This curriculum guide was developed for use with public television's Nature series. The materials in the guide are designed to help students actively participate in the study and experience of nature. Students are encouraged to view the programs as naturalists would, observing animals in a variety of habitats, noting their behavior, and drawing conclusions. Each lesson in the Teacher's Resource Guide includes: (1) a "Program Overview" that presents background information and brief synopses of the program to be viewed; (2) "Objectives" that provide the teacher with measurement goals; (3) a "Before Viewing Activity" that familiarizes students with the subject and allows them to set purposes for viewing; (4) "Vocabulary" that features definitions of unfamiliar words used in each program; (5) "Discussion Questions" that help students assess the main points of the program; (6) "Suggested Resources" for students who may want to learn more about the topic; and (7) a "Naturalist's Guide" (student worksheet) to be duplicated and distributed to students. The programs highlighted in this guide focus on the vast Indian subcontinent and its rivers, oceans, deserts, mountains, and forests. Program titles include "The Tiger's Domain," "Sacred Waters," "Unknown Seas," "Desert Seas," "Desert Kingdom," "Mountains of the Gods," and "Monsoon Forests". (WRM)
Dear Educator:

For the ninth consecutive year Canon U.S.A., Inc. is pleased to be a sponsor of the NATURE series, and bring you this Teacher's Guide.

NATURE brings the wonders of the natural world into our homes in a unique and informative manner. The NATURE miniseries featured in this Guide - "India: Land of the Tiger" - will give you and your students new insights into the fascinating creatures of India, and some of the challenges facing the people who want to preserve them.

Canon is a company well known for investment in new technology. However, some of our most important research and development projects have nothing to do with our products. We invest in "future generations" through the support of a wide variety of programs reaching today's children and protecting tomorrow's environment. It is our belief that a successful business should do more than make a profit; it should make a difference as well.

Through our Clean Earth Campaign, we work to preserve our natural lands with programs such as "Expedition Into The Parks" through the National Park Foundation. Our "Cartridge Recycling Program" keeps millions of toner cartridges out of landfills while the U.S. Environmental Protection Agency certifies our line of office equipment Energy Star Compliant so they use less energy. Canon also sponsors "Envirothon," a national high school competition that helps students develop an early sense of environmental responsibility.

We hope this Teacher's Guide will provide you with tools to enhance your teaching of the world around us. We salute your efforts and deeply respect your commitment to building "future generations." We are honored to play a part in providing you with materials you may wish to use in preparing your children to better understand NATURE.

Sincerely,

Haruo Murase, President & CEO
Canon U.S.A., Inc.
One Canon Plaza
Lake Success, N.Y. 11042-1113

Visit our Web site at www.usa.canon.com
INDIA IS A LAND OF EXTRAORDINARY DIVERSITY.

From the Himalayas in the north, to the coral reefs off the southern coast, to the monsoon forests in the west and northeast, a visit to India is, in the words of naturalist Valmik Thapar, "the journey of a lifetime." This Teacher's Guide has been developed for use with public television's NATURE miniseries, "India: Land of the Tiger." Mr. Thapar, host of the series, explores the ecosystems of the vast Indian subcontinent - its rivers, oceans, deserts, mountains, and forests. "India: Land of the Tiger" also discusses the complex bonds between the varied wildlife of the region and the people.

We recommend that you preview "India: Land of the Tiger" to find the segments you'd like to focus on in class. Some of the programs include explicit scenes of animal mating, so you should preview "India: Land of the Tiger" carefully before showing it to your students.

THE EDUCATIONAL MATERIALS

This guide has been designed to help teachers and students use the public television series as a starting point for active participation in the study of nature. Students are encouraged to view the programs as a naturalist would, observing animals in a variety of habitats, noting their behavior, and drawing conclusions.

Each lesson in the Teacher's Guide includes:

✔ Program Overview, which gives background information and a brief synopsis of the program to be viewed;
✔ Objectives, which provide the teacher with measurable goals;
✔ Before Viewing Activity, familiarizing students with the subject and allowing them to set purposes for viewing;
✔ Vocabulary, which provides definitions of unfamiliar words used in each program;
✔ Discussion Questions that help students assess the main points of the program;
✔ Suggested Resources for students who may want to learn more about the topic; and
✔ Student Worksheet (Naturalist's Guide), to be duplicated and distributed to students. This student worksheet contains activities that will help students gain a better understanding of animal behavior, natural phenomena, and other subjects discussed in "India: Land of the Tiger." The student worksheets encourage family viewing and contain cooperative learning activities.

Creating a Naturalist's Diary

(You may wish to share the following with your students):

Naturalists keep diaries to record their observations. In order to complete activities presented in this guide, students may be interested in making diaries of their own. Students may set aside part of their science notebook, or they may choose to make a separate booklet for this purpose. Diaries may include news clippings, drawings, photos, maps, charts, graphs, and other information, as well as records of observations. Students may wish to share their diaries with others or use their entries to develop a bulletin board display that reflects what they have learned.

PROGRAM SCHEDULING

Programs are scheduled to be broadcast on the dates indicated below. Broadcast dates, however, may vary slightly from area to area. Please check local listings for any scheduling changes.

THE TIGER'S DOMAIN . . . . . . . . . NOV. 15
SACRED WATERS . . . . . . . . . . . NOV. 15
UNKNOWN SEAS . . . . . . . . . . . NOV. 16
DESERT KINGDOM . . . . . . . . . NOV. 16
MOUNTAINS OF THE GODS . . . . NOV. 17
MONSOON FORESTS . . . . . . . . NOV. 17

WEB SITES & WNETSCHOOL

Look for more information about NATURE on the Web at www.pbs.org or at www.wnet.org.

These and related lessons can be found on WNetSchool (www.wnet.org/wnetschool).

VIDEO ORDERING

You may assign programs to your students for viewing when they are first broadcast, or you have the right to tape the programs and play them for instructional purposes for one year after the original broadcast.
Valmik Thapar, an Indian conservationist and host of this six-part series, believes that no animal symbolizes the wildlife of India more than the tiger. "The sheer beauty and power of this magnificent creature has completely mesmerized me," says Thapar.

"The Tiger's Domain" follows Thapar as he travels through remote India, searching for wild tigers and many of the other animals celebrated in Rudyard Kipling's classic tales in The Jungle Book. On the first leg of his journey, he explores diverse habitats and encounters tigers, Asiatic lions, wild buffalo, rhinos, elephants, peacocks, cobras, and langur monkeys.

In his quest for interesting wildlife, Thapar travels thousands of miles, from the frozen peaks of the Himalayas to the sun-scorched deserts of Rajasthan. He also ventures into the green, humid forests of Assam and the warm, blue waters of the Indian Ocean.

"The Tiger's Domain" presents rare footage of various Indian animals hunting their prey. In one sequence, Thapar watches a tiger killing a langur monkey. Tigers rely on surprise to catch their prey, and, in fact, only one hunt in twenty succeeds.

Many of the nearly one billion people that live in India believe that some animals are sacred and should never be killed under any circumstances. As a result, wildlife is integrally woven into their daily lives.

Today, tigers are becoming endangered due to poaching and disappearing habitats. To learn how we might help protect tigers, scientists are using radio collars to track these creatures' territories, feeding habits, and social behavior.

THEME: Indian tigers live in a complex ecosystem with other animals and humans.

To give students a sense of India's large population, explain that almost a billion people live there. You could mention that if a billion people were to join hands in a long line, they would stretch around the earth 25 times!

Many students are familiar with the Disney film The Jungle Book, or the book by Rudyard Kipling that it is based on. Review with your students the key characters, including Mowgli (the boy), Baloo (bear), Bagheera (panther), Shere Khan (tiger), and Kaa (snake). Remind your students that these stories reflect an English/American view of these animals and not necessarily that of Indian culture.

After viewing the program, you may wish to introduce students to the vocabulary before viewing the program.

Students will:
- examine how people coexist with animals in India
- discuss some ways to protect and conserve wildlife in their own communities
- compare the size of the United States with India. Encourage students to make predictions about the climate (or climates) that exist in India.

You may wish to introduce students to various ways of obtaining food, feed their young, and help each other survive. (Wild boars are sometimes able to steal food that other animals have caught. A tigress will eat the kill herself and feed her cubs milk until they are ready to eat meat. Langur monkeys, when they climb fruit trees, often accidentally dislodge loose fruit, which chital (spotted deer) can eat. Both creatures help warn each other of danger. If either detects a prowling tiger, it warns the entire forest.)

Encourage students to discuss the program and share their observations. The following questions may be used to spark discussion.

Describe some methods animals in India use to obtain food, feed their young, and help each other survive. (Wild boars are sometimes able to steal food that other animals have caught. A

For students who want to learn more about this topic, suggest the following:


The Tiger Information Center http://www.5tigers.org
Rare Earth Explorations http://www.wildindia.com

Indian subcontinent printed on the back of the poster. Preview them with your students. As they watch the program, suggest they refer to the map. In addition, ask them to determine how animals are suited to live in certain habitats.
Complete the first activity and one other activity of your choice.

<table>
<thead>
<tr>
<th>ANIMAL</th>
<th>WHERE I OBSERVED IT</th>
<th>WHAT IT WAS DOING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: ROBIN</td>
<td>Outside my window</td>
<td>Gathering material for a nest</td>
</tr>
</tbody>
</table>

**Valmik Thapar enjoys observing animals and studying their behavior. In this program, he finds an Asiatic lion, a sloth bear, a snow leopard, and many other creatures. Use the chart to write down four animals you've seen in the last month, where you saw them, and what they were doing. Compare your chart with another student's.**

**Valmik Thapar says, “We must save the tiger so that future generations can witness wonders like this.” If you were the Prime Minister of India today, what actions would you take to protect nature in that country? How would you promote these ideas to India's citizens? Work with a small group of students to develop suggestions for a nature management plan in India.**

Many animals in the United States are also in danger of becoming extinct. Get a list of these animals by writing to the U.S. Fish & Wildlife Service or from their Endangered Species Home Page (http://www.fws.gov/r9endspp/endspp.html). Pick one of them and find out where it lives, what it eats, and why it’s endangered. Are there any efforts to save it? How could you and other students help?

**Animals are sacred to many people in India and Sri Lanka. Some religious festivals include processions called peraheras – parades and celebrations that can go on for days and sometimes include hundreds of elephants. Use the Internet or your library to find out more about peraheras. Write a short TV news segment about one of these processions for your classroom.**

Animals also have a role in the Christian tradition. Search the Internet, or use other library resources to find out about the Feast of St. Francis of Assisi’s Blessing of the Animals.
Valmik Thapar shows us the wildlife along two of India's sacred rivers, the Ganges and the Brahmaputra. These rivers run through a wide variety of habitats where he encounters fascinating animals.

Two places in India where tigers flourish are Kaziranga National Park and the Sunderbans. Kaziranga is home to the highest density of tigers in the world and is a refuge for India's largest animals, including elephants and rhinos. Eighty years ago, there were only twelve rhinos left in this area, as poachers had decimated the population. But today, thanks to conservation efforts, there are over 1,200 rhinos. The Sunderbans, in contrast, is an enormous mangrove swamp where more than 500 tigers live.

Four hundred million people live on the plains of northern India and Bangladesh. Though it is difficult enough to support the large human population, people provide for local wildlife. Many children collect snails to feed colonies of young painted storks that have been abandoned.

Every year, in August, the monsoon season arrives in full force. At times, the rivers carry nearly a billion gallons of water to the sea every second. The floods kill hundreds of people each year, but leave behind rich silt, which creates a fertile environment for wildlife. During monsoon season, tens of thousands of birds flock to Bharatpur, one of the finest wetland sanctuaries in the world.

THEME: "Sacred Waters" illustrates how India's rivers influence both its wildlife and its people.

BEFORE VIEWING THE PROGRAM

Introducing the Program
Using a large map or globe, ask students to find the Ganges and Brahmaputra rivers in India. Invite them to compare these rivers with the Mississippi River, in terms of length, total flow, number of tributaries, and so on. If you wish, you can explain that, like the Mississippi, the rivers in India flood each year. Based on the location of the Ganges and Brahmaputra, encourage students to make predictions about the animals they might expect to find in these areas. What creatures thrive in or near water? Write these suggestions on the board.

Distribute the Student Worksheet (Naturalist's Guide)
Duplicate and distribute the Student Worksheet (Naturalist's Guide—opposite page) to students, and preview it with them. As they watch the program, tell students they will be observing many interesting animals—some of which they've probably never seen before. To help them keep track of these creatures, invite them to use the chart on the Naturalist's Guide.

AFTER VIEWING THE PROGRAM

Encourage students to discuss the program and share their observations. The following questions may be used to spark discussion.

1. How are some animals adapted for survival on land and in the waters of India? (Fishing cats' claws, which look like fish hooks, help them snag their prey in the water. Mudskippers have the ability to walk on land when the tides recede. Water monitors live on land but also can swim. Monkeys called macaques survive by searching for food both in the trees and on the mud near the shoreline.)

2. Describe the unusual wetland sanctuary of Bharatpur. (This wetland is artificial. It was created about one hundred years ago by the Maharajah of Bharatpur. He flooded the natural marshland to attract birds for shooting. Today, shooting is forbidden, and thousands of birds breed here during the monsoon season.)

3. What are some of the ways that people manage their relationships to animals in and around the rivers of India? (The tiger is a sacred animal. People fear and respect the tigers that live in the mangroves, and do not intrude on their domain. Fishermen use otters to find fish. In exchange, the fishermen give the otters scraps from their daily catch.)


5. How do some animals respond to the floodwaters of India's rivers? (Four hundred million people live on the plains of northern India and Bangladesh. Though it is difficult enough to support the large human population, people provide for local wildlife. Many children collect snails to feed colonies of young painted storks that have been abandoned.)

6. Why are the Ganges and Brahmaputra rivers important to India's wildlife? (The Ganges Delta is a sanctuary for many migratory birds, such as painted storks. The Sunderbans, in contrast, is an enormous mangrove swamp where more than 500 tigers live.)

7. What are some of the ways that animals in India raise their young? (Monkeys called macaques survive by searching for food both in the trees and on the mud near the shoreline.)

8. How do some animals adapt to the floodwaters of India's rivers? (Mudskippers have the ability to walk on land when the tides recede. Water monitors live on land but also can swim.)

9. What are some of the ways that people manage their relationships to animals in and around the rivers of India? (The tiger is a sacred animal. People fear and respect the tigers that live in the mangroves, and do not intrude on their domain. Fishermen use otters to find fish. In exchange, the fishermen give the otters scraps from their daily catch.)
Many unusual creatures live in or near India's rivers. Since these rivers flood every year during monsoon season, some of these animals have adapted to life on the land and in water. As you watch the program, look and listen for information about the five animals listed here. You will probably need to do some additional research to fill in all the information.

<table>
<thead>
<tr>
<th>ANIMAL</th>
<th>HABITAT</th>
<th>PREY</th>
<th>ADAPTATIONS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>mudskipper</td>
<td>mangroves</td>
<td></td>
<td>can swim and walk</td>
<td></td>
</tr>
<tr>
<td>gharial</td>
<td>fish</td>
<td></td>
<td>thin jaws</td>
<td>to grab prey</td>
</tr>
<tr>
<td>fishing cat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>painted stork</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>otter</td>
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</table>

You are invited to view NATURE. As you watch the program, look for some of the ways that children interact with the local creatures. Often these children are helping their family's livelihood. After the program, discuss what it might be like to grow up in India.

Some naturalists explore the diverse wildlife that thrives near large bodies of water.

In this program, Valmik Thapar says, "If I were a bird, I would dive into Bharatpur to live and stay." This part of India is home to thousands of different kinds of birds. Using the Internet and other resources in your library, find an example of a wildlife sanctuary in your area. Call, write, or e-mail the sanctuary to gather information about the animals that live there. Share what you learn with the class.

Some animals have a helpful relationship with each other. In the forests of northern India, the macaque monkey and chital deer help each other look out for danger. Biologists call this cooperative behavior symbiosis, or mutualism. Research other animal pairs in nature, both in India and elsewhere, that help each other out. (Some suggestions: the clown fish and the sea anemone; the remora and the shark; the rhino and the oxpecker.)

These materials were made possible by Park Foundation, Conran U.S.A., Inc., Ford Motor Company, and TIAA-CREF.
**INDIA: LAND OF THE TIGER/UNKNOWN SEAS**

**Broadcast Date: November 16, 1998**

**PROGRAM OVERVIEW**

In this program, Valmik Thapar embarks on a voyage to the warm, blue waters of the Indian Ocean, in search of living treasures. He sets sail off the northwest coast of India near the Arabian Sea. Following the wind and water currents around the southern tip of India, he next explores the islands of the Andaman Sea. The last leg of his adventure takes him to the east coast, near the Bay of Bengal.

While traveling in the Arabian Sea, Thapar explains that two of the largest creatures there—the whale shark and the manta ray—are harmless to humans, feeding on tiny plankton. Thapar then explores a cluster of coral reefs and islands called the Lakshadweep, nearly 200 miles off the west coast of India.

In the tropical Andaman Sea, the climate is perfect for the growth of coral reefs. These provide sustenance for many small fish and feasts for predators such as sharks, rays, and tuna. More than 600 miles from the mainland, Thapar explores a chain of over 300 islands that were once part of a mountain range in southeast Asia. In this region, Thapar also observes a group of “working elephants,” swimming between the islands to haul timber for people.

**THEME: “Unknown Seas” demonstrates how creatures in the waters surrounding the Indian subcontinent have adapted to their environments.**

**BEFORE VIEWING THE PROGRAM**

**Introducing the Program**

As students view "Unknown Seas," they’ll discover that appearances can sometimes be deceptive. Ask students to look at a photograph of the whale shark. Explain that this rare sea creature lives in the Indian Ocean and can grow as large as six elephants. Ask the class to predict what this species eats. Record all hypotheses on the board.

Some students may guess that whale sharks eat other fish. Explain that they usually eat plankton. Discuss how the whale shark ingests huge amounts of water, filters out the plankton, and pushes the water out of its gills. To emphasize the importance of large marine animals, ask how the ocean would be different without big sharks and whales. Why is it important to protect them?

In this program, distances and sizes are described in metric units. Explain that if you know a distance in kilometers, you can find out the equivalent number of miles by multiplying by .62; similarly, if you know the length in meters, you can figure out the number of feet by multiplying by 3.28. (As an example, students could calculate how many feet long a fifteen-meter whale shark is.)

**Distribute the Student Worksheet (Naturalist's Guide)**

Duplicate and distribute the Student Worksheet (Naturalist's Guide—opposite page) to students, and preview it with them. As they watch the program, encourage students to observe the coral reefs and the animals that live there. Explain that, as a class project, you will be creating a large mural of a coral reef. They should sketch pictures of underwater wildlife they want to include.

**AFTER VIEWING THE PROGRAM**

Encourage students to discuss the program and share their observations. The following questions may be used to spark discussion.

1. Many of the fish that live in coral reefs are brightly colored. What are some benefits of this? (Coral fish graze on algae and are highly territorial. The host speculates that their bright colors serve as a warning signal to other creatures to stay away.)
2. How do prawns and gobies help each other? (The prawns and the gobies share the same home. The prawns are always shoveling sand, searching for food. The gobies get any extra food the prawns dig up. In return, the gobies watch for predators, as the prawns are almost blind.)

**Students will:**

- Examine the rich array of marine wildlife that lives in waters surrounding the Indian subcontinent
- Discuss the interrelationships of organisms in coral reefs

**For students who want to learn more about this topic, suggest the following:**

- Planetary Coral Reef Foundation http://www.pcrf.org
- Coral Health and Monitoring Program http://coral.aoml.noaa.gov/

**plankton plural noun: small, floating organisms found in oceans and lakes**

**coral reef noun: large underwater structure built of the skeletons of thousands of tiny creatures called coral polyps**

**crustacean noun: mostly aquatic creatures that have hard outer skeletons with jointed legs**

**ecosystem noun: an interdependent community of animals and plants which create and sustain a specific environment**
Complete the first activity and one other activity of your choice.

**AN UNDERWATER RAINFOREST**

Coral reefs are found in warm tropical waters near the equator. Reefs are built of the skeletons of thousands of tiny creatures called polyps. Collaborate with your class to create a large mural of a colorful coral reef that might be found in the Indian Ocean. You may use pictures from magazines or books for ideas. Include some of the sea creatures from this program:

- Garden Eels
- Reef Shark
- Sting Ray
- Moray Eels
- Sea Fans
- Clown Fish

Use resources from your library and the Web to make your reef as authentic-looking as possible, with hiding places, territories, grazers, predators, and so on.

According to some calculations, ten percent of all the world's coral reefs have been destroyed, and thirty percent will all but disappear in the next 20 years. To find out why this is happening, and some ways that you can get involved with protecting coral reefs, contact projects and organizations like SeaWeb (www.seaweb.org) and the Coral Reef Alliance (www.coral.org).

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**THERE'S NO PLACE LIKE HOME**

Valmik Thapar calls it “one of the most extraordinary natural history events in the world.” He is talking about when tens of thousands of female olive ridley turtles swim to the east coast of India to lay their eggs on the beach. These mother turtles have not been on this land since they were hatched there, about twenty years before. Many have traveled thousands of miles to get there. Use resources in the library to find out what scientists have learned about these turtles. How, after all those years, can they find the place where they emerged from their shells? What other animals, such as salmon and puffins, also return to their birthplace to breed? Present your findings to your class.

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**WATER AND WILDLIFE**

As this program illustrates, bodies of water can have a profound impact on the people and wildlife that live nearby. Get a map of the region where you live and make note of any bodies of water you see. Using resources from the local library and perhaps your city hall, find out which bodies of water are natural and which are man-made, and which were drained or dredged or filled in. Find out some examples of the types of fish and other creatures that lived in these waters and that live there now. If possible, gather some pictures that show the species that live in your local lakes, rivers, or ocean. Present your research to your class.

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**TO THE FAMILY**

You are invited to view NATURE. As you watch the program, imagine how your life would be different if you had grown up on an island in the Indian Ocean. After the program, discuss your ideas with your family.

Naturalists are dedicated to identifying and preserving the enormous variety of plants and animals that thrive in the ocean.
Many people think of deserts as barren, lifeless places. But in the Thar Desert in northwest India and eastern Pakistan, a rich variety of wildlife thrives. In addition, the Thar is over-flowing with people; it is the most heavily populated desert in the world.

A fascinating array of animals manages to get by with minimal quantities of water. The chinkara (Indian gazelle), for example, survives without drinking water at all. It gets all the moisture it needs from the morning dew and from the leaves of shrubs.

Thapar visits with a tribe of people called the Bishnoi, who are the “true guardians of the desert.” They are strict vegetarians, and their culture forbids the killing of any animal. The Bishnoi will take incredible risks to prevent harm to animals. Thapar describes how a young Bishnoi was fatally shot in an effort to protect a chinkara from a poacher’s bullet.

The desert is a world of extremes. For seven months, there is not a drop of rain—then suddenly, it is as if the ocean has invaded the land. A monsoon arrives and drenches the desert. During this brief wet period, many animals, such as wild asses, breed.

**THEME:** “Desert Kingdom” illustrates how a harsh climate affects the lives of animals and humans.

**OBJECTIVES**

Students will:  
- examine how some animals have adapted to the arid climate of the Great Indian Desert  
- study how the lives of people and animals in the Indian deserts have become intertwined

**VOCABULARY**

- **buck** noun: a male deer or antelope  
- **conservation** noun: the protection and preservation of forests, wildlife, and natural resources  
- **desert** noun: often hot, dry, sandy places where very specialized plants grow because there is so little rain and so much evaporation  
- **dung** noun: animal droppings  
- **foal** noun: a young horse, donkey, or zebra  
- **monsoon** noun: strong, seasonal winds, especially in the Indian Ocean

**SUGGESTED RESOURCES**

For students who want to learn more about this topic, suggest the following:

- **Books**

- **Web Pages**
  - India: Rajasthan  
  - Rajasthan Web  
  - http://www.rajasthanweb.com

**QUESTIONS FOR DISCUSSION**

- How do the people of the village of Kheechan help cranes survive? (For hundreds of years, the people of Kheechan have fed the demoiselle cranes huge amounts of grain every day. In fact, the cranes fly over a thousand miles from their breeding grounds in Central Asia to the village of Kheechan.)

- Since cows are sacred in India, what do the people do when these animals die? How does this affect the vulture population? (Every day, the large dead animals are taken to the edge of the city by a small group of people called the Chamars, who remove their skins. Then vultures descend from the sky and devour the carcass until just the bones are left. Without vultures, the disposal of dead animals in India would be difficult.)
Complete the first activity and one other activity of your choice.

**LIFE AT THE WATERHOLE**

Waterholes help many animals survive in the desert. Around this picture, sketch and write the names of five animals that you might find at a waterhole in India, such as vultures, soft-shell turtles, pied kingfishers, and nilgai (India’s largest antelope).

**WEEKS WITHOUT RAIN**

When it doesn’t rain for weeks at a time, even the wettest cities in America can become like deserts—with local wildlife suffering. Research the worst drought your hometown has experienced. How long did your city or town go without rain? In the local library, you may be able to find articles about how your local government handled this crisis. You may also try to interview people who lived in your hometown during this dry spell. Turn your research into a brief news report, and present it to your class.

**URBAN SCAVENGERS**

Vultures eat the remains of dead animals. We call creatures that search for and eat food that has been abandoned by other animals, scavengers. In cities, pigeons sometimes play this role. Although some people dislike these birds, they help keep the garbage level down in our cities. Research and report on Project Pigeon Watch on the Internet at http://birds.cornell.edu

**TO THE FAMILY**

You are invited to view NATURE. As you watch the program, look for examples of the important roles that animals play in the lives of people in Indian subcontinent. After the program, discuss your observations.

Conservationists support the establishment of National Parks to preserve and protect wildlife in its natural habitats.

These materials were made possible by Park Foundation, Canon U.S.A., Inc., Ford Motor Company, and TIAA-CREF.
In "Mountains of the Gods," Valmik Thapar takes viewers on a journey to the majestic Himalayas, the world's highest mountain range. The Himalayas extend for approximately 1550 miles, and their varied habitats - from snowy peaks to riverbeds to subtropical forests - support a surprising number of unusual creatures.

According to a Hindu legend, the Himalayas were formed when Mother Earth was attacked by a demon and her limbs were thrown towards the sky. Geologists tell a different but equally dramatic story. Millions of years ago, the Himalayas were at the bottom of what is today the Indian Ocean. At that time, India was a large island, drifting north. Eventually, it crashed into Asia with such force that the collision crumpled the earth's crust - and a giant mountain range was born.

Thapar explores the high mountains of Ladakh, home of the snow leopard. Each winter, people in India flock to the numerous monasteries in Ladakh for Buddhist festivals. To Buddhists, all life is linked in an endless cycle of death and rebirth. Their reverence for all living things has made these monasteries a haven for wildlife. In turn, animals are vital to the survival of the people here.

During winter, finding food can be difficult for many animals. The markhor (mountain goats) sometimes climb trees to find sustenance. When the snow melts, scavengers such as vultures devour the remains of carcasses left behind by predators.

Thapar ends this program with a trip to Namobuddha, where, legend has it, Buddha gave his life to a starving tigress and her cubs. This legend has been commemorated with a stone sculpture.

In what ways do the holy men known as sadhu believe this glacial river can help them? (The Himalayas are thought of as the Mountains of the Gods. By bathing in the sacred waters of the Gaumukh, sadhu believe they can cleanse their souls.)

As red pandas move through the forest, they mark their trails with a scent. Why do they do this? Why else might an animal mark its territory? (By marking their trails, the red pandas - normally solitary creatures - can find one another during mating season. Another reason an animal marks its territory is to warn other members of the same species to "keep out."
**India receives most of its annual rainfall during the monsoon season (between June and September). In some parts of northeastern India, more than 120 inches of rain falls during the year—and some areas get an average of 450 inches of rain! Use the library or the Internet to research the average precipitation in your home state. Make a graph showing the average precipitation for each month, add up the total, and compare it with the annual rainfall in northeastern India.**

**A RANGE IS BORN**

There are two amazing stories of how the Himalayas were created—the legend of Vishnu and Mother Earth and the geological Theory of Continental Drift. Work with another student to research these two stories. The legend comes from an epic called the Mahabharata; the drift theory was developed by Alfred Wegener in 1912. Then collaborate on a two-part book that tells how the Himalayas were formed. When read one way, the book presents the legend. When flipped and read the other way, the book presents the geological explanation. Create illustrations for your book, and share it with the class.

**DROP IN FOR DINNER**

The scarcity of food in the Himalayas encourages animals to be resourceful in getting their meals. The bearded vulture, for example, drops animal bones onto rocks to crack them open, so they can eat the marrow inside. Use the library or the Internet to find other birds, such as herring gulls, that use hard rocks and gravity to get at their meals. Do you think this behavior is instinct or learned? Work with another student to figure out how you might explore the answer to this question.

These materials were made possible by Park Foundation, Canon U.S.A., Inc., Ford Motor Company, and TIAA-CREF.
Students will:
- Discuss the complex coexistence of humans and wild animals in the rain forests of the Indian subcontinent
- Observe the enormous influence a single plant – the fig tree, for example – can have on the survival of a variety of creatures

**THEME:** “Monsoon Forests” illustrates how a moist climate can create great biodiversity and foster remarkable interactions between plants, animals, and humans.

**BEFORE VIEWING THE PROGRAM**

**Introducing the Program**

Show a map of the Indian subcontinent, and explain that an enormous area was once entirely “wet forests.” This “green pathway” made it possible for animals to travel great distances on land. Due to changes in climate and human activities such as cutting down forests for cropland, monsoon forests are now restricted primarily to three areas: Sri Lanka, the Western Ghats, and Northeast India.

Ask students to use what they know about rainforests to make predictions about the kinds of animals that might live there. If time and resources permit, you could supplement this opening activity by gathering books with pictures of 20 different animals. Ask students to predict whether they’d expect to find each animal in the monsoon forests of India.

**Distribute the Student Worksheet (Naturalist’s Guide)**

Duplicate and distribute the Student Worksheet (Naturalist’s Guide – opposite page) to students and preview it with them. As they watch the program, encourage students to observe how humans interact with animals in India, and to contrast this to such interactions in the U.S.

**AFTER VIEWING THE PROGRAM**

Encourage students to discuss the program and share their observations. The following questions may be used to spark discussion.

1. Many animals in the wet forests depend on the fig tree for their diet. But, the host says, “Figs need hornbills just as much as hornbills need figs.” How do the hornbills help the fig tree? (Hornbills eat the figs. Seeds from hornbill droppings are buried in the soil, where they grow.)

2. Why are there so many brightly colored animals in the monsoon forest? (Bright colors serve a number of important functions. They can work as camouflage to blend in with the forest. They also signal other animals to stay away. A quick flash of color can startle and scare another animal for a moment. Some animals’ bright colors fool other animals into thinking they are a more dangerous species. The nonvenomous milk snake, for example, has red, yellow, and black bands, which mimic the poisonous coral snake.)

**RESOURCES**

For students who want to learn more about this topic, suggest the following:

- Rain Forests is one of a series of books from the Habitat Ecology Learning Program (HELP) of the Wildlife Conservation Society. For more information, contact the Manager of National Programs at:
  - Education Department
  - Bronx Zoo/Wildlife Conservation Park
  - 1300 Southern Boulevard
  - Bronx, NY 10460
  - (800) 937-5131

- American Museum of Natural History’s site on “Biodiversity”

- Year for the Tiger: The Science of Conservation
  - http://www.worldwildlife.org/tiger/con_10000.html
LONG-LOST COUSINS

This program features an animal called a fiontaill macaque. Although this monkey is not related to the lion, it gets its name because of its lion-like tail and mane. Using library resources, look up these eight animals and find out how they got their nicknames:

- ANT LION
- RHINOCEROS BEETLE
- ELEPHANT SHREW
- KANGAROO RAT
- TIGER BEETLE
- MONKEY FLOWER
- TIGER MOTH
- TIGER LILY

GO FIG-URE!

Valmik Thapar says "figs are truly the linchpins of the forest," as they offer food and shelter to many people and animals. Using the library or the Internet, make a list of some of the ways that figs are used in different societies around the world. As an alternative activity, you could research the uses and cultural importance of a crop like corn or yams. Work with another student to prepare a presentation on figs or some other meaningful food for your class. As a finale, you may wish to give everyone a taste of a dish you prepared.

INSECT HUNTER

Although the chameleon walks slowly and deliberately, it is quite adept at catching insects with its sticky tongue. Create a flipbook to animate how a chameleon catches its meals. If you have access to a videotape of "Monsoon Forests", you could watch the chameleon section in slow-motion to get all the details. If you don't have a videotape, you could gather information from the library.

TO THE FAMILY

You are invited to view NATURE. As you watch the program, compare the families in the monsoon forests with your own. How would your life be different if you lived in an Indian "wet forest"? After the program, share your thoughts with your family.

A biologist sometimes examines how different species are affected by extreme temperatures in the environment.

RAINIEST PLACE IN AMERICA

The hill forests of southern India receive rain for six months of the year. Use the library or the Internet to research which town or city in the U.S. had the most rain last year. Which town or city had the least rain? Compare the types of wildlife that live in these areas, and how they survived in the extreme weather conditions. Create a short newsletter for your class to share what you've learned.

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This guide was produced by

Ruth Ann Burns, Director

PUBLISHER: Robert A. Miller
EDITOR: David Reisman, Ed.D.
DESIGN: Diane Adzema
WRITER: Jordan Brown
PHOTO EDITOR: Christina L Draper
PROOFREADER: Stle Young Wilson
CONSULTANTS: Dr. Steven D. Garber, Wildlife Biologist, The Port Authority of New York & New Jersey; Regina McCarthy, Coordinator, Gateway Environmental Study Center, Board of Education of the City of New York

FOR THE NATURE SERIES

SCIENCE EDITOR: Janet Hess
COORDINATING PRODUCER: Janice Young
SUPERVISING PRODUCER: Bill Murphy
EXECUTIVE IN CHARGE: William Grant
EXECUTIVE EDITOR: George Page
EXECUTIVE PRODUCER: Fred Kaufman

FOR BBC-TV

SERIES PRODUCER: Mike Birkhead
PRODUCERS: Mike Birkhead, Martin Hughes-Blake
EDITORS: Martin Elsbury, David McCormick, Andrew Naylor
MUSIC: William Grant
WRITERS: Pelham Aldrich-Blake, Jenny Devitt

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