning.  
*If the article details the wise use and involvement of humans, the students should list it as conservation. If the article describes habitat that is set aside for the species without human interaction, the students should list it as preservation.*

2. Is the environmental practice described in the article showing success with the particular animal? Why or why not?  
*Students should look for increases in populations of the specific species. Low population, isolated populations, low birth rates, and large predators are particularly difficult to rebound back from endangered status. Students should list specific methods that seem to be helping or hindering the progress of the animal.*
3. If conservation practices are being used, what would be the advantages and/or disadvantages of preservation of this species? If preservation practices are being used, what would be the advantages and/or disadvantages of conservation of this species?  
*Students are analyzing the methods and approaches to conserving or preserving the species in the article. They decide based on the information given, if the animal is better off with or without human intervention.*
4. How are humans affecting the animal in a positive way?  
*Answers will vary based on the article. May include population increases, habitat increases, etc.*
5. How are humans affecting the animal in a negative way?  
*Answers will vary based on the article. May include poaching, loss of habitats, domestication of a previously wild animal, etc.*

**Suggested Links for Articles:**

National Geographic	<a href="http://www.nationalgeographic.com">http://www.nationalgeographic.com</a>
Nature Conservancy	<a href="http://nature.org">http://nature.org</a>
La Dept of Wildlife and Fisheries	<a href="http://www.wlf.state.la.us">http://www.wlf.state.la.us</a>
National Wildlife Federation	<a href="http://www.nwf.org">http://www.nwf.org</a>
Discover Magazine Online	<a href="http://www.discover.com/">http://www.discover.com/</a>
New Scientist	<a href="http://www.newscientist.com/">http://www.newscientist.com/</a>

**References:**

- Alligator's Last Stand [Electronic version]. *New Scientist*. Retrieved on January 10, 2004, from <http://www.newscientist.com>
- Back to Mongolia [Electronic version]. *Discover*. Retrieved on January 10, 2004, from <http://www.discover.com>
- New Roo [Electronic version]. *Discover*. Retrieved on January 10, 2004, from <http://www.discover.com>
- Thick Shells Don't Break [Electronic version]. *Discover*. Retrieved on January 10, 2004, from <http://www.discover.com>
- Glad That's Settled [Electronic version]. *Discover*. Retrieved on January 10, 2004 from <http://www.discover.com>
- Whale Boom [Electronic version]. *Discover*. Retrieved on January 10, 2004, from <http://www.discover.com>

## Attachment 1

### **Alligator's Last Stand.**

The Chinese alligator is set to become the first crocodylian species to die out in recent history. "This is a species literally on the edge of extinction," says John Thorbjarnarson of the Wildlife Conservation Society in New York. He and his team used nocturnal counts and interviews with local people to estimate the number of individuals in the alligator's last stronghold--a reserve in Anhui province, eastern China (Biological Conservation, vol 103, p 93). They reckon that there are fewer than 130 individuals in the wild and that numbers are falling by four to six per cent per year. Thorbjarnarson puts the crisis down to agricultural expansion, which is destroying the alligator's wetland habitat.

### **Back to Mongolia**

A small herd of Przewalski's horses returned to the wild last summer on the Mongolian steppe, where the species had been extinct for more than two decades. Thick-necked and black maned, this ancient species - believed by some to be the ancestor of the domestic horse - had been hunted, out competed by domestic livestock, and shipped off to zoos in the West. Fortunately, a few survivors bred in captivity. Two years ago a Dutch conservation foundation flew some of them back to Mongolia, keeping them in large enclosures while they adjusted to the harsh climate. Last June the gates were opened, and 19 horses were released. One more foal was born in the wild. "Remarkably, 100 percent of the mares foaled this year," says Lee Boyd, a zoologist from Washburn University who witnessed the release. "If they continue to flourish at anything close to this rate, they will be a self-sustaining population by the year 2000." The Dutch foundation plans to release more herds.

## Attachment 2

### **New Roo**

A new species of tree kangaroo turned up last year in western New Guinea, in the Indonesian province of Irian Jaya. Tim Flannery, a biologist with the Australian Museum in Sydney, first became aware of an "interesting looking" tree kangaroo on a visit to the province in 1990, when he saw a Dani tribesman with a hat made from an unusual skin. Last May Flannery and a group of local hunters managed to track down a live animal - but the hunting dogs got to it first, and it died of shock. "I was pretty depressed about that," Flannery says. Fortunately for science, a live male of the species turned up in October at a nearby copper and gold mine, sitting among oil drums and covered in oil, and mine workers captured it alive. The new tree kangaroo, which has yet to be named, is the only member of the kangaroo family that is black and white. It stands about two and a half feet tall and weighs about 20 pounds. Unlike other tree kangaroos, it apparently spends most of its time on the ground. "It's capable of climbing trees still," says Flannery, "but its skeletal morphology suggests that it can't do things other tree kangaroos can do, like leap out of the treetops."

### **Thick Shells Don't Break**

The bald eagle is back. The U.S. Fish and Wildlife Service proposed last July that the nation's symbol should no longer be considered endangered; it's merely threatened. In 1963 there were only 417 nesting pairs of bald eagles in the lower 48 states, but now there are more than 4,000. Officials say the ban on DDT, the insecticide that once caused eagles and other birds to lay fragile, thin-shelled eggs, helped bring back the eagle. So did the protections afforded by the Endangered Species Act, which will remain in effect; it will still be illegal to shoot a bald eagle. "It's just reached the point where threatened is a more appropriate designation than endangered," says Georgia Parham of the Fish and Wildlife Service. "But it's more a reflection of a species' status than a change in protection."

## Attachment 3

## **Glad That's Settled**

The world's smallest primate, weighing just one ounce, was discovered in Madagascar in October 1992 - but last year it became clear that the discovery was in fact a rediscovery. Jutta Schmid, a graduate student at the University of Tübingen, found the tiny, mouse-size lemur in one of her traps set in the Kirindy Forest in 1992. "She was putting out traps right near the camp, at a place where nobody else bothered catching animals before," says Jorg Ganzhorn, an ecologist with the German Primate Center who is Schmid's adviser. But a search through the scientific literature this past year revealed that Schmid's supposedly new lemur had been described by one Wilhelm Peters 150 years earlier as *Microcebus myoxinus*. Later, however, *M. myoxinus* had gotten confused with another species, *M. murinus*; its photo had even appeared under that name in textbooks. "Sometimes these taxonomists, they have funny ideas," Ganzhorn says. "It's half the size of murinus. How somebody could get the idea of lumping them I don't know."

## **Whale Boom**

Last June the California gray whale became the first marine mammal ever to be taken off the endangered species list. Researchers estimate that there are now about 21,000 gray whales. "In spite of the increase in traffic and coastal use, they seem to be doing quite well," says biologist Howard Braham, director of the National Marine Mammal Laboratory in Seattle. "The population now appears to be as large as or larger than it was before commercial whaling started back in the 1800's." Gray whales are still protected under the federal Marine Mammal Protection Act; only Arctic subsistence hunters may kill them. But Braham says the gray whale is not in danger of becoming extinct in the foreseeable future.