

APRIL 2006: ENDANGERED ANIMALS

# GREENTIMES TEACHER GUIDE

Dear Teacher,

The intended role of *Greentimes Teacher Guide* is to assist you in using each issue of *Greentimes* in various classroom settings. We offer a selection of cross-disciplinary activity and lesson ideas that partner the concepts presented in the newsletter with curriculum areas. There are also reproducible pages that you can give to your students (if they read most or all of the newsletter). Please feel free to tell us what you want to see in these guides in the future – just e-mail Heather at [hfreeman@greenscreen.org](mailto:hfreeman@greenscreen.org)!

## BACKGROUND INFORMATION



<http://www.endangeredspecies.com/>: Everything you need to know about **endangered species** from causes of endangerment, to endangered animals in your state, to what you can do to help, to various fun facts and figures. Also offered are teacher links (with lesson plans) and student links.

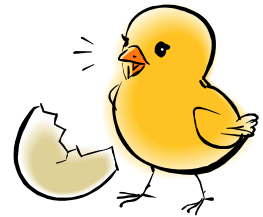
<http://whoopers.usgs.gov/faqs.htm>: Information of the **Whooping Crane**.

<http://www.planetpals.com/foodchain.html>: Information on the **food chain**.

<http://www.nps.gov/plants/alien/>: A website devoted to **invasive plants** in the United States. Information on why it is important to control invasive weeds, what plants are invasive and other interesting facts.

## HANDS ON SCIENCE

Help students to visualize the part of a **bird's life cycle** that they cannot see—development in the egg. Visit <http://esd.iu5.org/LessonPlans/LifeCycle/animals.htm> for an easy experiment that shows students how a bird survives in an egg before it hatches. You will need a raw egg and a hardboiled egg. Additionally, the life cycles of several different species, such as frogs, grasshoppers, butterflies, and turtles are outlined.



Build a bird's nest in the classroom with the following materials: mud, straw, grass, twigs, string, sticks, eggs, 3 rulers and tape. Want to see how strong your nest is? Place the nest on a branch low to the ground and place a couple of eggs in it (hard boil the eggs to avoid a mess).

Students learned that herbivores eat plants and that plants produce energy with the aid of the sun. Plants, like animals, also need water to survive. You can show students that plants need water by filling up three bottles of water and dropping a different type of food coloring in each one. In each bottle put a freshly cut white flower. The next morning the flower will be tinted with the color of the food dye.

**DID YOU KNOW** that before fixed nitrogen (nitrogen that can be used in fertilizers and bombs) was synthetically made it was harvested from bird droppings? Offshore islands of Peru played an integral role in the supply of nitrogen to the United States and other countries. So important was this collection of dung, or **guano**, that the United States fought a battle in 1856 in an effort to claim the islands as its own. However, the fight was fruitless. Bored explorers who went bird hunting as a means of entertainment and over exploitation of the island brought the end of the guano trade because so many of the birds had been slaughtered or died. It goes to show, the endangerment of animals and human activity can have serious unforeseen consequences.

## SPOTLIGHT SAHARA DESERT

---

The article 'Physical Adaptations' discusses the importance of an animal's ability to adapt to its environment. Use this article to lead students into a discussion about the Sahara desert.

- The Sahara desert, the biggest dessert on Earth, is famous for size. Located in North Africa, the Atlantic Ocean is to the West, the Mediterranean Sea and the Atlas Mountains are to the North, the Red Sea and Egypt are on the East, and the Niger River Valley and Sudan are to the South. Can students locate these countries, rivers, oceans and mountains on a map or globe.
- Do students know any plants or animals that can survive the desert's harsh environment as a result of adaptation? For example, a large majority of mammals and reptiles in the Sahara are nocturnal which helps them to withstand the intense heat of the day. Some animals even live underground. Also, many plants use thorns as a defense mechanism to discourage animals for drinking the water from inside their stems. What other plants and animals around the world do students know that have adapted in order to survive?
- Birds and rodents of the Sahara typically only reproduce during periods of rain because that is when plants will grow. How does this compare to the reproductive cycles of other animals students read about in *Greentimes Endangered Animals*.
- Do students know of any other deserts in the United States? Can they locate them on a map? Deserts are extremely dry and hot areas. For more information on what classifies a desert go to <http://pubs.usgs.gov/gip/deserts/what>.
- Are students aware of another well know desert in Africa, the Kalahari (in South Africa)?

## HISTORY

---

Use the article 'Physical Adaptations' to teach students about **Puerto Rico**. Students discovered that the Puerto Rican Parrot is endangered. After reading this article, or while referencing this article in a history lesson, ask students to locate Puerto Rico on a map and discuss the following issues. For a comprehensive timeline of Puerto Rican history visit <http://welcome.topuertorico.org/history.shtml>.

- The capital and the largest city of Puerto Rico is **San Juan**. What other country capitals can students identify? (For example, the capital of Canada is Ottawa and the capital of Mexico is Mexico City.)
- What ocean and sea surround Puerto Rico (the Atlantic and the Caribbean Sea)?
- Have students observe Puerto Rico's position on a map. Can students make the connection that since the island is located near the equator it has a topical climate?
- Ask students when the Spanish colonized Puerto Rico. Christopher Columbus originally landed there in 1493, claiming the island for Spain. However, it was not actually colonized until 1508 by Ponce De León (for Spain).
- When initially colonized, the island was home to 30,000 Taínos (natives of Puerto Rico). However, throughout the period of European colonization most of the residents died. Can students figure out why? Some reasons include lack of resistance to European diseases and mistreatment by Spaniards.
- Do students realize that Puerto Rico is a commonwealth of the United States? When did Puerto Rico become a commonwealth of the U.S (1898)? Explain that the Spanish-American War instigated the transition of the colony from Spanish rule to American rule. Do students know the difference between a state and a commonwealth? Visit <http://ask.yahoo.com/20001117.html>. Keep in mind the commonwealths of Massachusetts, Virginia, Pennsylvania and Kentucky are technically called commonwealths but legally act as states.

## THE LEVELS OF ENDANGERMENT

**Vulnerable Species:** These species have low or declining populations and are at risk for endangerment. At this stage they are not considered to be a threatened species. The Yellow-eyed Penguin is a vulnerable species.

**Threatened Species:** These species are facing significant problems that could lead to their endangerment. Although they are not in immediate jeopardy of extinction, if their situations are not recognized they will become endangered. The Bald Eagle is a threatened species.

**Endangered Species:** An endangered species is in definite and immediate danger of becoming extinct. It can't survive without protection because its population is so small. The Florida Panther is an endangered species.

## READING SUGGESTIONS

**Inheritance and Selection (Life Science in-Depth) by Ann Fullick.** This book is intended to be read by students around the age of 9 and above.

**The Life Cycle of a Frog (The Life Cycle Series) by Bobbie Kalman, Kathryn Smithyman and Bonna Rouse.** This is a fun and simple book that is great for kids. It is one of a series that includes books on the life cycle of a honeybee, butterfly, spider, earthworm and bird.

**Eating Apes (California Studies in Food and Culture) by Janet K. Museveni, Karl Ammann, and Dale Peterson.** A convincing read, this is a good book for adults concerned with the endangerment of apes. The research is primarily focused on the consequences of the modern day food consumption of apes, such as the bushmeat trade in Africa, while still presenting other elements contributing to the cause of ape endangerment.

**Priceless : The Vanishing Beauty of a Fragile Planet by Bradley Trevor Greive and Mitsuaki Iwago.** Geared towards adults, this book provides excellent photographs and information about endangered animals around the world.

## WRITING

**Tenses:** The article 'Whooping Cranes Migration' talks about Whooping Cranes in the past and in the present. Discuss the first paragraph and ask students to identify verbs that are in the past tense and verbs that are in the present tense. Can students make any comments about Whooping Cranes in the future tense?

**Simple and Compound Sentences:** Use 'Happy in the Cold...and at the Equator' to discuss the structure of simple and compound sentences. Can students differentiate between the two structures? Ask students to break down compound sentences into simple sentences or to combine simple sentences to create compound sentences.

**Opinions:** Ask students to form an opinion about the causes of animal endangerment using the article 'Animal Endangerment.' Students could express views about habitat destruction and pollution. Opinions should be supported by evidence from the article.

## GEOGRAPHY

**Continents:** *Greentimes Endangered Animals* talks about animals that live all over the world. Can students name the seven continents?

- What countries and geographical aspects can students identify on each continent. Create a class list of places and major geographic landmarks (mountains, rivers, rain forests, peninsulas, etc). If students are currently learning about a specific country or geographic area ask students to recognize information that they have already learned.
- There are seven continents now but millions of years ago there was only one. Can students **recall** the name of this supercontinent, Pangaea?



**Africa:** Expanding upon 'Spotlight Sahara Desert,' located in the Teacher Guide, ask students to draw an outline of Africa. Then, ask students to fill in the following geographic features: the Sahara Desert, the Nile River, Mount Kilimanjaro, the Kalahari Desert and the Cape of Good Hope.



Name \_\_\_\_\_

Date \_\_\_\_\_

*Greentimes Endangered Animals*

1. Name 2 reasons that might cause an animal to become endangered.

---

---

2. What is an invasive species? Give one example of an invasive species.

---

---

3. Where do penguins live?

---

---

4. What do Snow Leopards look like? How does this help them survive in their environment?

---

---

5. Name three reasons why Whooping Cranes are endangered.

---

---

6. Name two special qualities that help nocturnal animals move around at night.

---

---

7. What is the first stage of life? In what way is it different for a human, butterfly and frog?

---

---

8. What is the last stage of life for all animals?

---

---

Name \_\_\_\_\_

Date \_\_\_\_\_

*Greentimes Endangered Animals*

Use the articles 'Happy in the Cold...and at the Equator?' 'Physical Adaptations' and 'Snow, Snow Go Away! Little Caribou Want to Live!' to fill in the chart.

<b>Animal</b>	<b>Reason for Endangerment</b>	<b>Physical Characteristics of Animal</b>
<b>Peary Caribou</b>		
<b>Black Rhino</b>		
<b>Puerto Rican Parrot</b>		
<b>Galapagos Penguin</b>		

Use the article 'The Food Chain' to answer the following questions.

1. Where do all animals get energy?

---

---

2. What are tertiary consumers. Give one example of a tertiary consumer.

---

---

3. What are producers? Give one example of a producer.

---

---

4. What are primary consumers. Give one example of a primary consumer.

---

---