

VOCABULARY

TALL BLONDES

adaptation *a change in appearance or behavior that increases an individual's ability to survive and reproduce in a given environment, resulting from natural selection or variation*

infrasound *sound waves that move so slowly that they cannot be heard by humans, but can be felt as vibrations or detected by special computer software*

mutation *a permanent change in an animal species' genes (DNA)*

ossicones *hair-covered horns made of bone*

prehensile *adapted for seizing or holding, especially by wrapping around an object*

THE VANISHING LIONS

artificial insemination *when humans artificially impregnate a female animal with sperm from a male animal; often done to introduce new genes into an inbred group of animals*

gene pool *the collective genetic information contained within a breeding population*

habitat *the natural area where an animal lives*

inbreeding *interbreeding of closely related animals, which reduces the overall genetic health and variety within a species*

Masai *a semi-nomadic African tribe*

pride *a group of lions living together*

NATURE SCHEDULE

April – May 2006

| | |
|----------|-------------------------------------|
| April 16 | Tall Blondes |
| April 23 | Cloud: Wild Stallion of the Rockies |
| April 30 | The Vanishing Lions |
| May 7 | Crime Scene Creatures |
| May 14 | Snowflake: The White Gorilla |
| May 21 | The Dolphin Defender |
| May 28 | Horse and Rider |

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TALL BLONDES

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THE VANISHING LIONS

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VIDEO ORDERING INFORMATION

To purchase copies of *Tall Blondes* and *The Vanishing Lions*, call 1.800.336.1917 or log on to www.shophirteen.org.

thirteen
WNET NEW YORK



450 West 33rd Street
New York, NY 10001
www.thirteen.org
www.pbs.org



TEACHER'S
GUIDE

LIONS & GIRAFFES



Canon



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WNET NEW YORK



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William Clay Ford, Jr.
Chairman of the Board
Ford Motor Company
One American Road
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Dearborn, Michigan 48126-2798 USA

Dear Educator:

Ford Motor Company is pleased to bring you this Teacher's Guide and classroom poster for NATURE.

The Guide provides stimulating lessons and activities for teachers and students to use as they learn more about the excitement of scientific discovery. It is for use with two NATURE programs airing in April that focus on African animals, the ways people coexist with wildlife, and efforts to protect species and their habitats.

The NATURE series is an inspiring and exciting way for children to encounter the environment in their classrooms. Ford Motor Company has a strong legacy in caring for the environment and in education initiatives, including its innovative curriculum, Ford Partnership for Advanced Studies. We are proud to be associated with this outstanding program.

On behalf of all of us at Ford Motor Company, I salute your work and hope you find these NATURE materials a useful tool. I invite you to visit our website at www.fordvehicles.com/environment for more information on our environmental programs and at www.fordpas.org for the Ford Partnership for Advanced Studies.

Sincerely,

William Clay Ford, Jr.



Canon U.S.A., Inc.
One Canon Plaza
Lake Success, NY 11042-1198

Dear Teachers:

For the 16th consecutive year, Canon U.S.A., Inc. is proud to support NATURE and to contribute to this exceptional Teacher's Guide.

The lessons in this Teacher's Guide discuss two NATURE programs, *Tall Blondes* and *The Vanishing Lions*. Both programs focus on African wildlife and conservation – *Tall Blondes* explores the lives of giraffes, while *The Vanishing Lions* examines the challenges facing Africa's largest predator.

Canon continues its commitment to preserving the never-ending beauty of nature. Our technology allows everyone to capture the wild in pictures and leave it as they have found it, preserving our environment.

In the spirit of our corporate philosophy – kyosei, all people, regardless of race, religion, or culture, harmoniously living and working together into the future – Canon takes a socially responsible approach to business. We strive to improve our relationship with local communities and to increase our respect for the environment.

Many award-winning professional photographers and videographers depend upon our high-quality cameras, lenses, camcorders, and photographic printers around the world – including many of whom produce award-winning NATURE programming. Canon's popular line of consumer products also allows people everywhere to capture, print, and preserve their memories. Our new corporate slogan, **Canon image*ANYWARE***, represents our ability to create a borderless environment of people, devices, images, and information that lets people live and work the way they want, virtually anytime, anywhere.

You can learn more about us and the many environmental and community programs we support at www.usa.canon.com. Canon invites you to join us in watching the NATURE series every week.

Sincerely,

Yoroku Adachi
President and CEO
Canon U.S.A., Inc.

INTRODUCTION

This Teacher's Guide accompanies two NATURE programs – *Tall Blondes* and *The Vanishing Lions*.

Tall Blondes, hosted by ABC 20/20 correspondent Lynn Sherr, explores the lives of giraffes in Kenya, South Africa, and other locations around the world. *The Vanishing Lions* examines the



challenges facing Africa's largest predator and features interviews with lion experts, farmers and Masai herdsman as they search for solutions to the problems of saving lions and living with them.

Lessons in the guide use the programs as a starting point for discussions about the adaptations that make these animals unique, as well as the threats that have an impact on their health and future survival in the wild. This guide includes teacher's pages and student activity masters that can be used with any or all of the programs. Please photocopy the pages and hand them out to students in class.



Web Resources

In addition to using the video and this guide, please ask your students to look at the NATURE Web site (pbs.org/nature). It may be helpful to copy and distribute other Web addresses we've included, or to have your students do Web searches on topics we've covered in the programs.

Using NATURE Videos in the Classroom

You may wish to use questions on the Teacher's Page to spark discussion about *Tall Blondes* and *The Vanishing Lions*. By posing these questions to students before they watch the video, you can help focus their viewing experience. You may stop the video periodically, so students can discuss the subject matter while it is fresh in their minds.

If you are going to use the programs in school, please **pre-screen** them to find the segments you'd like to use. **Please note both programs include scenes dealing with animal reproduction, including mating in *Tall Blondes* and artificial insemination in *The Vanishing Lions*.** Each program is one hour. If time is limited, consider using clips that relate directly to the questions and activities that best meet your needs.

Teaching NATURE with Standards

National Science Education standards for Grades 5–8 apply when using these materials. SCIENCE AS INQUIRY: Content Standard A — Identify Questions That Can Be Answered Through Scientific Investigations; Use Appropriate Tools and Techniques to Gather, Analyze, and Interpret Data; LIFE SCIENCE: Content Standard C — Diversity and Adaptations of Organisms; HISTORY AND NATURE OF SCIENCE: Content Standard G — Science as a Human Endeavor. For more information on the Web, go to www.nap.edu/readingroom/books/nses/html/6d.html.

National Council of Teachers of English standards apply when using these materials:

Standard 8: Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and communicate knowledge. For more information on the Web, go to www.ncte.org/about/over/standards/110846.htm.

Videotaping Rights

You have the right to tape the programs and play them for instructional purposes for one year after the programs are broadcast.

Broadcast Dates

Most PBS stations are broadcasting *Tall Blondes* and *The Vanishing Lions* on the dates below. Broadcast times and dates vary in some areas. Please check your local TV listings to confirm when your PBS station will show the programs.

| | |
|----------------------------|----------|
| Tall Blondes | April 16 |
| The Vanishing Lions | April 30 |

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BROADCAST DATE: APRIL 16, 2006

Viewing Time: One hour (brief video segments may also be used)

AT A GLANCE

Theme: Giraffes have been walking the planet for more than two million years, but we're only now starting to learn how these marvelous creatures communicate. As the giraffe population in Africa declines, scientists help by trapping wild giraffes and moving them to safer locations.

PROGRAM HIGHLIGHTS

- Program host journalist Lynn Sherr loves giraffes. She shares her passion for these wondrous animals by taking viewers to Kenya, South Africa, and a zoo in the United States.
- For centuries, scientists thought giraffes were mute. Liz von Muggenthaler has discovered that giraffes do indeed talk with each other. But to hear these low-pitched sounds, she needs to use special computer software.
- Lynn Sherr talks with the head keeper of the Marwell Park Zoo in England. In a moving flashback, viewers hear the true tale of Victor, a popular giraffe at the zoo who had an accident in 1977 that led to his death. He fell spread-eagled on the ground, and couldn't get up.
- Shaun Rambert runs a wildlife translocation company in Zimbabwe in Southern Africa. Lynn Sherr joins him at Borakalalo National Park as he captures several giraffes and transports them to other locations.

OBJECTIVES

Students will:

- Analyze a variety of the giraffe's unusual adaptations.
- Conduct research to learn more about the giraffe's characteristics and behavior.

BEFORE VIEWING THE PROGRAM

Write the following animal names on the board: bear, camel, bat, elephant, hippopotamus, giraffe, rabbit, monkey, rat, blue whale, cow, dog, humans. Ask students what all these animals have in common. After students make suggestions, point out that all these animals are mammals. Write "mammals" on the board, and explain that there are about 4,000 different kinds of mammals on the planet today. They are all descendants (very distant relatives) of the first mammal that lived about 200 million years ago.

To help students generate prior knowledge about mammals, ask them to identify some of the main

characteristics or features that all mammals share. To assist them, remind them that humans are mammals. Help them brainstorm a list of mammal characteristics, including: they have hair, they breathe air, they give birth to live young that drink their mother's milk, and they are warm-blooded (their body temperature stays the same even when it is quite warm or cold outside).

Explain that today they'll be talking mostly about two mammals: Giraffes and Humans. Ask students to guess which animal has more bones in its neck—a giraffe or a human. After letting students respond, reveal the answer. Giraffes and humans, like almost all other mammals, have the same number of neck bones—seven. Point out that giraffe's seven neck bones are, of course, much longer than ours (each one can be about 10 inches long). If there's time, invite students to guess how much a giraffe's heart weighs, reminding them that its heart must pump blood all the way up its tall (6 foot) neck. Many students will be surprised to learn that the heart of an adult giraffe weighs about 25 pounds. This fact will be even more amazing if you can let student volunteers briefly carry an object that weighs this much.

DISCUSSION QUESTIONS

What makes a giraffe a giraffe? Describe some of its key physical features.

What tools do scientists use to understand how giraffes communicate?

Why do giraffes have such tall necks? [This adaptation did not evolve, as many people think, to get them access to a hard-to-reach food. Instead, most scientists believe that the giraffe's long neck is a genetic fluke, a mutation of evolution.]

Why are giraffes being relocated in Zimbabwe? What other ways might people coexist with giraffes in Africa?

FUN FACT

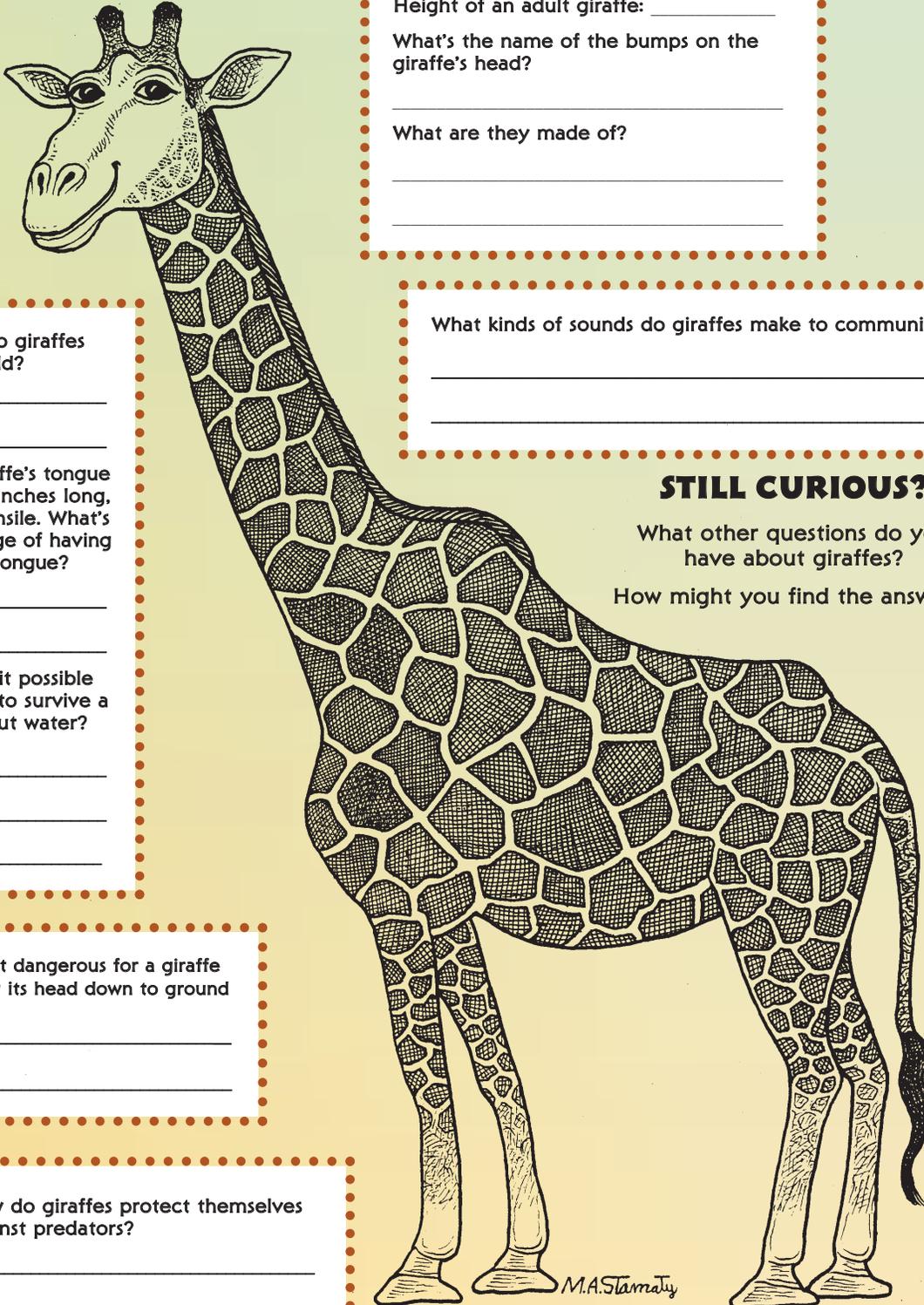
No two giraffes have the same pattern of spots. The pattern on a giraffe's coat is like a human fingerprint or the pattern of spots on a dalmation. At the same time, there are nine subspecies of giraffe that all look different – they can be recognized by their patterns and where they live in Africa.

WEBSITE

www.sandiegozoo.org/animalbytes/t-giraffe.html

ACTIVITY TIME: 1 – 2 class periods

Giraffes are amazing mammals. In addition to their famous long necks, they have many interesting adaptations such as super long eyelashes, a huge heart, and a variety of patterns on their fur. By using the information from this NATURE program, as well as books and Web sites, you'll be able to track down answers—which will probably lead to more questions.



Height of an adult giraffe: _____

What's the name of the bumps on the giraffe's head?

What are they made of?

What food do giraffes eat in the wild?

An adult giraffe's tongue is about _____ inches long, and is prehensile. What's one advantage of having a prehensile tongue?

What makes it possible for a giraffe to survive a month without water?

What kinds of sounds do giraffes make to communicate?

STILL CURIOUS?

What other questions do you have about giraffes?

How might you find the answers?

Why is it dangerous for a giraffe to bring its head down to ground level?

How do giraffes protect themselves against predators?

ILLUSTRATION BY MARK ALAN STAMATY

HELLO UP THERE!

THE VANISHING LIONS

BROADCAST DATE: APRIL 30, 2006

Viewing Time: One hour (brief video segments may also be used)

AT A GLANCE

Theme: Conservationists estimate that the number of wild lions in Africa has dropped dramatically in recent decades. Scientists are working hard to identify what is causing them to die at this rate, and figure out what can be done to bring lions back from the brink of extinction.

PROGRAM HIGHLIGHTS

- In the early 1980s, there were an estimated 200,000 lions in Africa. Today, there may be fewer than 20,000. One reason is a deadly virus called canine distemper, which is spread by jackals.
- Lions sometimes hunt livestock owned by the Masai, a semi-nomadic tribe. To protect their cattle, these farmers kill the lions. Sport hunting also threatens the lions' survival.
- The Laikipia Predator Project in Kenya, a Wildlife Conservation Society program, shows that the conflict between the Masai and Africa's lions isn't inevitable.
- The lion population also is declining as a result of isolation and inbreeding. One solution is artificial insemination. By collecting sperm from lions in one region and using it to inseminate lions from another, scientists are able to freshen the gene pools.

OBJECTIVES

Students will:

- Analyze strategies that scientists are using to try to increase the wild lion population in Africa.
- Discuss the importance of genetic diversity in maintaining the health of animal populations

BEFORE VIEWING THE PROGRAM

Introduce the topic by asking if any of the students have seen a live lion, and if so, to describe the experience. Any encounters with lions probably happened at the zoo or at the circus. Ask them if they wanted to see a lion in the wild, where would they go? Most will probably know the answer: Africa. Explain that there may be fewer than 20,000 lions now roaming in Africa. 20,000 may sound like a high number—but it's not. Scientists estimate that ten times that number lived in Africa in the early 1980s. Ask: Why do you think so many lions are dying? Have students brainstorm answers to this question, and write down all reasonable responses on the board.

Explain that the program will focus on the following reasons for the declining lion population: contagious diseases, inbreeding, conflicts with the Masai, and sport hunting. Point out that all of these reasons are related to the growth of the human population in Africa. Explain each of these reasons briefly.

- 1) **Contagious diseases** As human populations move closer to the lions' habitat, the lions are exposed to more diseases of animals that live with humans, in this case dogs. Some dogs carry a sickness called canine distemper, an airborne disease that gets passed to wild jackals, and then to lions.
- 2) **Inbreeding** As lion populations become more fragmented and isolated, their gene pool shrinks, making lions more vulnerable to disease and infertility.
- 3) **Conflicts with the Masai** As the lions' territory shrinks, they sometimes hunt the livestock that belong to the Masai. To prevent this from happening again, the Masai kill any lions that take their property. While hunting them with spears used to be a ritual tradition for Masai men, it is illegal — they now only kill lions to protect their livestock.
- 4) **Sport hunting** The trophy hunting of lions is a threat to their survival, since the death of mature adult males can be disastrous for a pride.

DISCUSSION QUESTIONS

Why is it beneficial for lions to live in groups (prides)?

What lion behavior did you observe in this program that surprised you?

What benefits may Masai entrepreneur Jonathan Kip's tourist lodge bring to both the Masai and the lions?

What limits do you think should be placed on the sport hunting or trophy hunting of lions?

FUN FACT

Lions spend 16 to 20 hours a day sleeping and resting. Nice life, don't you think?



ACTIVITY TIME: 2 – 3 class periods

The lion population in Africa is decreasing at an alarming rate. Just twenty years ago, it is estimated that there were ten times more lions than there are today. Conservationists want to do all they can to reverse this trend before lions become extinct.

WHAT TO DO

- As you watch this program, take notes on each of the three threats described below, as well as their proposed solutions. After discussing the program with other students in your class, fill in the Notes column. Discuss if you think the proposed solution will be effective in solving the problem.

| THREATS | SOLUTIONS | NOTES |
|---|--|---|
| Why are so many wild lions dying out? Canine Distemper | How are scientists and others trying to address the problem? | Do you think this solution will work? Why or why not? |
| Killed by the Masai to protect their livestock | | |
| Inbreeding | | |
| Sport Hunting | | |

- If there's time, go to the library or use the Internet to dig up details about one lion conservation project. After your research, present your findings to the class either as a written report or an oral presentation. The following links may be helpful.

Laikipia Predator Project
http://www.wcs.org/sw-around_the_globe/Africa/kenya/laikipiapredatorproject

Kilimanjaro Lion Conservation Project
<http://www.lionconservation.org/kili.htm>

African Wildlife Foundation — Lions
<http://www.awf.org/wildlives/148>

Lion Conservation.org
<http://www.lionconservation.org/>

African Lion Working Group
<http://www.african-lion.org/>

Lions on the Edge
<http://www.zoo.org.au/exhibits/lionsconservation.htm>