NATIONAL WILDLIFE FEDERATION

AFRICAN WILDLIFE AND CLIMATE CHANGE

GUIDE FOR EDUCATORS

INTRODUCTION

www.climateclassroom.org/kids

News about climate change is everywhere—in the newspaper, on TV and the radio, even at the movies. It's hard enough for grown-ups to sort out what's true and to determine what we should do about it. For kids, it can seem even more complicated and scary. That's why age appropriateness is a vitally important ingredient of climate change education.

The most age-appropriate measure you can take as a teacher is to help your students explore nature in their own neighborhoods and communities. This fosters a strong, positive connection with the natural world and builds a foundation for caring about global environmental problems later in life.

But how do you answer the questions your students inevitably raise about climate change? And how do you begin to examine the topic in a manner that doesn't frighten or overwhelm them? The best strategy is to provide children with brief, accurate information at a level you know they can understand and relate to—and in hopeful ways. This guide is one tool you can use to do just that.

About Howard Ruby, the photographer:

Wildlife images featured on Climateclassroomkids.org and throughout this guide were taken by Howard Ruby. Mr. Ruby is a nature photographer, Chairman of Oakwood Worldwide, and a supporter of the National Wildlife Federation. He has spent years traveling around the world to photograph the many amazing wild animals and wild places seen on this site. He is passionate about using his photos in creative ways to teach children and adults about the effects of climate change and he has been the driving force behind the creative development of this website and education program.

You can also visit his website, **www.howardruby.com** to see a preview of other photos that will soon be featured on our site.

ABOUT NATIONAL WILDLIFE FEDERATION

National Wildlife Federation inspires Americans to protect wildlife for our children's future. For more than 70 years, NWF has been connecting people of all ages with nature through award-winning education programs and resources, including the children's magazines *Wild Animal Baby*®, *Your Big Backyard*®, and *Ranger Rick*®.

ABOUT THIS GUIDE:

This guide's activities are designed for grades 3-5, with extensions for younger and older children. These activities meet national standards for English/Language Arts, Science, Social Studies, and Visual Arts.

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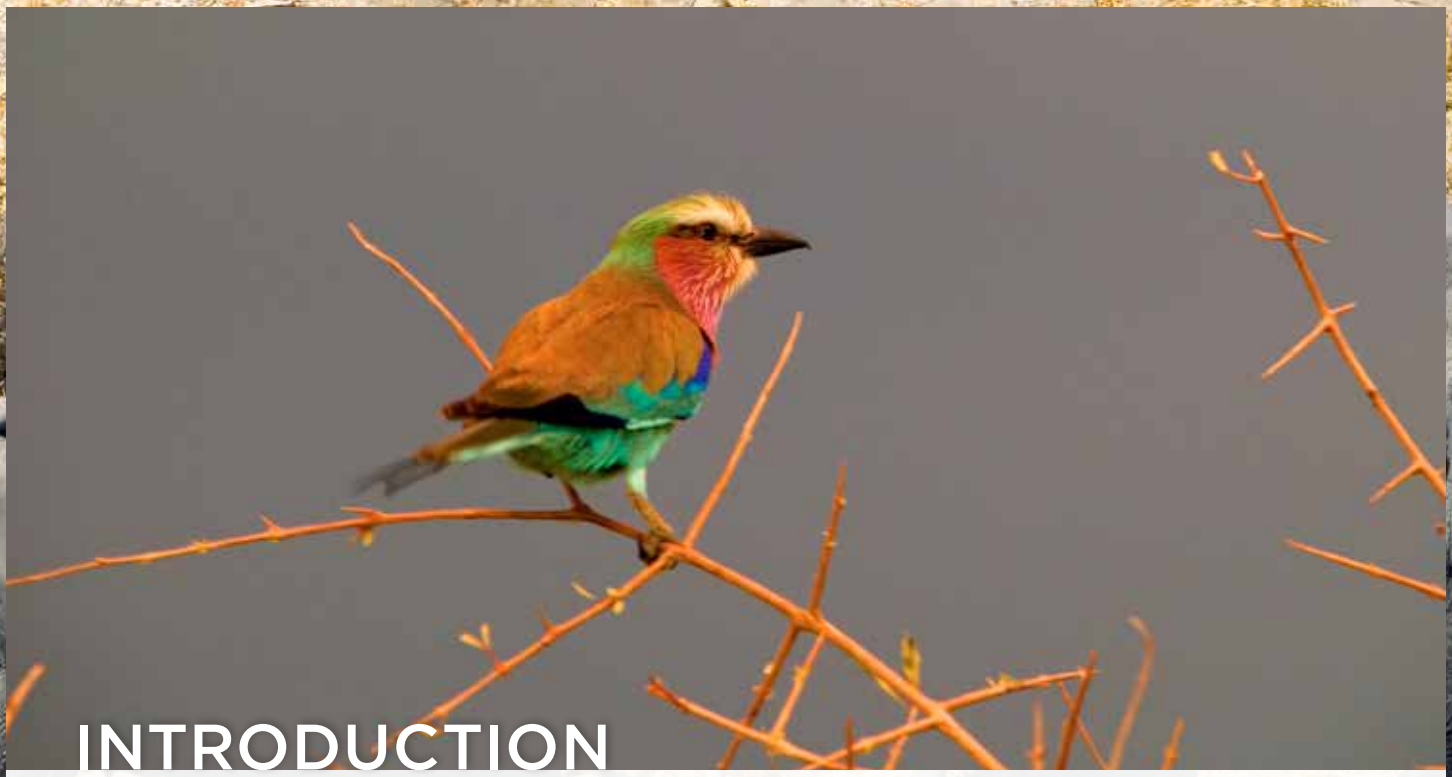


INTRODUCTION

Why Focus on Africa in Climate Change Instruction?

Africa's unique landscapes, weather patterns and abundance of natural resources make it especially susceptible to the effects of climate change. The unique ecosystem of Okavango Delta of Botswana is the worlds largest inland delta. Since it is located in an extremely arid region, it attracts a large diversity of iconic African species which rely on the wetlands and seasonal floods to survive. Rising temperatures and declining rainfall impact the flood patterns of the Delta and as the distribution of water shifts, wildlife must compete for diminishing resources.

The inland delta doesn't empty into a sea or ocean. The Okavango River floods during bone-dry winter months and is home to the largest elephant population in the world. Flood waters draw buffalo, giraffes, zebras, elephants, lions, cheetahs, rhinoceros, both black and white species, and other animals.

"One of the unique characteristics of the site is that the annual flooding from the river Okavango occurs during the dry season, with the result that the native plants and animals have synchronized their biological cycles with these seasonal rains and floods," the U.N. World Heritage statement.

What Do African Wildlife Have to Do with Climate Change?

Species may not be able to adapt to this rapid climate change or move fast enough to more suitable areas as their current areas become less suitable for them. Rising temperatures, irregular rain patterns and drought result in changes in vegetation that force animals like elephants to move to new areas and face conflicts with human developments and increased competition as habitat size decreases.

TALKING TO KIDS ABOUT CLIMATE CHANGE

1. **Be age appropriate.** Climate change is the largest environmental problem humans have ever faced. Solving it is a vast responsibility to place on the next generation. Our responsibility is to prepare our children for it—and to hand it over only when they're ready. **Preschool/Early Elementary:** This is a time for children to explore the immediate environment (backyard, neighborhood, nearby parks) in a way that is hands-on and full of joy. It's not a time for them to worry about environmental tragedies. There's no need to bring up climate change at this age if children don't ask about it. If they have questions, by all means address them—but keep

your answers brief and basic. Assure children that grown-ups are working hard on solutions. The very best thing you can do for the youngest children is to foster a strong, positive connection with the natural world. This builds a foundation for caring about global environmental problems later in life. (For ideas and resources to connect young children with nature, visit www.beoutthere.org) Upper **Elementary:** As their ability to think abstractly increases, older children will be able to discuss climate change in more depth. This is the time to talk about your students' questions and ideas, model your own interest in learning more about the issue, and seek out concrete actions you can take to be part of the solution. At the same time, continue exploring and enjoying the local environment. Outdoor exploration and learning are vitally important ways to foster care for the planet.

2. **Let students guide the conversation.** Listen carefully to their questions and concerns. It may be hard to hold back, especially if you know a lot or are passionate about this subject, but it's important not to overload students with information they aren't ready for.
3. **Answer questions.** To effectively answer students' questions, it's important to be informed yourself. Visit www.climateclassroomkids.org for additional child-friendly information about climate change.
4. **Diffuse fear.** There's no doubt that climate change and many of its projected impacts are scary. If students are anxious or upset by what they have heard, acknowledge these fears. Then try to diffuse them by steering the conversation toward solutions.
5. **Don't burden them.** Children didn't create this problem, and it's not fair to tell them that they'll be solely responsible for solving it. Let them know that many, many grown-ups are working hard to resolve it.
6. **Think positively.** Children are naturally optimistic. We'll need every drop of that optimism to tackle climate change successfully—so be sure they keep it! Emphasize that it's not too late. People have caused this problem, and people, working together around the world, should be able to solve it.
7. **Invite participation.** Explain that solving the problem will require some big changes—in society and also in our own daily lives. We'll need to rethink many things, from the way we get energy to the way we build our houses and get around. Simply turning off the lights won't solve the problem. But everyone can play a part in turning the tide.
8. **Empower action.** Provide opportunities for students to take action at home and in the classroom. Seek out positive steps you can take together. Whenever possible, keep it local and tangible, with visible results. For instance, you may not be able to directly help the polar bears in the Arctic, but you could participate in a habitat restoration project that will benefit wildlife in your own neighborhood.

ACTIVITY ONE

WHERE IN THE WORLD?

Subjects: Geography: Landforms, maps, globes

LEARNING OBJECTIVES:

- Identify Africa and the Okavango Delta in Botswana and some of its key geographic features on a globe and a world map.
- Compare ways information is presented on globes and maps.
- Record and discuss prior knowledge and perceptions of the African continent.

MATERIALS:

- Blank paper
- Books and online access to research Africa
- Student Page "What I Know About Africa"
- Photos of the region
- Globe and World Map
- Pencil & Red Pencils

BACKGROUND:

Longitude and latitude are imaginary lines on a map or globe that help us describe the location of any place on Earth. Latitude lines measure the distance north or south of the Equator. Longitude lines measure the distance east or west of the prime meridian. Both are measured in terms of the 360 degrees of a circle. The Okavango Delta region lies in the northern part of Botswana, at approximately 19 degrees South (latitude) and 23 degrees East (longitude). The area is in close proximity to the equator, making the region mostly temperate with very hot summers. The Okavango is produced by seasonal flooding when summer rains flood an area the size over 16,000km2 over four months before drying again during winter months. Signs of climate change are evident here, with extended periods of drought becoming more common and impacting the wildlife and people that rely on the region to survive.

WHAT YOU DO:

1. Divide students into small groups and give each group a set of photos of the Okavango Delta. Tell students that today they are going to learn about a special place. Have each group look through its photos and jot down answers to these questions:
   - What does this place look like?
   - How would you describe its climate?
   - What is this place called?

   Invite groups to share their answers with the class. Then tell students that they are going on a mapping adventure to find the place pictured—the Okavango Delta.

2. Using a globe, show students Africa and the Okavango Delta region in Botswana. Ask the class:
   - What are the differences between globes and maps?
   - Which tool would you use to see the best model of the entire Earth?
3. Distribute copies of the student page called “What I Know about Africa” Give students ample time to record what they know about the Africa in the chart on this page.
4. Collect the completed pages. At the end of this teaching unit, return the pages to your students and have them compare their initial knowledge about Africa with their current knowledge.

ADAPTATIONS:

Students will create an art project to showcase the animals in the Okavango Delta. Using photos on the website and other craft materials available, students may draw, color or paint the animals in their habitat.

USEFUL LINKS:

Photos of the Okavango Delta can be found at **www.climateclassroomkids.org/photo-galleries**

Video: **video.nationalgeographic.com/video/botswana_okavangodelta**

STUDENT PAGE

WHAT I KNOW ABOUT AFRICA

Directions: Record things you know about Africa and the Okavango Delta region in the spaces below.

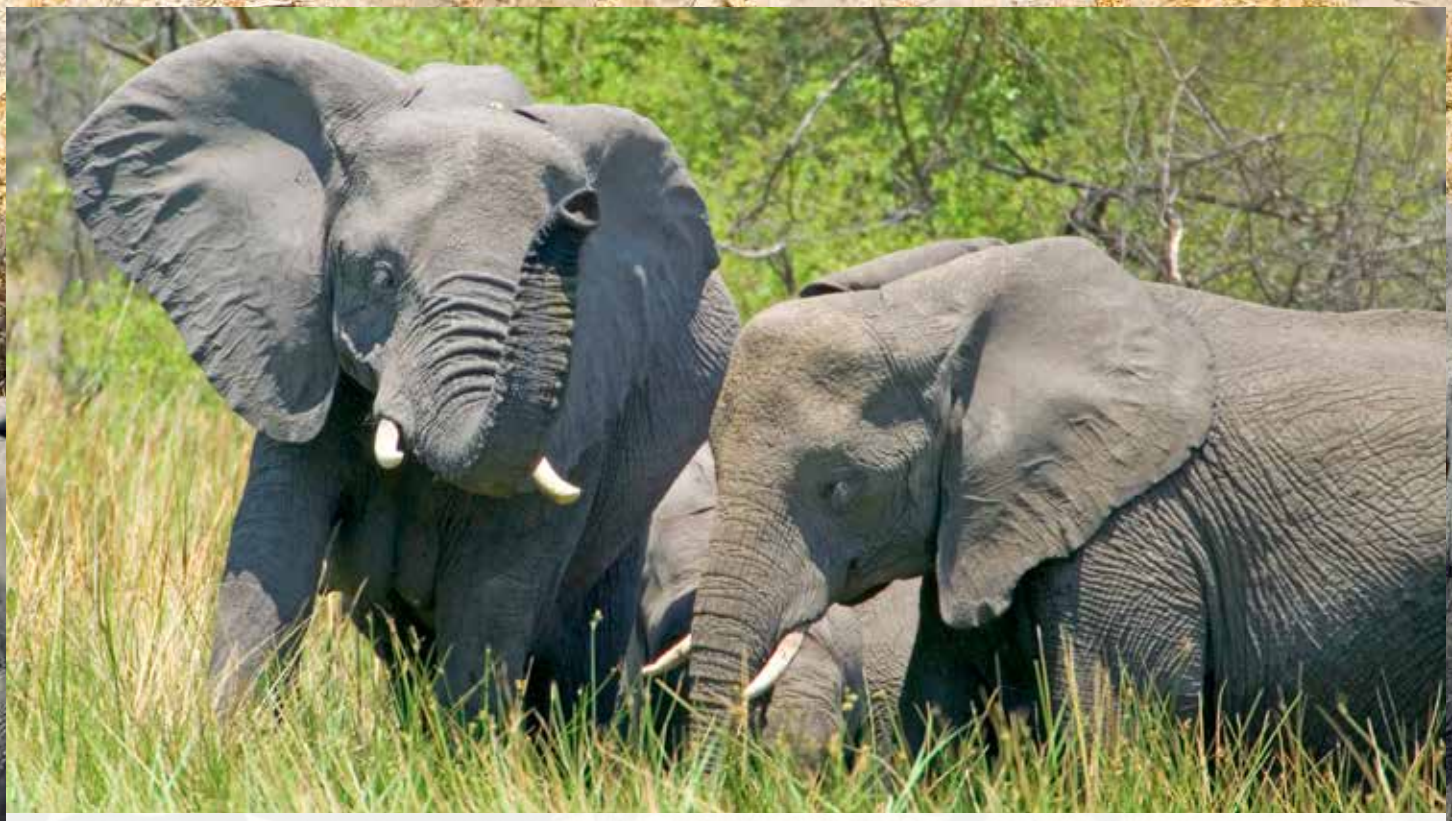
Climate _____

Animal _____

Plants _____

People _____

Other _____



ACTIVITY TWO

HABITAT–WHAT'S THAT?

Subjects: Biology, Natural Science, Environmental Science

LEARNING OBJECTIVES:

- Define the concepts of habitat, ecosystems, and limiting factors
- Apply these concepts to African animals

MATERIALS:

- Student Page - Habitats
- Access to internet or downloaded photos from the Africa Galleries on **www.climateclassroomkids.org**

BACKGROUND:

Terms to know:

Habitat – A place that provides a species with everything it needs for survival. The four requirements of habitat are 1) food, 2) water, 3) cover and 4) space – including places to raise young.

Cover – Shelter to hide an animal from predators or to protect an animal from cold, hot, wet, or dry conditions.

Limiting factor – Something required by an animal to survive. If it is not present, the animal cannot survive or reproduce. For example, African elephants need a lot of undeveloped space to live in herds and raise their young.

Ecosystem - A community of living organizing and nonliving components, interacting.

WHAT YOU DO:

1. Ask your students "Habitat—what's that?" Explain that habitat is the place where a plant or animal lives. Without habitat, living things can't survive. With healthy habitat, they'll thrive. For animals, habitat has four parts: food, water, cover, and places to raise young.
2. Review or introduce the terms habitat, ecosystem, and limiting factor (see "terms to know" above).
3. Hand out copies of the Student Page - Habitats. Have students choose a species found in the Okavango Delta. (Students may look at photos online in the Climate Classroom Kids Africa Galleries or hand out printed copies of photos from the galleries for students to select and research.) Fill in the blanks as they learn about the animal's habitat. What does the species need to live and raise its young? What does it eat? What is the climate to which it is adapted?

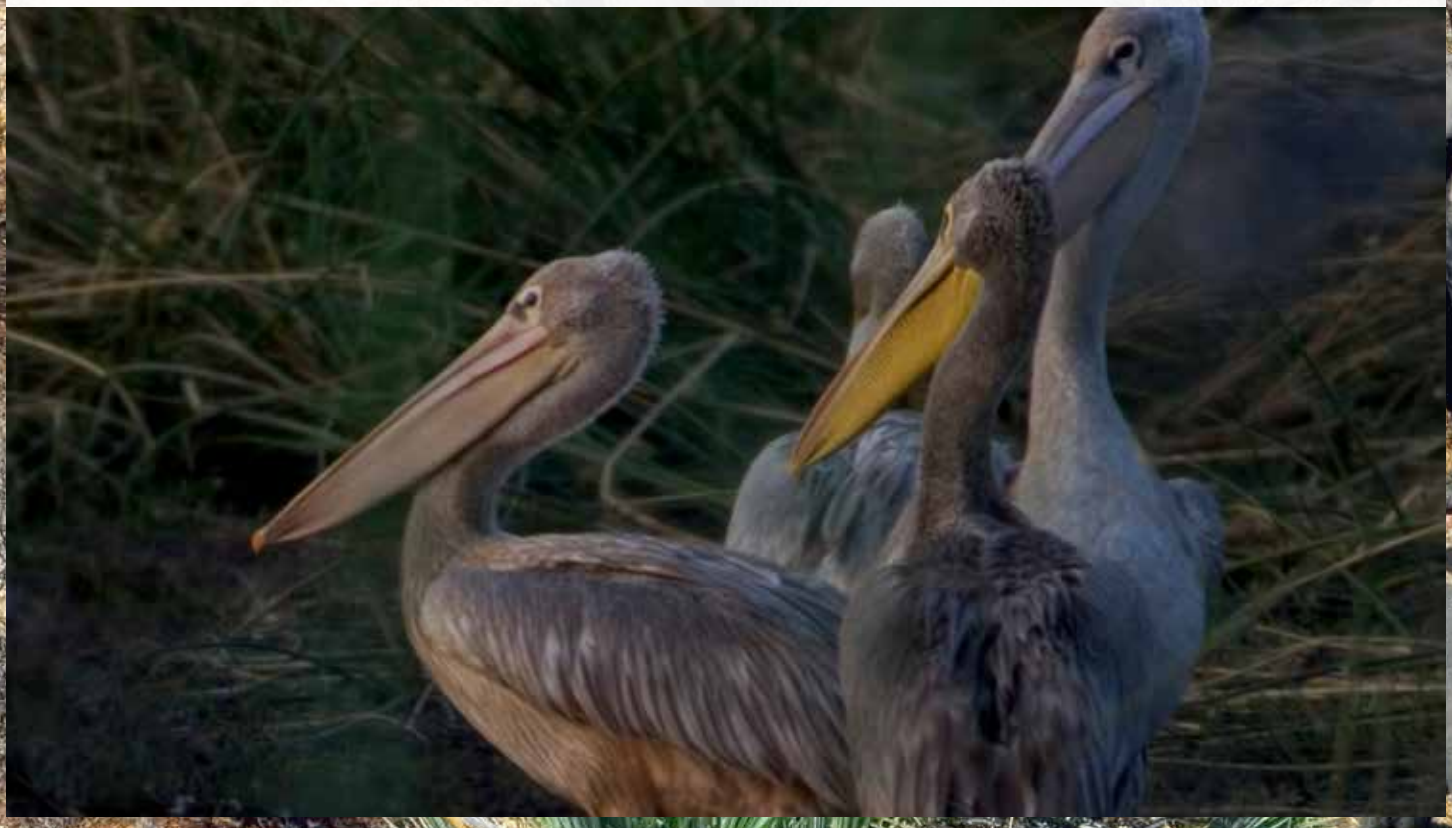
ADAPTATIONS:

For older Students. Ask each student to research a particular animal's needs, beginning with food, water, cover, and places to raise young. On the back of the worksheet, ask them to include other elements, such as weather, geographical location, the amount of room they need, the amount of sunlight, the type of terrain they prefer, and so on. Ask student if their animal spends all its time in one area or if it moves around.

Questions: What sort of food, water, cover, and places to raise young do local animals require? Where in this area do these four elements of habitat exist? What elements are missing?

USEFUL LINKS:

A Schoolyard Habitats® project found at **www.nwf.org/schoolyard**, is a great opportunity for students to spearhead a wildlife habitat effort for the entire school community. The result will be a wonderful outdoor classroom where students may practice many cognitive skills by studying, researching and documenting wildlife in the area.



STUDENT PAGE - HABITATS

1. Species: _____

2. Describe the region or ecosystem where it is found: _____

3. Habitat needs for this animal:

Food:	Young:	Water:	Cover: Places to Raise

4. Other plants and animals that might live nearby:

5. What are the limiting factors for your species that might keep it from surviving or raising its young?

ACTIVITY THREE

AWESOME ADAPTATIONS

Subjects: Biology, Natural Science, Environmental Science

LEARNING OBJECTIVES:

- Define the concept of adaptation
- Demonstrate understanding of how a species adapts to its habitat as a means of survival
- Develop critical thinking skills

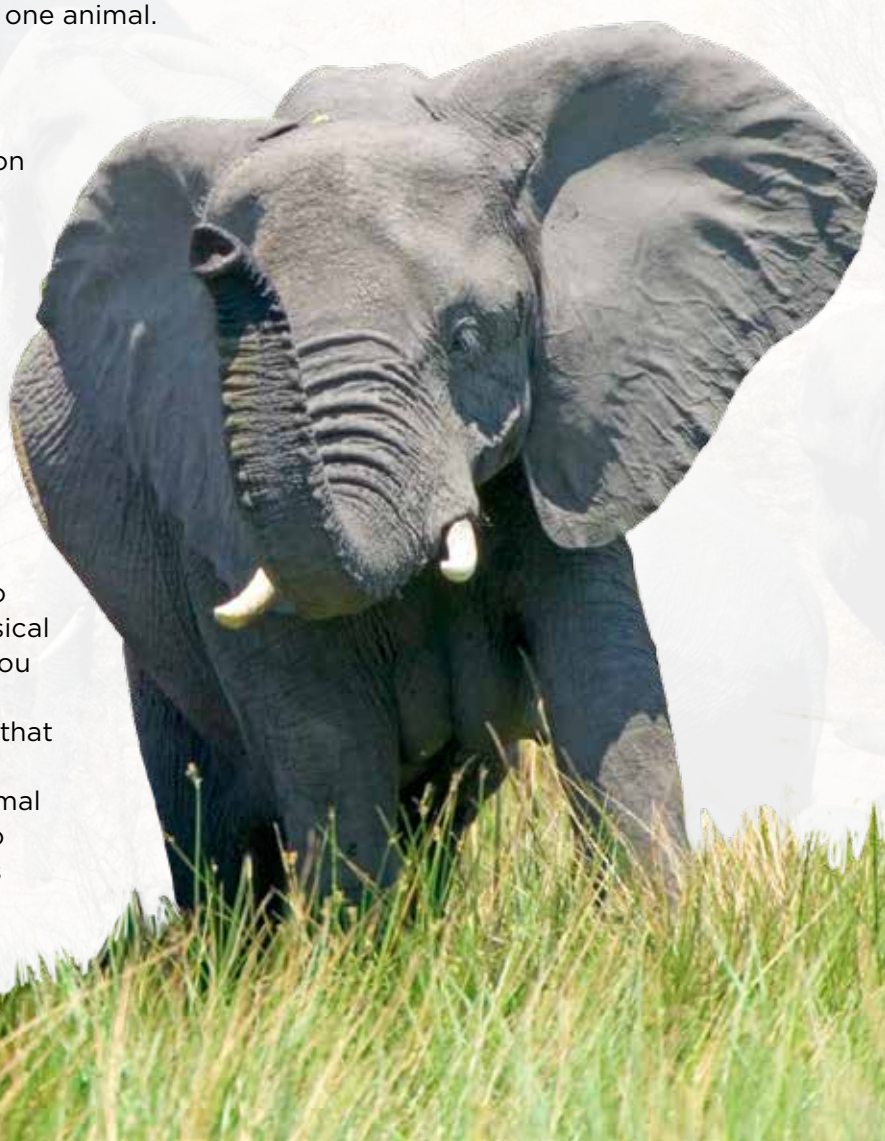
MATERIALS:

- Paper and pencils
- Slips of paper
- Access to internet or downloaded photos from the Africa Galleries on **climateclassroomkids.org**

An adaptation is a trait that helps an animal survive in its habitat. Animal species change over time to better fit their environments. Plant or animal species subjected to a major change in their environment over a long period (years of flooding, the appearance of a new predator, etc.) will do one of three things: leave, change, or die. If a species changes in any way over time to better fit into its environment, it has adapted to it. Adaption involves changes that are passed on to the next generation, not just changes to one animal.

WHAT YOU DO:

1. Explain the concept of animal adaptations using the description above. Then start a class discussion by asking students if they can give examples. Encourage them to consider a wide variety of animals, including those they have observed directly or learned about previously.
2. Make a list of students' ideas on the board. Then ask students to place the examples in categories. Start with the two main types of adaptations: physical and behavioral. If time allows, you can then come up with other categories such as adaptations that help an animal get food and adaptations that protect an animal from predators. Ask students to note similarities and differences in adaptations across the animal kingdom.



ADAPTATIONS:

For younger students. To help students remember the concept of adaptation take them outside for these this fun hands-on activity.

Elephants use their trunks to breathe, sniff, drink, shower, and pick things up.

Try this! Put your arms, elbows and fingers together to form a trunk. Use the trunk to push a basket along the floor or pick up various items.

For older Students. Start a class discussion about endangered and threatened species. Review the concepts of habitat and adaptations from the previous activities and draw connections with the reasons why populations of certain species have become dangerously low.

Discuss why some African animals are endangered. Black Rhinoceros and African Elephants are losing their habitat, but the major reason these species are in trouble is that humans illegally hunt or poach them to sell their ivory tusks and horns. How does climate change affect species survival in this region? Everywhere?

Conclude by discussing ways that we can all help save elephants, rhinos and other endangered animals. Go to What You Can Do for ideas.

USEFUL LINKS:

To learn more about the list of animals in Botswana rated as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) go to **www.iucnredlist.org**

ACTIVITY FOUR

MAMMALS ARE AMAZING

Subjects: Biology, Natural Science, Environmental Science, Social Studies

LEARNING OBJECTIVES:

- Define the characteristics of mammals
- Apply these concepts to African animals
- Discuss some of the ways milk differs from one mammal species to another.

MATERIALS:

- Access to internet or downloaded photos from the Africa Galleries on **climateclassroomkids.org**

BACKGROUND:

There are 164 different kinds of mammal in Botswana, including: Vervet monkeys, Meerkats, Chacma Baboons, Wild Dogs, Bat-eared Foxes, Black backed Jackels, several kinds of Genet and Hyena, Lions, Leopards, Cheetahs, Burchell's Zebra, White Rhinoceros, Hippopotamus, Elephant, Wildebeest. There are several kinds of antelope, including Kudu, Gemsbok, Eland, Sable, Roan and Waterbuck. (Note:There are more elephants in Botswana than any other place in the world.)

Basic mammal characteristics:

- All mammals are warm blooded.
- Almost all mammals give birth to live young.
- Mammals have hair or fur on their bodies.
- Mammals are vertebrates.
- All mammals have lungs to breathe air.
- Mammals feed milk to their babies.

WHAT YOU DO:

1. Show students photos of a variety of animals, some mammals and some not. Ask students to use the list of mammal characteristics to explain whether each photo shows a mammal or some other kind of animal.

2. Milk is amazing! Explain that milk is special "baby food" that mammals produce. Even though all mammals produce milk, the nutritional content of milk varies from one species to another. Besides containing fat and protein, the milk of different mammals also contains different amounts of vitamins, minerals, carbohydrates, and water. (Water is the main ingredient in all mammals' milk. For example, cow milk is about 87% water.) Each kind of mammal mother produces the kind of milk that is best suited to the needs of her young.

   Discuss some of the ways milk differs from one mammal species to another. For example, the milk of seals and other marine mammals contains very high amounts of fat, which helps the babies quickly put on a layer of blubber to stay warm in the water.

3. Ask students to name several mammals from which people get milk. Which mammals' milk is sold in most stores? Next ask students if they can name some foods that are made from milk (such as butter, cheese, cream, ice cream, and yogurt).

   Explain that most of the milk products we're used to eating are made from cow milk, but some students may be familiar with products made from the milk of other species. In parts of Europe, for example, goats are the main milk producers. (Ask students if any of them have ever tasted goat milk. Can they describe what it tasted like? In some parts of the Middle East, sheep milk is popular, and in many desert areas camel milk is a mainstay. People drink water buffalo milk in Indonesia, and in Lapland reindeer milk is a big part of some people's diets. You might want to bring in some goat milk cheese and goat milk for students to sample. These are available at most health food stores.

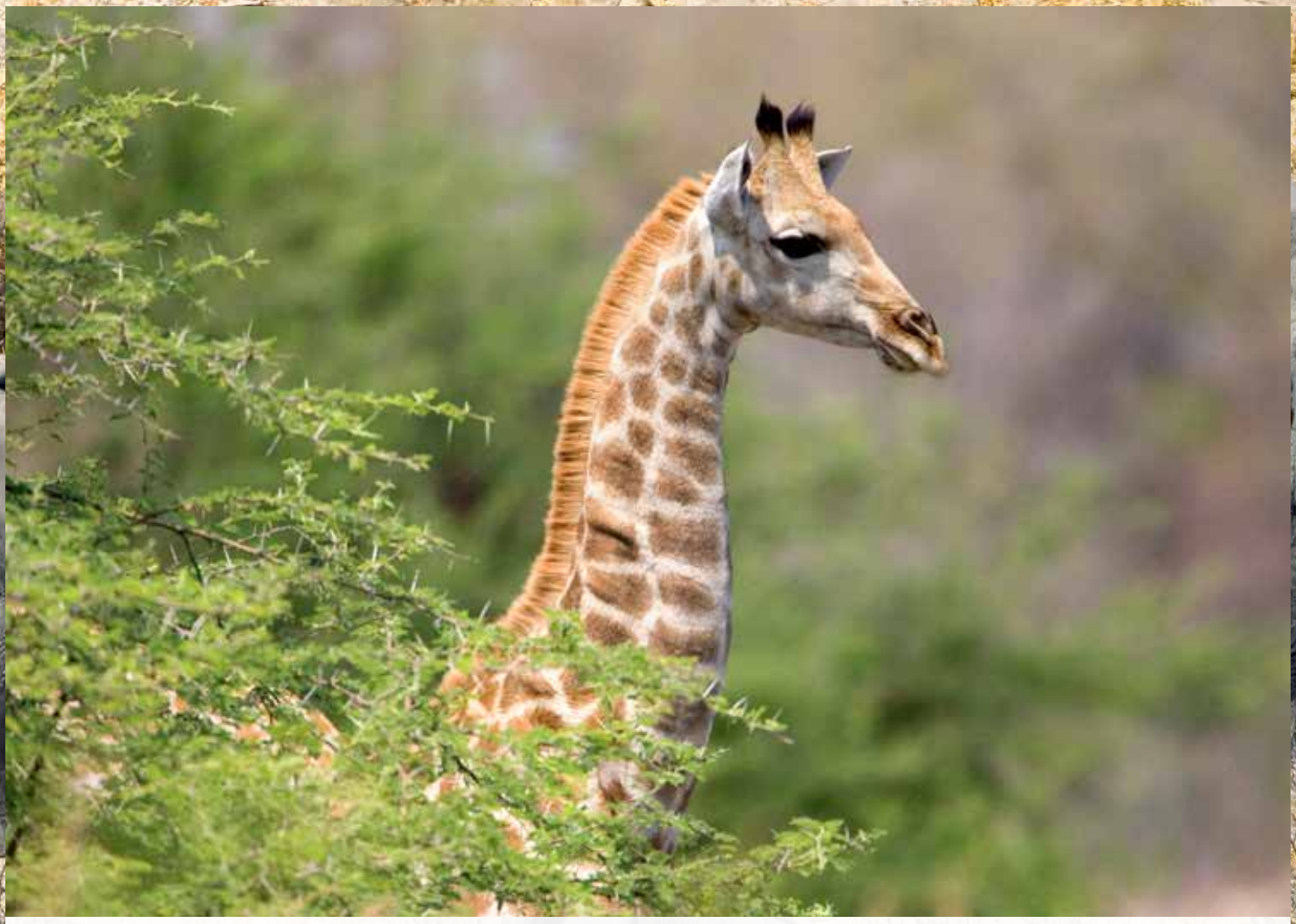
ADAPTATIONS:

For younger students. Visit a grocery store and find milk products from different mammals. Visit a local dairy to see how cows (or goats) are milked and how the milk is sorted and treated.

For older students. Lead a discussion with older students about how producing milk for baby mammals is essential to their survival. How may climate change affect mother mammals and their young when food or water is scarce?

USEFUL LINKS:

Visit **www.nwf.org/Wildlife/Wildlife-Library/Mammals.aspx** for more information about mammals.



ACTIVITY FIVE

WILDLIFE WHERE YOU LIVE

Subjects: Biology, Natural Science, Environmental Science

LEARNING OBJECTIVES:

- Observe animals and plants in the schoolyard or nearby park
- Conduct a population study in a plot on the school grounds
- Compare the plant and animal life found in different plots on the school grounds

MATERIALS:

- Field guides (online or books)
- Pens, pencils and art supplies

BACKGROUND:

After learning about amazing wildlife in Africa's Okavango Delta and its key geographic features, you can take your students on a local "safari" to discover local plants and animals. Review the terms habitat, ecosystem, adaptations and mammals in previous activities.

WHAT YOU DO:

Provide the following instructions to help guide your students in their observations:

1. Search for animals, big and small. Look for small animals (ants, butterflies, beetles, snails) on plants and under rocks, logs, and leaves. Look for large animals (birds, squirrels, frogs, toads) in the air, the trees, near shrubs or in the open.
2. Heed the signs. Tracks, holes, nests, scat, chewed plants, insect sounds, birdcalls, and other signs are all clues about the presence of wildlife.
3. Do not disturb. Be a good steward of your local environment. Move slowly and quietly.
4. Remove any trash you find and always leave an area as you found it—or better.
5. Look it up. Borrow a field guide and bring it along with you to help you identify animals.
6. Create your own field notebook to write or draw what you see. Then you can look up plants and animals you observed when you go back inside.

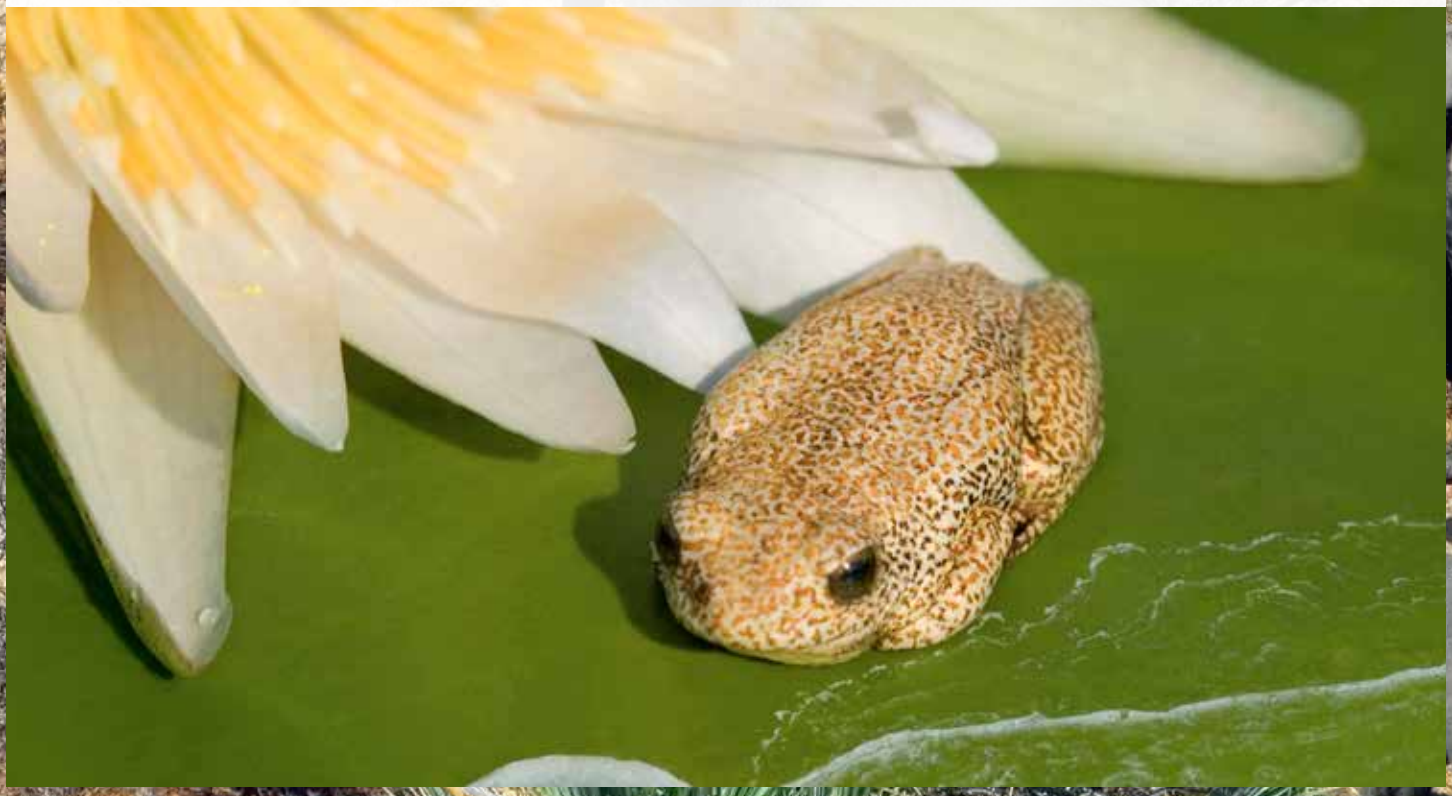
ADAPTATIONS:

For younger students. Go outside as a group and lead a nature hike around the school grounds. Help students learn to look for signs of wildlife. Then make a list on the board as a class of all the unique insects, plants and animals that you saw.

For older students. Ask students to research and write a short paragraph about an animal or plant they observed. Ask them to explain why this species is so incredible giving an example of a trait or characteristic that they just learned. (Remember insects are animals too.)

USEFUL LINKS:

Help the National Wildlife Federation track wildlife sightings in your area through NWF's Wildlife Watch at **www.nwf.org/wildlifewatch**. Ask students to write about or draw animals they see and submit sightings through the website.



ACTIVITY SIX

WRITER'S CORNER

Subjects: Language Arts, Biology, Natural Science, Environmental Science

LEARNING OBJECTIVES:

- Develop keen observation skills
- Differentiate between factual observations and opinions
- Explain why careful observation and record-keeping are important for scientists
- Communicate thoughts and opinions effectively using a variety of media

MATERIALS:

- Notebook
- Pencil or pen

WHAT YOU DO:

1. Give students an opportunity to develop skills as scientific observers and reporters. Have them choose an animal they can easily observe in the wild (such as a bird or a squirrel) or even a family pet in your own home. Ask them to keep a notebook where they write down what they notice and what they think their observations mean.

   Have them divide each page into two columns. Label the first column "Observations" and the second column "Speculations". In the observations column, they should record exactly what they see happening – just the facts without any opinions. For example:

   - What is the animal doing?
   - Where does it go and in what places does it stop?
   - How does the animal interact with others of its kind?

   Then, in the Speculations column, they can record their ideas and questions about the reasons behind the behavior they observed. For example:

   - Why does the animal choose to rest in certain places?
   - Does it seem to prefer certain foods over others?
   - When it encounters other animals, what might its behavior indicate?

   After students have had time to work on their journals, ask students to share some of their observations with the group. Discuss the value of both factual observations and the ideas and questions that result from them for advancing scientific knowledge.

ADAPTATIONS:

For older students. Have students research species whose populations have increased because of help from people and organizations. Instruct students to identify the heroes and the species they are saving. They can work alone or in teams to create an outline or notes. Then each student can present their finding in class or write a paper or blog about people who have worked to save wildlife. Here are a few sample questions that students could answer:

- What endangered species did the work focus?
- Why did the animal become endangered?
- Where did work occur?
- When did he/she or the group get started?
- What can people do to support the work and help save this species?.

USEFUL LINKS:

Every month, NWF's Ranger Rick® has a photo contest for kids (ages 13 and under). Using the themes above as inspiration, your students could submit photos or read about amazing animals with Ranger Rick. **www.nwf.org/Kids/Ranger-Rick/Photo-Contests.aspx**

Meet two amazing wildlife heroes. Go to **www.nwf.org/borntobewild**

ACTIVITY SEVEN

WHAT YOU CAN DO

Subjects: Science, Civics

LEARNING OBJECTIVES:

- Define climate change
- Explain why climate change is a threat to wildlife in Africa - especially threatened and vulnerable species
- List several actions students can take to help endangered species and reduce their own contribution to global warming pollution.

MATERIALS:

- Access to the internet
- Student Page: “Climate Change Action”

WHAT YOU DO:

Use the concepts and resources presented throughout this guide or the suggestions below to lead a brainstorming session with your students on actions they can take to benefit help save elephants, lions and other vulnerable wildlife and the environment as individuals, as a class or a school.

1 Discuss ways that we can all help save elephants, lions and other vulnerable wildlife. Here are some ideas:

- Support ivory bans. Avoid all products made from ivory or any other part of an elephant.
- Avoid palm oil. Read the ingredients on food, soap, and other products and choose things made from sustainably harvested palm oil.
- Buy wood products with an FSC label. FSC stands for “Forest Stewardship Council” and shows that wood comes from forests that are managed well.
- Learn more about endangered animals and share what you learn with others.
- Have a fundraiser to raise money for organizations that help these animals.
- Support laws that protect all endangered species.

2. Ask your students to develop a plan for taking action as individuals or as a class.

3. Share your plan and measure progress. Make a chart to document progress on class activities or post everyone's pledges for individual actions in the classroom or in a common area of the school.

Make a list of Simple Steps you can take to fight climate change and help Africa's wildlife!

- Unplug three electronic devices (TV, computer, stereo) when not in use.
- Take reusable bags when you go shopping.
- Walk, bike, carpool and use mass transit whenever you can.
- Replace old light bulbs with energy-saving compact fluorescents.
- Learn more and add to your list at www.nwf.org/energy.

4 Get involved! Join an organization that works to protect wildlife, such as the National Wildlife Federation or a group that works in your area. You can even join as a class at **www.facebook.com/StudentWildlifeAction**

Dispose of garbage and chemicals properly! Chemicals can end up in the oceans and harm plants and animals. Use reusable bags and recycle whenever possible.

ADAPTATIONS:

For younger students. Have students choose an endangered species or a species. Then tell them they will draw a picture of their species in its habitat. Frame the picture with a piece of colored construction paper and have them write the names of their animals (or plants) in bold letters, then hang the portraits on the wall to create greater awareness at their school.

For older students. Have them create posters or write blogs about species from the region and what people can do to help..

USEFUL LINKS:

Want to help your school take big steps to protect wildlife and the environment? Join Eco-Schools USA! National Wildlife Federation's Eco-Schools USA is part of an international program that helps you form an Eco Action team and make a plan to green your school building, grounds, and curriculum. You choose to focus on one or more of the eight "pathways", which includes Climate Change - a good fit if you're looking to do more to help African wildlife!
www.nwf.org/Eco-Schools-USA/Become-an-Eco-School/Pathways.aspx

National Wildlife Federation's Trees for Wildlife is a unique educational and tree-planting program for children ages 6 to 18, involving science-based learning, tree-planting, and ongoing stewardship activities. The Trees for Wildlife initiative aims to teach children about the value of the environment; to expand the world inventory of trees to protect and improve natural resources; and to help children value long-term stewardship of trees, Earth's "perfect organic machines."
www.nwf.org/trees-for-wildlife.aspx

STUDENT PAGE

CLIMATE CHANGE ACTION

Directions: Use www.climateclassroomkids.org to help you answer the following questions.

PART ONE:

What is climate change?

What is causing it?

How do scientists measure it?

Why is it a problem?

What are some things people are doing to solve it?

PART TWO:

List five things you could do in your own life that would help save energy and reduce climate change pollution.

1.
2.
3.
4.
5.

STUDENT PAGE

CLIMATE CHANGE FAMILY ACTION CHECKLIST

Simple Steps

- Turn off the lights, computer, and TV when you're not using them.
- Unplug electronics and chargers between uses.
- Do laundry when you have a full load.
- Set your washer on the cold water setting.
- Take shorter showers and don't fill the tub full when you take a bath.
- Run your dishwasher when you have a full load. Use the energy-saving setting.
- Set your water heater no higher than 120 degrees.
- Set the temperature on your air conditioner a few degrees higher.
- Set the thermostat on your furnace a few degrees lower.
- Walk or ride a bike instead of riding in the car for short trips.
- Combine errands to reduce car trips.
- Recycle your paper, plastic, glass, and cans.
- Take reusable bags with you to the supermarket.

Bigger Steps

- Switch to compact fluorescent light bulbs.
- Hang your wash up to dry instead of using the dryer.
- Insulate your hot water heater.
- Weatherize your windows and doors.
- Check the tire pressure on your car regularly.
- Keep your car's engine tuned up.
- Plant a tree or two.

Super Steps

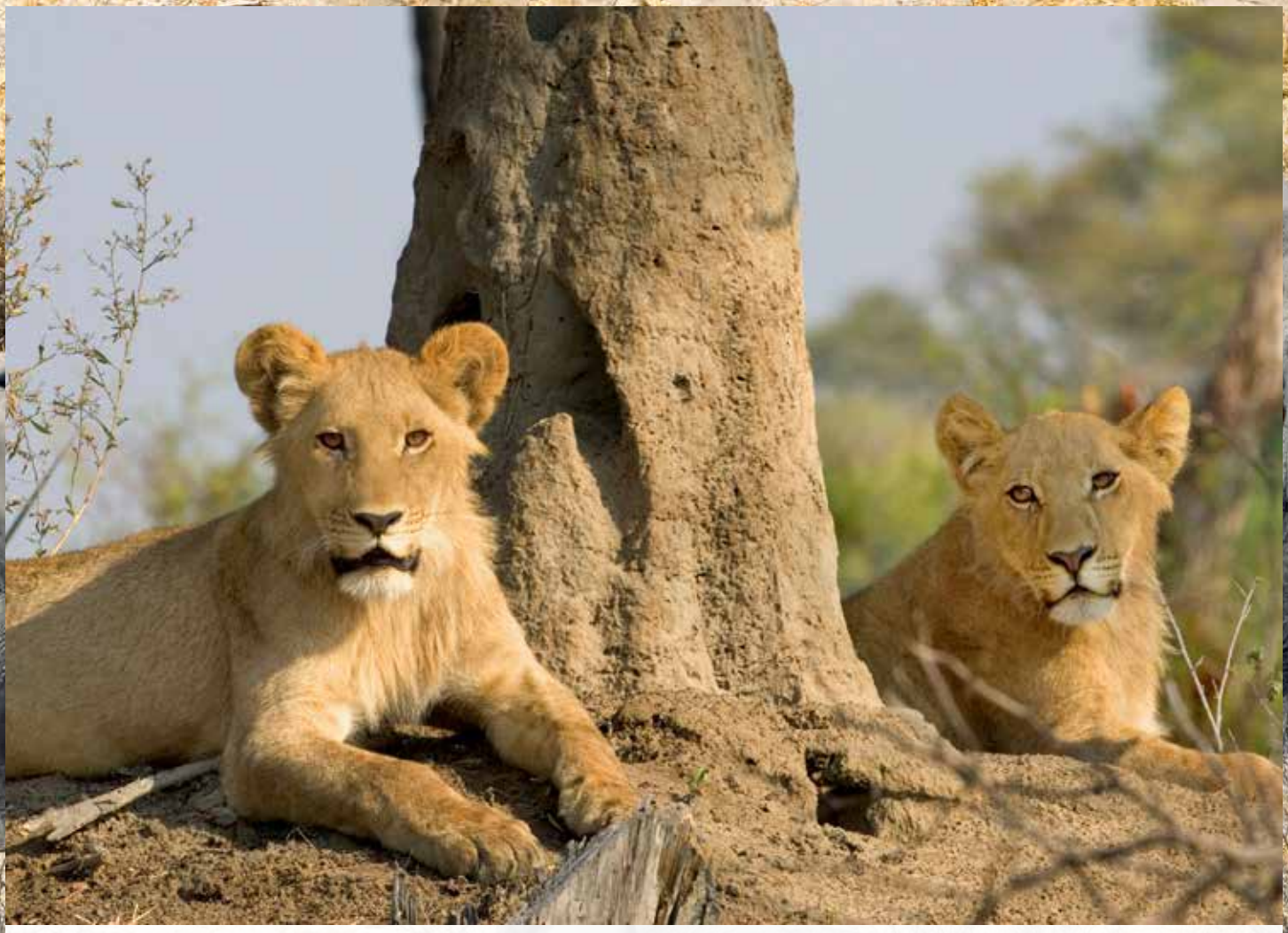
- Buy fresh, locally grown fruits and veggies.
- Buy less stuff.
- Choose recycled paper and other recycled products.
- Add more insulation to your home.
- Choose a well-insulated home that isn't bigger than you need.
- Choose a car that gets high gas mileage.
- Choose appliances with the Energy Star® label.
- Tell others how they can join the fight against climate change.
- Encourage elected officials to support laws to reduce climate change.

JOIN ECO-SCHOOLS USA!

National Wildlife Federation's Eco-Schools USA is part of an international program that helps you form an Eco-Action team and make a plan to green your school building, grounds, and curriculum. You choose to focus on one or more of the eight "pathways," which include Energy, Transportation, or Climate Change—a good fit if you're looking to do more to help African wildlife!

Find the Eco-Schools Climate Change Pathway at: **www.nwf.org/Eco-Schools-USA/Become-an-Eco-School/Pathways/Climate-Change.aspx**

Find the Eco-Schools USA Water Pathway at **www.nwf.org/Global-Warming/School-Solutions/Eco-Schools-USA/Become-an-Eco-School/Pathways/Water.aspx[CH2]**



AFRICAN ANIMAL FUN FACTS

(These facts are adapted from National Wildlife Federation's Ranger Rick® magazine)

KNOW YOUR AFRICAN ANIMALS

- A male African elephant's tusks can be 8 feet long!
- An adult African elephant poops about 200 pounds of manure a day.
- Only male lions grow manes, beginning at about 3 years of age. Manes vary individually from blond to black.
- Herds of springbok sometimes jump in the air together again and again – this is called "pronking." Scientists are not sure why they pronk. Maybe it's just for fun!
- A giraffe can grow up to 19 feet tall--taller than any other animal in the world. Its neck alone can be eight feet long! But it has only seven neck bones--the same number you have.

AFRICAN ANIMAL FAMILIES

- Lions in a pride greet each other by rubbing their heads and sides together, with tails held high.

- Lion cubs have brownish spots that usually fade by 3 months. Sometimes they still have them on their bellies even when they are grown up!
- A baby giraffe is only six feet tall at birth-as tall as a grown man.
- Giraffes also use their necks to tell each other how they feel. For example, when a giraffe is angry, it will lower its neck until it's almost level with the ground. But when it wants to say "I give up--you're the boss!" it stretches its neck up and raises its nose in the air.

AFRICAN ANIMAL ADAPTATIONS

- Elephants use their trunks to breathe, sniff, drink, shower and pick things up. African elephants are very strong and can lift more than a ton with their trunks.
- Giraffes eat leaves and can reach branches 19 feet from the ground.
- Elephants can hear each other, even when their herd is spread out, because the very low sounds they make can travel over long distances. The sounds are too low to be heard by human ears!
- When a herd of zebras runs away, their stripes can keep a predator from picking out an individual animal long enough to give the zebras a chance to get away!
- A giraffe's tricky tongue is up to 18 inches long. It's so long the giraffe can use it to clean its nose!
- Scientists recently discovered that giraffes can make sounds that are too deep for humans to hear. But humans can hear some giraffe sounds like moo, roar, snort, and grunt. Plus, they burp!
- Adult giraffes have very few enemies. (Would YOU try to attack something that big?) Hungry lions and hyenas may try to snatch an adult drinking at a waterhole. But more often they go for young giraffes. If the predator comes close, they kick! The blow from a giraffe's hoof can easily knock out or even kill a lion.

NATIONAL EDUCATION STANDARDS

WHERE IN THE WORLD

Science: NSES

Grades K-4 Standard C: Life Science

Organisms and environments

Grades 5-8 Standard C: Life Science

Regulation and behavior, Diversity and adaptations

Grades K-4 Standard D: Earth & Space Science

Changes in earth and sky

Grades 5-8 Standard D: Earth & Space Science

Structure of the Earth system, Earth in the solar system

HABITAT – WHAT'S THAT?

Science: NSES

Grades K-4 Standard C: Life Science

Characteristics of organisms, Organisms and environments

Grades 5-8 Standard C: Life Science

Populations and ecosystems

Grades K-8: Standard A: Science as inquiry

Abilities necessary to do scientific inquiry

English/Language Arts: NCTE/IRA

Standard 7: Evaluating data

Standard 8: Developing research skills

AWESOME ADAPTATIONS

Science: NSES

Grades K-4 Standard C: Life Science

Characteristics of organisms, Organisms and environments

Grades 5-8 Standard C: Life Science

Regulation and behavior, Diversity and adaptations, Populations and ecosystems

English/Language Arts: NCTE/IRA

Standard 7: Evaluating data

Standard 8: Developing research skills

MAMMALS ARE AMAZING

English/Language Arts: NCTE/IRA

Grades K-4 Standard C: Life Science

Characteristics of organisms, Life cycles of organisms, Organisms and the environment

Grades 5-8 Standard C: Life Science

Regulation and behavior, Diversity and adaptations, Populations and ecosystems

English/Language Arts: NCTE/IRA

Standard 4: Communication skills

WRITER'S CORNER

Grades K-4 Standard C: Life Science

Characteristics of organisms, Life cycles of organisms,

Organisms and the environment

Grades 5-8 Standard C: Life Science

Regulation and behavior, Diversity and adaptations,

Populations and ecosystems

Grades K-8: Standard A: Science as inquiry

Abilities necessary to do scientific inquiry

English/Language Arts: NCTE/IRA

Standard 1: Reading for perspective

Standard 4: Communication skills

Standard 5: Communication strategies

Standard 6: Applying knowledge

WHAT YOU CAN DO

English/Language Arts: NCTE/IRA

Standard 4: Communication skills

Standard 5: Communication strategies

Standard 6: Applying knowledge

Standard 7: Conducting research

FUN FACTS

SCIENCE: NSES

Grades K-4 Standard C: Life Science

Characteristics of organisms, Organisms and environments

Grades 5-8 Standard C: Life Science

Regulation and behavior, Diversity and adaptations, Populations and ecosystems

English/Language Arts: NCTE/IRA

Standard 1: Reading for perspective