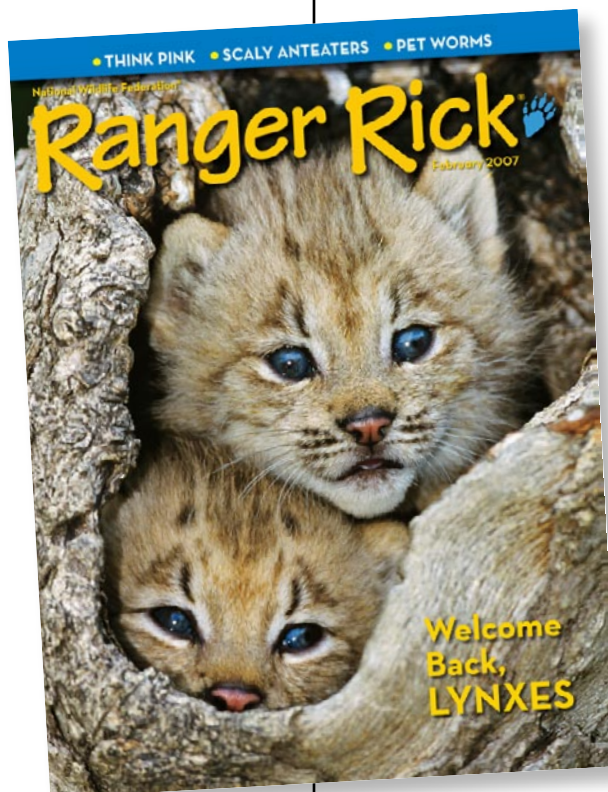


FEBRUARY 2007

National Wildlife Federation
Ranger Rick[®]



EDUCATOR'S GUIDE



This guide is designed to complement the February 2007 issue of National Wildlife Federation's *Ranger Rick*[®] magazine.





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Introduction

Welcome to the *Ranger Rick Educator's Guide!*

This guide provides you with educational activities to bring **National Wildlife Federation's *Ranger Rick***[®] magazine alive in the classroom and beyond. Using *Ranger Rick* feature articles as an entry point, this guide engages students ages 7-12 in exploring the natural world to build literacy, critical and creative thinking skills, and understanding across the disciplines. Activities are correlated with the National Education Standards for science and language arts, and are designed to assist you in meeting required curriculum objectives.

Can we have class outside today?

Find out how you can say "Yes!" at www.nwf.org/backyard. The outdoor environment offers excellent opportunities for active, hands-on, interdisciplinary learning. You can enhance the learning experience by creating your own habitat site. Revitalize an entire schoolyard, a garden, or even a rooftop, windowsill, or balcony by creating an outdoor classroom and sanctuary for birds, butterflies, and other wildlife.

How To Use This Guide

Each section of the guide is matched with a specific *Ranger Rick* feature. After you read through the magazine, choose the stories and activities that complement your curriculum and that will interest your students. Sections include:

- **Learning Links.** A summary of concepts presented in the article.
- **Discussion Questions and Writing Prompts.** Entry points to engage students in discussion or writing to develop literacy and thinking skills.
- **Resources.** Web sites and books where you can find further information.
- **Activity Ideas.** Quick investigations and extended projects to complement article topics.
- **Student Pages.** Ready-to-copy activity sheets for students.

We have also provided a **Family Fun** activities page for you to copy and send home with students.

Subscribe to *Ranger Rick!*
Special rate classroom subscriptions available.
Details at www.nwf.org/rangerrick

Lynx Comeback

pages 4-8

1



Learning Links:

Big, snowshoe-like paws and extra-long legs make lynxes effective hunters in the snowy North. Despite these great “hunting tools,” U.S. lynx populations have diminished sharply over the years. Here’s how scientists are bringing lynxes back to Colorado.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Have you ever heard the phrase “The Comeback Kid”? If so, how was it used? What does it mean?
- In this story, wild cats called lynxes are The Comeback Kids. What do you think that means for the lynxes?

Comprehension Check:

- What are some features that can help you tell a lynx from other wild cats?
- How are a lynx’s paws like snowshoes?
- How do long legs help a lynx survive in the North?
- Where in North America do most lynxes live?
- Why are there so few lynxes in the United States today?
- How did scientists bring more lynxes to Colorado?

- What are two ways scientists keep track of the lynxes they released in Colorado?
- What is a baby lynx called?
- How many baby lynxes did scientists recently count in Colorado?

Critical and Creative Thinking Connections:

- Why would “The Good News Lynxes” be a fitting title for this article?
- What can tracks tell scientists about animals?
- What skills do you think Tim and the other lynx trackers need to do their job well?
- How do you think the trackers feel when they come upon a den of lynx kittens? Why?
- What would you do if you came upon two kittens like the ones playing in the photo on page 8?

RESOURCES

Wild Cats: Lynx, Bobcats, Mountain Lions by Candace Savage (Sierra Club Books, 1993). Eye-popping photos of these wild cats teach about their habitat, diet, and survival skills.

- www7.nationalgeographic.com/ngm/O6O1/feature4/index.html Learn more about Colorado’s lynx reintroduction program with this article and map from National Geographic.

ACTIVITY IDEAS

Make Your Own Snowshoes

Experiment with making snowshoes that help students walk on snow the way a lynx's wide paws do. Each student will need two tissue boxes. If a student's foot doesn't fit into the opening of the box, trim away a bit of each box top until the foot just slips in but doesn't slide back out. Have each student cut out two pieces of bubble wrap big enough to cover the box bottoms and glue a piece on each bottom. Students can paint the outside of the boxes to look like lynx feet and add "claws" cut from pieces of black felt or paper. The shoes are now ready to carry them across a snowy field! If you live in a snowy place, put on warm socks and try it out. Discuss how snowshoes make students' feet bigger, spreading out their weight so that they can more easily walk on snow without sinking in.

TIME:**30 Minutes****MATERIALS:**

2 oblong tissue boxes per student
Scissors, poster paints, paintbrushes, bubble wrap, glue
Scraps of black felt or black paper

Animal Trackers

Students may not be able to find lynx tracks in your area, but a walk in a local woods or park could turn up other animal tracks. Good spots to look for tracks include muddy patches of soil, sand, or fresh snow. Also look near trees, shrubs, or other cover. If you don't find tracks, encourage wild visitors by sprinkling some birdseed on the ground. Return the next day to see if animals found your snack. Can you follow any of the tracks? Where might the animal have gone? Encourage students to draw pictures of the tracks they find. Consult a field guide to help identify the tracks you spot. Helpful books on the topic are *Tracks, Scat, and Signs* by Leslie Dendy (Northword Press, 1996) and *Peterson's Field Guide to Animal Tracks* by Olaus J. Murie and Mark Elbroch (Houghton Mifflin, 2005). A good online source for animal tracks is www.eNature.com/zipguides. Select "mammal tracks" and search by your zip code for animal tracks you are likely to find in your area.

TIME:**45 Minutes****MATERIALS:**

Paper and pencils
Animal tracks field guides
Internet access
Birdseed (optional)

Really Wild Sports Shoe

Pumas and tigers have sports shoes named after them, so why shouldn't lynxes enjoy the same honor? Ask students to complete the [Really Wild Sports Shoe student page](#), following the steps to design their own lynx-inspired shoe. On the back of the page, have them draw a sample shoe, label its main parts, and under the drawing, write a paragraph about the shoe's special features. Conclude with a "fashion show" in which each designer shows and describes his or her shoe. Discuss how students incorporated lynx features into their shoe designs and what purpose these features will serve for the shoes' wearers.

TIME:**60 Minutes****MATERIALS:**

[Really Wild Sports Shoe student page](#)
Crayons or markers



Really Wild Sports Shoe

Congratulations! The Everything Lynx Company has just hired you to design its new sports shoe for kids. Like everything invented for this company, the lynx must be your “sole” inspiration. Follow the three steps below to do your job.

Step 1. Complete this form:

What special features does a lynx have?

How could you use some of these features to design your sports shoe?

What sport is your shoe for? _____

What is the name of your shoe? _____

Tell how your shoe will provide these three things:

• Fashion: _____

• Comfort: _____

• Sports Performance: _____

Step 2. On the back of this page, draw your shoe and label its main parts.

Step 3. Under the drawing, write a paragraph about the shoe's special features.

Think Pink

pages 13-16



Learning Links:

Pink is a popular color for Valentine's Day, but you can find it any time of the year throughout the natural world. This story provides a perfect opportunity to consider the purposes color serves in nature as well as how color affects people.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- What's your favorite color?
- Why do you like it?

Comprehension Check:

- What makes flamingos pink?
- Name three pink animals from the story.
- Name two pink plants from the story.
- Name something pink in the story that's not alive.

Critical and Creative Thinking Connections:

- Where would you look for pink in nature? Name some places near your home and some places far away.

- What do you think is the "pinkest" season?
- Why is pink a Valentine color?
- Do you like the color pink? Can you explain why or why not?
- Some animals have bright colors or bold patterns; others do not. What are some reasons for animals to have the colors they do?
- Flamingos are pink because of pigments in the foods they eat. Do you think that all animals get their color from their food? Why or why not?
- What if you couldn't see color? How would your life be different if you saw the world in black and white?

RESOURCES

White is for Blueberry by George Shannon (Greenwillow, 2005). Look at nature's colors in a whole new way in this convention-challenging book.

Berry Smudges and Leaf Prints by Ellen Senisi (Dutton Children's Books, 2001). Explore the colors of nature with this attractive presentation of information and an assortment of craft projects using natural materials.

➤ www.hiltonpond.org/ArticleAnimalColorsMain.html Here is an interesting explanation of where color in nature comes from and how animals use it.

ACTIVITY IDEAS

Pink Palette

After admiring all the shades of pink in "Think Pink," go on a pink hunt of your own. Stop by a hardware store and collect an assortment of pink-hued paint strips. Then see how many of the shades students can match with something in nature. Encourage careful observation. Sometimes pink is oh-so-obvious, as in a splashy sunset or a tulip bursting into bloom. But it can also be a subtle shade, such as pale pink specks tucked among the minerals in a rock. Keep adding to your list as spring signs begin to appear. Which week of the year, or which place in your town, wins the prize for the most plentiful profusion of pink? Of course, you could feature other colors at other times of the year, too.

TIME:

Variable

MATERIALS:

Pink paint strips
Paper and pencils

Color Collage

Pink is by no means the only color that occurs abundantly in nature. Have each student choose a color he or she particularly likes and create a collage like the one in "Think Pink." Students can cut photos out of magazines or take their own photos when they find their chosen color in nature. Encourage them to experiment with the most appealing way to arrange the images and to give the collage a clever title. Then display all these colorful creations in a class gallery.

TIME:

60 Minutes or more

MATERIALS:

Old magazines
Scissors
Cameras (optional)
Poster board
Glue

Color Conference

Brainstorm a wide-ranging list of questions about color in nature. Have each student (or a small group of students) choose one question to research. Then convene a color conference in which the "experts" on each topic share the information they found. Presentations could take a variety of forms, such as a talk with visual aids, a Powerpoint show, a poster, or a skit. Here are a few color questions to get you thinking:

- Why is the sky blue? What causes a beautiful sunset or a rainbow?
- Why are flowers colorful? Why do leaves change color in the fall?
- Why are some birds colorful while others are dull?
- How does camouflage work?
- What is warning coloration and which animals have it?

TIME:

Several sessions of
variable length

MATERIALS:

Library/Internet access
for research

Favorite Colors

Engage students in a discussion about color. Do they like the color pink? Why or why not? Is pink only for girls? Says who? (Interestingly, less than a century ago the color convention was just the opposite of today's pink-for-girls and blue-for-boys norm.) Ask students to share their ideas about why people like or dislike certain colors. What emotions, thoughts, or memories do they connect with specific colors? Why is pink a Valentine color, while other colors are associated with other holidays? As an extension to this discussion, have students conduct a survey of favorite and least favorite colors among their classmates or family members. They can compile and graph the data to show which colors are most popular among girls, boys, kids, adults, and so forth.

TIME:

30 Minutes or more

MATERIALS:

Paper, pencils, and
computer access for
conducting a survey
(optional)

Pet Worms

pages 18-19

3



Learning Links:

A worm bin isn't just an environmentally-friendly way to recycle your kitchen scraps into rich compost. It's a great tool for scientific inquiry and discovery, as students learn about and watch the processes of decomposition right before their eyes.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Animals help people do lots of different kinds of work. Around the house, on the farm, in the city, and in other places, what are some jobs animals do that help people?
- What kinds of useful work do you think worms could do?

Comprehension Check:

- Why might people want a worm bin?
- What kind of worms should you use in a worm bin? Why?
- Which of the following should you NOT put in a home worm bin: banana peel, leftover chicken casserole, apple core, tea bag, moldy cheese, potato peels, all 20 pounds of Aunt Mildred's brussels sprouts surprise?
- What could you do with the castings the worms make?
- What could you do when you have plenty of worms in your bin?

Critical and Creative Thinking Connections:

- What makes a good pet? What characteristics of worms make them good "pets"? What are some important pet qualities that worms do not have?
- Do you think the worms in a worm bin are really pets? Why or why not?
- What does a worm need to live? How does a worm bin provide these things?
- Why do you think a worm bin should be dark and moist inside?
- What is it about worms that makes them useful in people's gardens?
- What do you predict would happen if worms and other decomposers suddenly disappeared from Earth?

RESOURCES

Worms Eat My Garbage by Mary Appelhof (Flower Press, 1997). Here's the classic guide to worm composting by the "Worm Woman" herself. Practical and user-friendly, it will help you get started or find answers to questions as you go.

Worms Eat Our Garbage by Mary Appelhof, Mary Frances Fenton, and Barbara Loss Harris (Flower Press, 1993). Extend the learning opportunities around a classroom worm bin with this collection of interdisciplinary activities, experiments, and kid-friendly "wormformation."

- compost.css.cornell.edu/worms/wormhome.html Cornell University's "Composting in Schools" Web site has lots of practical information as well as curriculum connections.
- yucky.kids.discovery.com/flash/worm/pg000104.html Read more about worms as recyclers and check out the interview with Worm Woman Mary Appelhof.
- whatcom.wsu.edu/ag/compost/Easywormbin.htm Here's a step-by-step set of plans for a clever double-decker worm bin as well as some helpful tips for maintaining any bin.

ACTIVITY IDEAS

Explore the Worm World

Once you've set up your worm bin, take a close look at the world within. Provide students with hand lenses to examine the worms. Can they see food moving through the worm's body? Can they find adults, babies, and the tiny, lemon-shaped cocoons from which the babies hatch? What do the castings look, feel, and smell like? Can they find any other living things in the bin? (Many other tiny decomposers will be hard at work there.) Have students record and sketch their observations. Keep a "Worm Journal" next to the bin to encourage students to note their observations, questions, and discoveries over time.

TIME:

30 Minutes, plus

MATERIALS:

**Worm bin
Hand lenses
Paper and pencils**

Worm Bin Experiments

A worm bin is an ideal setting for scientific investigations. Discuss research methods and engage students in one or more of the following investigations:

- What are worms' "favorite foods"? Add different kinds of foods to the bin and keep track of which foods they eat first and fastest.
- How does size affect decomposition rate? Add whole lettuce leaves, leaves torn into pieces, and shredded lettuce. Observe what happens.
- How does decomposition differ in and out of a worm bin? Put identical samples of food in the worm bin, in a sealed plastic bag, in an outdoor compost pile, and buried in the soil. Track what happens to each sample.
- Prepare pots with and without worm castings added to the soil. Plant seeds in both. Note any differences in growth rates.

TIME:

Variable

MATERIALS:

**Assorted food scraps
Seeds, potting soil,
and pots
Paper and pencils**

Worm Math

There are lots of math connections to be made in and around a worm bin. Have students collect and weigh their food waste over a period of time. Calculate what percentage could be composted in a worm bin. Count or weigh the worms before you add them to the bin, and feed them accordingly (two pounds of worms can eat approximately one pound of food per day). When you harvest the castings, count or weigh the worms again to see if they have reproduced. Observe and graph the decomposition time for various types of food scraps. Measure the worms and calculate their average size.

TIME:

Variable

MATERIALS:

**Paper and pencils
Graph paper
Scale to weigh food
waste and worms**

Writing About Worms

Worms make great subjects for writing assignments. Here are a few fun ways to incorporate worms into language arts lessons:

- Create an information sheet or step-by-step manual for making and maintaining a worm bin, including information from published sources and helpful hints from personal experience.
- Write a menu for the worm patrons at your "Worm Bin Restaurant." Give food scraps and leftovers tempting names and descriptions, modeled after real restaurant menus.
- Compose a persuasive piece about the value of worms or worm composting. How might you change someone's mind if they thought worms were "icky" or preferred to throw their food scraps in the trash can?

TIME:

Variable

MATERIALS:

Paper and pencils

Hangin' with Pangolins

pages 21-26

4



Learning Links:

Although covered with scales like a reptile, pangolins are actually mammals. And though they slurp ants with a long tongue like an anteater's and curl in a ball like some armadillos, they aren't close relatives of either one. In this introduction to an unusual animal, students discover how pangolins put their adaptations to work.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Look at the picture on page 21. What do you think this creature could be?
- What are some animals with scales? Why are scales useful?

Comprehension Check:

- To what group of animals do pangolins belong?
- How are pangolin scales different from reptile or fish scales?
- Where are pangolins found? What's their habitat?
- What do pangolins eat?
- What are two body parts that help pangolins get and eat their food?
- Describe three ways that pangolins defend themselves or their babies.

Critical and Creative Thinking Connections:

- Why does a baby pangolin take the "tail train"? What are some other animal babies that "hitchhike"?
- Why do you think pangolins are sometimes known as scaly anteaters?
- Pangolins aren't closely related to armadillos or to anteaters, but they have some characteristics in common. What are some similarities you notice between pangolins and armadillos or anteaters?
- This story is written as a series of questions and answers. What other questions do you have about pangolins?
- What do you think Baby Pango is saying on page 26? Make up your own captions for the photos.

RESOURCES

Eyewitness: Mammal by DK Publishing (DK Children, 2000). The Eyewitness series is packed with interesting facts. In this title you'll learn a little more about pangolins as well as lots more about the characteristics of all mammals.

➤ www.awf.org/content/wildlife/detail/pangolin Explore the pangolin species of Africa at the Web site of the African Wildlife Foundation.

ACTIVITY IDEAS

The Art of Description

Ask students to find someone (perhaps a student in another class) who has never heard of a pangolin. Following the steps on the [Hangin' with Pangolins student page](#), have them describe a pangolin's physical characteristics in as much detail as possible (without showing the photos). As the student describes, the other person should draw what he or she thinks a pangolin looks like (without showing the drawing). When both describer and artist have completed their tasks, have them compare the photos and the drawing. How well do they match? Emphasize that artistic skills are not the point in this exercise: The more detailed and complete the description, the better the artist can envision the animal. Ask students—both describers and artists—to evaluate how the descriptions were effective and how they could have been improved. Discuss the value of good description for effective writing and spoken communication.

TIME:**30 Minutes****MATERIALS:**[Hangin' with Pangolins student page](#)
Drawing paper

Pangolin Parts

Pangolins have lots of interesting body parts for getting food, taking care of young, and defending themselves. Have students make a drawing of a pangolin. Then have them label its various parts with a brief description of how the part functions and how it helps the pangolin survive. For examples using other animals, see the "Quick Bits" stories in back issues of *Ranger Rick*, such as sea snakes in June 2006 and bats in October 2005.

TIME:**30 Minutes****MATERIALS:**Drawing paper
Pencils
Crayons/markers

Pangolin Patterns

The pattern of a pangolin's overlapping scales can be found elsewhere in nature and also in human creations. For instance, you'll find it in the plant kingdom on pine cones and artichokes. Fish and reptile scales may look similar. The shingles on our roofs are often arranged this way. Traditional Chinese armor also copied the design! Have students look for examples of the pattern and gather photographs or objects that display it. Then, as a group, compare the examples and discuss what makes this arrangement advantageous.

TIME:**30 Minutes, plus out-of-class time for collecting****MATERIALS:**

Objects or photos collected by students

Pangolin Pals

Who wouldn't want a pangolin for a pal? After students read "Hangin' with Pangolins," make pangolin pals out of pine cones. Start with an outdoor excursion to collect pine cones. Then transform them into pangolins by adding heads, eyes, legs, claws, and tails. Provide beads (for eyes) and modeling clay (for everything else), or encourage students to be creative in finding their own materials to complete the creatures. Have students use their pals to act out scenes from pangolin life based on what they learned in the story.

TIME:**60 Minutes****MATERIALS:**Pine cones
Beads
Modeling clay



Hangin' with Pangolins

Your mission: Find a friend or family member who has never heard of a pangolin. Then ask this person to help you test your ability to describe an unusual animal.

1. Take a close look at the pangolin photos in Ranger Rick—but don't show them to your partner! How would you describe this animal to someone who has never seen one? Start by making a list of important details to include:

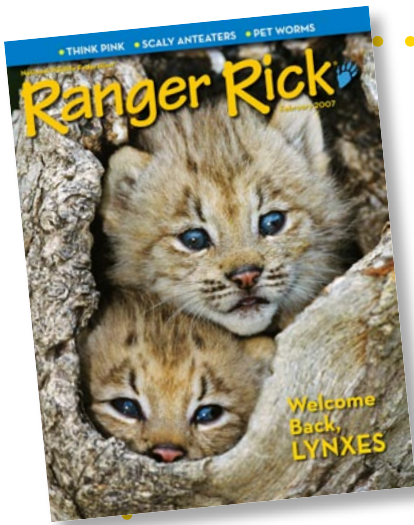
2. Now give your partner a blank piece of paper and a pencil. Ask your partner to draw a pangolin as you describe it. Turn your back and don't look at your partner's drawing! Use your notes above to help you remember all the important details.

3. When you finish describing, and your partner finishes drawing, put the photos and the drawing side by side. How well do they match?

How does the drawing look like a real pangolin? _____

What is wrong or missing on the drawing? _____

4. How could you have changed or added to your description to help your partner draw the pangolin more accurately?



National Wildlife Federation
Ranger Rick

Family Fun!

*Dear Parent or Guardian,
Your child is reading Ranger Rick magazine in class. Each month, amazing photos, feature articles, and activities bring nature, wildlife, and conservation to life. You can extend the learning and fun at home with these engaging family activities.*

PINK PARADE

Don't just "think pink" (pages 13-16). Go on out and find pink! Take a walk around the neighborhood and see how many shades of this Valentine color you can spot. Keep a list of your finds and add to it as you begin to notice the first signs of spring. Can you find the pinkest place in town?

WORMS AT HOME

Compost your kitchen waste with the help of everyone's favorite wiggly critters. You'll find all you need to know to start your own worm bin in "Pet Worms" on pages 18-19. It's a great way to recycle, your garden will thank you, and you'll have fun, too!

STOP THE INVADERS

This month in "Ranger Rick's Adventures" (pages 28-31), the gang met an alien! That is, an alien species not native to the Everglades. Invasive species are a problem in many habitats. Visit www.sgnis.org/kids for some fun "detective work" that will help you find out about other troublesome invaders and how to stop them.

UNLIKELY FRIENDS

In "Odd Couples" on pages 32-35, you met some unusual friends. Do you know any animals that make an unlikely pair? What about your own friends—are they just like you or are they different in some important ways? As a family, discuss your ideas about what makes a good friend. Then take some time to make a card, send an email, or pick up the phone to tell some special friends what you appreciate about them!

MYSTERY BIRD

Who is that unidentified animal on pages 38-39? Hit the library or search the Internet and see if you can identify the creature in this month's "Who Am I?" contest. When you have a guess, send your answer in to *Ranger Rick*.

For more interactive family fun, be sure to visit www.nwf.org/kids.

