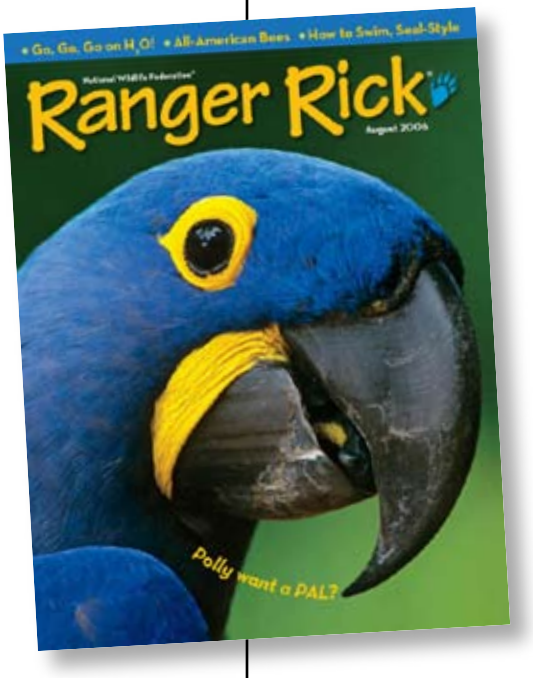
AUGUST 2006

National Wildlife Federation®

Ranger Rick® EDUCATOR'S GUIDE



This guide is designed to complement the August 2006 issue of National Wildlife Federation's *Ranger Rick*® magazine.

NATIONAL WILDLIFE FEDERATION

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To subscribe to Ranger Rick® and find other fun stuff for kids, visit www.nwf.org/kids

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/backyardwildlifehabitat**. 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.

Splash, Splash, Here We Go!

pages 4-8

Learning Links:

Animals get around in all kinds of ways. The ones in this story make use of an especially novel form of transportation. As students investigate how certain animals walk or run on water, they will discover some interesting adaptations as well as some of the unique properties of water.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- What are some ways people travel on or in water?
- How do other animals travel on or in water?

Comprehension Check:

- Why is the basilisk lizard running on top of the water?
- What's the purpose of the western grebes' water dance?
- How do water striders use their legs?
- How does a fishing spider know when its prey is near?
- Why do whirligig beetles whirl?
- What's special about a whirligig's eyes?
- Which of the animals in this story walk or run on water for just a short way? Which ones can do it all day?

Critical and Creative Thinking Connections:

- What's special about the feet or other body parts of the animals in this story? How do these adaptations help them stay on top of the water?
- If you could walk on water like one of the animals in this story, which animal's way would you choose? Why?
- Can you think of any other animals that confuse predators in a way similar to the whirligig beetles' technique?
- Imagine you could see like a whirligig beetle—both above and below the water's surface at the same time. What would you do with your talent?

RESOURCES

http://www-math.mit.edu/~dhu/Striderweb/striderweb.html Researchers in the MIT math department's Fluid Dynamics Group are studying how insects move on water. Check out the photo gallery to see "Robostrider" (a mechanical water strider) and some artistic photos revealing the water striders' movements.

Pond Life by George Reid (Golden Guides, 2001). This field guide to the insects and other animals that live around a pond is a great resource for outdoor explorations.

One Small Square: Pond by Donald Silver (McGraw Hill, 1997). Another good resource for exploring a pond, whether you take it along on an outdoor adventure or just absorb the many details on each page.

ACTIVITY IDEAS

Graceful as Poetry

TIME:
30 Minutes
MATERIALS:
Paper and pencils

After students read about these walk-on-water animals, have them choose one animal from the story and write a poem about it. Ask them to imagine how it would feel to dash, splash, skate, glide, or whirl on top of the water and convey these feelings in their poem. For some poetic inspiration, read the poems in "Dear Ranger Rick" on page 9. Or check out Paul Fleischman's *Joyful Noise: Poems for Two Voices* (Harper Trophy, 1988) for a fun poem about whirligig beetles.

Whirligig World View

TIME:
30 Minutes
MATERIALS:
Whirligig World View student page
Pencils and crayons

A whirligig beetle's unique view of the world takes in what is above and below the water's surface at the same time. Have students use the **Whirligig World View student page** to make a drawing of a pond scene through a whirligig's eyes—all four of them! Starting with a line across the middle of the page to represent the waterline, they can envision what's happening at, above, and below the surface. For a more involved project, have them create a whole comic strip where each box includes this dual perspective. After they finish, invite them to share their art with one another and discuss the advantages a whirligig enjoys by seeing in this way.

Skimming the Surface

TIME:
45 Minutes
MATERIALS:
Internet access
Water
Plastic cups
Pennies
Eyedropper
Needles, pins, or paperclips
Construction paper
Scissors
Tape or glue

Investigate surface tension—the property of water that makes some forms of water-walking possible. Have students go to **nwf.org/rangerrick** to read about what surface tension is and how it works. Then give students a chance to try out some of these surface tension experiments:

- Fill a cup to the brim with water. Then gently drop pennies in until the water bulges above the brim. How many pennies can you add before it runs over?
- Use an eyedropper to place drops of water on a penny. What happens? How many drops can you add before the dome of water collapses?
- Drop a needle, pin, or paperclip into a cup of water. It sinks, right? Now try to gently lay one of these objects on the surface of the water so it floats. (Hint: Laying the object across the tines of a fork and lowering it onto the surface works well.)
- Once you've mastered surface tension, make your own "walk-on-water" bug. Try cutting out a paper body and attaching it to paperclip "feet." Can your bug balance on top of the water?

Get Wet!

TIME:
60 Minutes or more
MATERIALS:
Dip nets
Magnifying glasses
Field guides

The best way to learn about aquatic life is to get right out there and get your feet wet—and nothing feels better on a hot summer day. Take students to a nearby pond, lake, or stream for a look around. Can you find whirligigs, water striders, or other aquatic insects? Check out the instructions at the end of the story (page 8) for ideas about what to take with you and what to look for when you get there.

Student Page

WHIRLIGIG WORLD VIEW

1. Where do whirligig beetles live?

2. What's special about their eyes? How does this help them?

3. Imagine you are a whirligig beetle. In the box below, draw what you might see on, above, and below the water's surface.

Parrot Pair-Ups

pages 12-16

Learning Links:

For social animals, interaction with other members of their own species is very important. This story explores the consequences when parrots lack this interaction, as well as what happens when a lonely bird finds a friend.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Some animals are social, meaning they prefer or even need to be around others of their own kind. What social animals can you name?
- Other animals are solitary, meaning they prefer to spend most of their time alone. Can you name some of these animals?
- Are humans social or solitary? Which group of animals—social or solitary—are you more like? Explain.

Comprehension Check:

- Why are parrots that live alone unhappy?
- What are some signs that a parrot is lonely and needs a friend?
- Why does Rita take in lonely parrots?
- What signs tell her that two parrots have chosen each other as partners?

Critical and Creative Thinking Connections:

- If you wanted a new pet, do you think a parrot would be a good choice? Why or why not?
- How are parrots similar to and different from other kinds of pets?
- What advice would you give someone who was thinking about getting a parrot for a pet?

RESOURCES

http://www.parrotsinternational.org Parrots International, which works to help endangered wild parrots and also to improve the lives of pet parrots, has lots of useful information on their Web site. See photos of many different kinds of wild parrots, read about conservation programs and important considerations for anyone thinking of getting a pet parrot, and find links to many other parrot resources.

ACTIVITY IDEAS

Parrot Talk

After students read "Parrot Pair-Ups," have them choose one of the bird pairs from the story and write some dialogue between the two birds. For instance, they could imagine the birds' very first conversation as they meet and tell each other about the situations that led them to Rita's place. Students could then imagine a later conversation in which the birds discuss their future together. As an extension, have students make parrot puppets and stage a show for their classmates.

TIME:
30 Minutes
MATERIALS:
Paper and pencils
Puppet-making supplies such as craft sticks and construction paper

Solitary or Social?

Have students use books and the Internet to investigate how parrots live in the wild. In what parts of the world do parrots live? What do they eat? How large are their flocks? How do they communicate with each other? Then have students compare and contrast this wild life with the life of a pet parrot. Discuss the difference between solitary and social species, and have students name some animals of each type. Then ask students to consider what kinds of problems could result from putting an animal in the opposite situation (keeping a social animal isolated from others of its kind, or placing a solitary animal into a large group of the same species).

TIME:
30 Minutes
PREPARATION:
Library/Internet access to research wild parrots

Pet Peeves

Learn more about the problems with keeping parrots as pets. In addition to the fact that parrots aren't happy without their flock, what's the other major problem with taking parrots from the wild for the pet trade? (*Removing parrots from the wild contributes to declining populations of already endangered species.*) Conduct a brainstorming session on the pros and cons of various common pets (dogs, cats, rabbits, hamsters and gerbils, fish, snakes, turtles, birds, etc.). For more context, have students visit http://www.nwf.org/coldfusion/nwfwebadmin/getFile.cfm?binaryId=3205 to read "Good Pet, Bad Pet," a story from the June 2002 issue of *Ranger Rick*. Ask students to weigh the options and decide, if they were looking for a new pet, what animal they would choose and why.

TIME:
30 Minutes
MATERIALS:
Blackboard for brainstorming
Paper and pencils
Internet access

Bea's Beautiful, Busy Bees

pages 22-27

Learning Links:

It's not common knowledge that honey bees aren't native to North America—or that there are lots of other bees that are native to this continent. This story introduces a few more members of the bee family and highlights the important role they play in pollinating plants, as well as their interesting and varied strategies for nesting and raising young.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Imagine you're outside on a summer day and you see a bee. How would you react?
- Why do you think you have this reaction?

Comprehension Check:

- What do all the bees in this story have in common?
- How are they different from honey bees?
- What happens when a bee flies from flower to flower?
- Where do carpenter bees build their nests?
- How do leaf-cutter bees use leaves?
- What do digger bees do to make their nests?
- Why do sweat bees land on people and other animals?

Critical and Creative Thinking Connections:

- What are the stages in a bee's life cycle?
- Why do bees need nests?
- What are some ways that bees depend on plants? (Hint: What do bees use to make their nests? What do they use to feed or protect their babies?)
- How do plants depend on bees?

RESOURCES

http://www.everythingabout.net/articles/biology/animals/arthropods/insects/bees Explore this Web site to learn more about each of the bees featured by Bea (and a few others, too).

The Bee Tree by Patricia Polacco (Putnam, 1998). This is a tale about honey bees, not native bees—and you won't learn a lot of new facts about bees—but you can't help enjoying a wild romp with Mary Ellen, Grampa, and almost everybody else in town as they follow a bee to the honey tree.

ACTIVITY IDEAS

A Bee's Life

TIME:
15 Minutes
MATERIALS:
Paper and pencils (optional)

Have students read the story carefully to determine the four stages in a bee's life cycle (*egg, larva, pupa, adult*). Then discuss how this life cycle compares with the stages in other insects' lives, and how it compares with the life cycles of other animals such as frogs, fish, birds, and mammals. How many different stages do other animals go through? Which kinds of animals hatch from eggs and which kinds are born live? Which ones look very different at each life stage and which ones resemble their parents even when they are babies? Have students draw or act out several of these life cycles to illustrate the similarities and differences between them.

See Bees

TIME:
30-60 Minutes
MATERIALS:
Optional: construction materials (see *Ranger Rick* Web site)

Once you know about native bees, you may be surprised at how easy it is to find them. Take students outdoors to try to spot some of the bees in this story. The key to finding bees is finding their favorite flowers in bloom. If you see some bees, try to follow and observe them carefully. How big are they? What colors? Where are they going? What are they doing? Can you find where they are collecting food or where their nests are? If you don't see any bees, try attracting them by planting some bee-friendly flowers. For bee garden tips, see **http://www.nwf.org/backyardwildlifehabitat/attractbees.cfm**. You might also want to make one of the bee houses pictured on page 28. Just follow the instructions online at **http://www.nwf.org/rangerrick** and see who moves in!

P.R. for the Bees

TIME:
60 Minutes or more
MATERIALS:
Props for staging commercials
Video camera (optional)

Tell students that native bees have banded together to improve their reputation. They're tired of people running away from them or ignoring them altogether. They're tired of being underappreciated for all the hard work they do, which keeps flowers blooming and plants making seeds. So the bees have hired your students as their new public relations specialists. The students' job is to create a television commercial to promote native bees. To prepare, watch some commercials as a group and discuss what kinds of language and action are used to grab attention, entertain, and sell the product or idea. Then teams of students can work together to plan and record their own commercials (or simply perform them as skits). After each team shares their work with the rest of the group, discuss what aspects of the commercials they think would be most effective in helping other people understand the importance of bees.

Swim Class, Seal-Style

pages 32-37

Learning Links:

A baby seal spends only a short time with its mother, and it has a lot to learn before it's ready to be on its own. Seals' swimming behaviors, as well as the adaptations that make them so well suited to aquatic life, are the subject of this story.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Have you ever taken swimming lessons?
- If so, what did you learn?

Comprehension Check:

- When does a baby harbor seal learn to swim?
- How long do harbor seal pups stay with their mothers?
- What's it called when a seal comes up onto land? Why do you think it's called this?
- Why do seals always stay near the water?

Critical and Creative Thinking Connections:

- What are some reasons for a seal pup to stay close to its mother?
- Why do you think seal milk has so much more fat than milk from humans or cows?
- How is a seal adapted to life in the water?
- Compare the length of time baby seals stay with their mothers to the length of time human children stay with their parents. What do you have to learn before you're ready to be on your own? Why does it take so much longer for you than for a seal?

RESOURCES

http://www.tmmc.org/learning/education/pinnipeds/harborseal.asp Learn more about harbor seals at the Web site of the Marine Mammal Center.

http://userwww.sfsu.edu/~halmark/kidspage.htm Students can try out their field biologist skills on the Kid's Pages of the Richmond Bridge Harbor Seal Survey.

http://www.panda.org/news_facts/education/middle_school/species_home/species_carnivores/seals_intro/index.cfm

The World Wildlife Fund's seal pages are a good source of information about all kinds of seals.

http://www.seaworld.org/just-for-teachers/guides/index.htm Want to really dive deep into the world of seals and their relatives? Check out the SeaWorld/Busch Gardens Teacher's Guide. Select "Seals, Sea Lions, and Walruses" on the dropdown menu.

ACTIVITY IDEAS

Swim with the Seals

TIME:
30 Minutes
MATERIALS:
Paper and pencils
Props for skits

After students read about "swim lessons" for a baby seal, ask them to imagine what might happen if *they* had a seal for a swim instructor. Read the poem "A Silly Sort of Schooling Plan" from the September 2005 issue of *Ranger Rick* (see http://www.nwf.org/coldfusion/nwfwebadmin/getFile.cfm?binaryId=3206) to spark some creative thinking about "creature teachers." Then have students make up skits featuring swimming lessons taught by a seal, or suggest that they make drawings and add speech balloons like the ones in *Ranger Rick*. Encourage them to use the information from the story to help them decide what lessons a seal might teach and what problems or funny situations might result if its pupils were not seals but humans.

Tracking Seals by Satellite

TIME:
30 Minutes
MATERIALS:
Internet access

When injured seals and other marine animals are rescued and rehabilitated, they're often outfitted with tags that allow scientists to track them by satellite after they are released. At the WhaleNet Web site, students can find out about recently released animals and even follow their movements by accessing maps of the tracking data. Have students explore http://whale.wheelock.edu/whalenet-stuff/Stop39394, the information page for a harbor seal released in December 2005 off the coast of Maine. Look at the tracking maps and ask students to determine information such as where the seal was released, how far it has traveled since then, where it spends most of its time, and where it was last located.

Pinniped Particulars

TIME:
30 Minutes
MATERIALS:
Pinniped Particulars student page
Pencils
Books/Internet for researching seals and sea lions

Seals, sea lions, and walruses are all *pinnipeds*, a name that means "fin-footed." Seals and sea lions especially have many things in common but are distinguished by a few important differences. Ask students to find out how a seal is similar to and different from a sea lion, and then organize this information within the Venn diagram on the Pinniped Particulars student page. Characteristics that the two animals share are written in the space where the circles overlap, while distinct characteristics go in the other part of the circles. See the following Web site for facts about the two animals: http://www.seaworld.org/just-for-teachers/guides/pinnipeds/what-are-seals-sea-lions-&-walruses.htm.

Dogs of the Sea

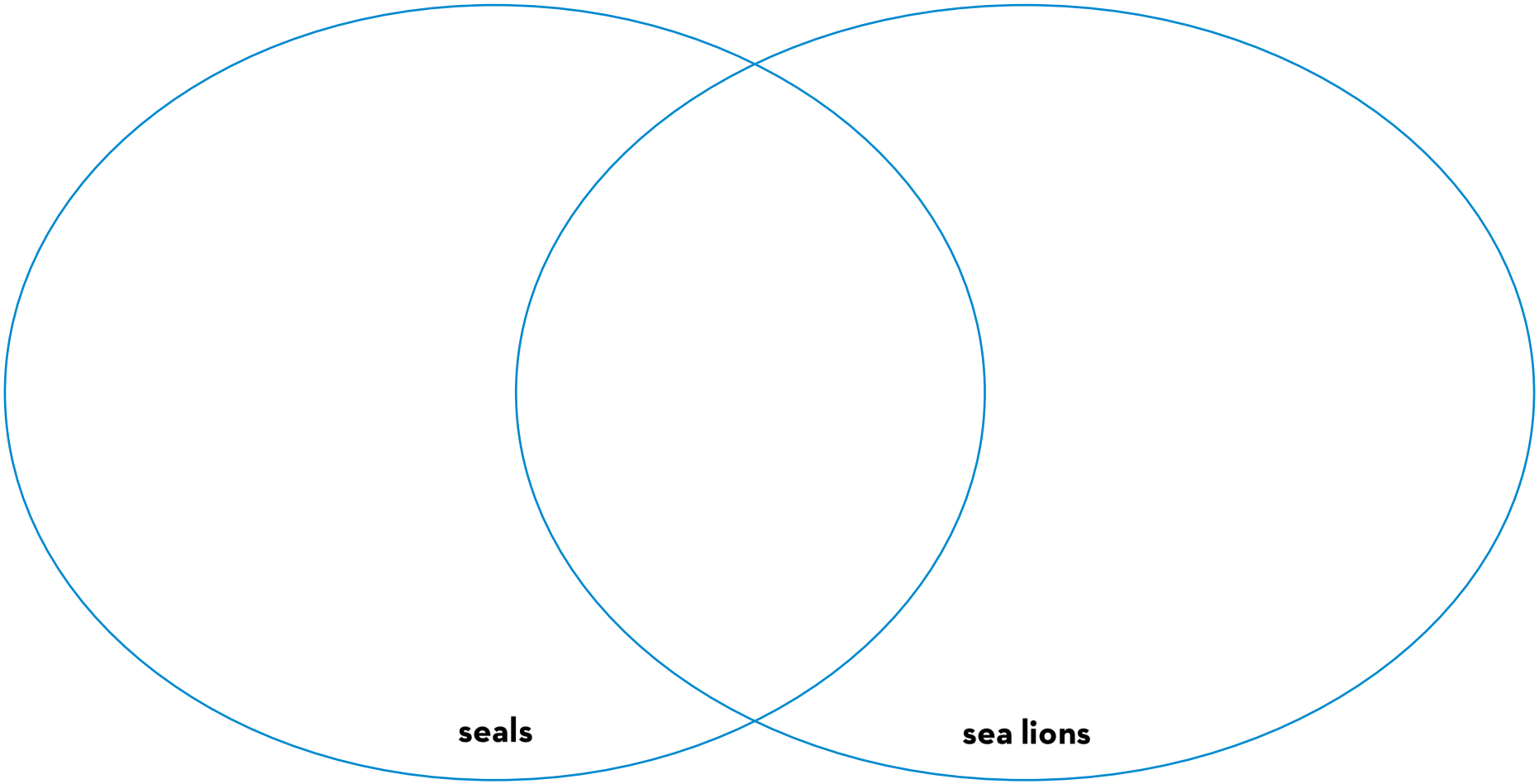
TIME:
15 Minutes
MATERIALS:
Photos of a seal and a dog

Seals, with their puppy-dog eyes and whiskered noses, are sometimes known as "sea dogs." In fact, scientists believe that seals and dogs share a distant ancestor. Have students compare the adaptations of a seal and a dog. Place photos of the two animals side by side and ask students to describe the similarities and differences. What physical characteristics and behaviors help each animal survive in the place where it lives? For instance, seals have four flippers for propelling themselves through the water, while dogs use their four legs to run on land. For more information, see http://www.ucmp.berkeley.edu/mammal/carnivora/carnivora.html.

Student Page

PINNIPED PARTICULARS

In the circles below, list some things that make seals and sea lions different from each other. Where the circles overlap, list some things they have in common.



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. Extend the learning and fun at home with these engaging family activities. Enjoy!

WATER WALK

Cool off on a hot day by taking a walk to a lake, pond, or stream near you. Before you go, check out the water insects featured at the end of "Splash, Splash, Here We Go!" (pages 4-8). Then see if you can find any of them. If so, watch them and see how they move.

POEM PARTY

Join the animal poetry fun. Read the poems in "Dear Ranger Rick" (page 9). Then write some poems of your own about some of your favorite animals.

BE THE PILOT

Gather several friends or family members and pretend to be a pod of pilot whales. As you read in "Ranger Rick's Adventures" (pages 17-19), pilot whales travel in groups with one whale leading the way. Take turns being the leader as you "swim" through your yard or neighborhood. Use your imaginations to find food and steer clear of danger.

PANDA-MANIA

After you read about Xiang Xiang in "A Small Step for Giant Pandas" (page 20), learn more about these endangered animals (and see pictures of a new zoo-born panda) at the National Zoo's Web site: **http://www.nationalzoo.si.edu/Animals/GiantPandas**.

SAYS WHO? SAYS YOU!

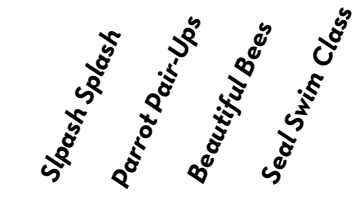
Make up your own caption for the zebra and tick bird photo in "Say What?" on page 21. Then mail it in! If you had fun with that, look at some of the other pictures in this issue and make up more captions.

BE A BEE HELPER

You read about how important bees are for pollinating plants—and how native bees need special places to build their nests. Now help them out! Plant some flowers or bushes to provide nectar for bees and other animals. And try building one of the bee houses in "Bee Friendly" (page 28). Help your neighborhood bloom!

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

NATIONAL EDUCATION STANDARDS



NATIONAL SCIENCE EDUCATION STANDARDS

Science as Inquiry

K-8	Abilities necessary to do scientific inquiry	■		■	■
K-8	Understandings about scientific inquiry	■		■	■

Life Science

K-4	Characteristics of organisms	■	■	■	■
K-4	Life cycles of organisms			■	■
K-4	Organisms and environments	■	■	■	■
5-8	Structure and function in living systems	■			
5-8	Reproduction and heredity			■	
5-8	Regulation and behavior	■		■	■
5-8	Populations and ecosystems		■	■	
5-8	Diversity and adaptations of organisms	■	■	■	■

Earth & Space Science

K-4	Properties of Earth materials			■	
K-4	Objects in the sky				
K-4	Changes in earth and sky				
5-8	Structure of the Earth system				
5-8	Earth's history				■
5-8	Earth in the solar system				

Science & Technology

K-4	Abilities to distinguish between natural and human objects			■	
K-8	Abilities of technological design	■		■	
K-8	Understanding about science and technology	■			■

Science in Personal and Social Perspectives

K-8	Personal health		■	■	
K-4	Characteristics and changes in populations				■
K-4	Types of resources			■	
K-4	Changes in environments				
K-4	Science and technology in local challenges				
5-8	Populations, resources, and environments				
5-8	Natural Hazards			■	
5-8	Risks and benefits		■	■	
5-8	Science and technology in society				■

History and Nature of Science

K-8	Science as a human endeavor	■	■		■
5-8	Nature of science	■			■
5-8	History of science				

ENGLISH LANGUAGE ARTS

1	Reading for perspective	■	■	■	■
2	Understanding the human experience		■		
3	Evaluation strategies	■	■	■	■
4	Communications skills	■	■	■	■
5	Communications strategies		■	■	■
6	Applying knowledge	■	■	■	■
7	Evaluating data		■	■	■
8	Developing research skills		■	■	
9	Understanding and respecting diversity		■		
10	Developing English competency	■	■	■	■
11	Participating in literary communities	■	■	■	■
12	Using language for oneself				