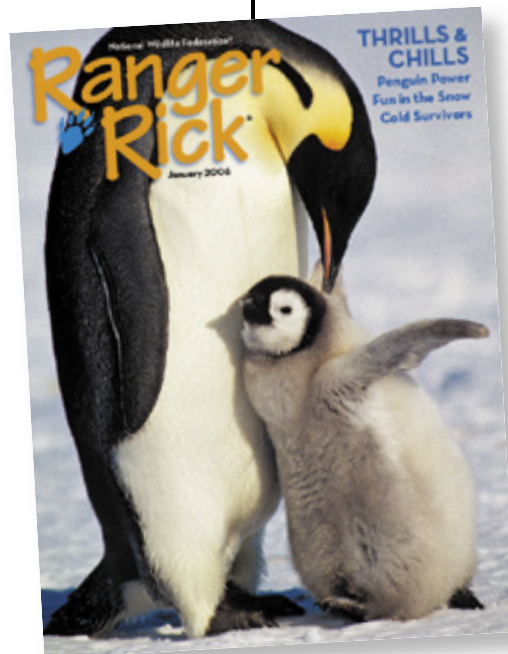


JANUARY 2006



EDUCATOR'S
GUIDE



This guide is designed to complement the January 2006 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 Science Education Standards 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.

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

The Emperor's Challenge

pages 4-11



Learning Links:

Emperor penguins endure extreme cold, long marches across the ice, and prolonged hunger, all for the sake of raising a single chick. In this story, students learn why such behavior is required and how it pays off.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- What's the most challenging journey you've ever made?
- Why did you do it? Was it worth it?

Comprehension Check:

- What do emperor penguins do when winter is on the way in Antarctica?
- Describe the winter conditions they face.
- What are three things that help them stay warm?
- After emperor penguins lay their eggs, why must they keep them on their feet?
- Why do the penguin parents trade off taking care of the egg and chick?

Critical and Creative Thinking Connections:

- How do you find your family when you're in a big crowd? How does your way compare with the way penguins do this?
- Are you shorter or taller than an emperor penguin?
- Why do you think emperor penguins gather in colonies?
- Do you think a pair of emperor penguins could ever have more than one chick at a time?

RESOURCES

March of the Penguins (Warner, 2005). This film documentary tells the story of the emperors' struggle to survive and raise their chicks. (Available on DVD.)

www.nationalgeographic.com/kids/creature_feature/0101/penguins.html Learn more about emperor penguins in this "Creature Feature" from National Geographic.

www.aad.gov.au A visit to the Australian Antarctic Division's Web site is almost like a field trip to Antarctica. Click on "Experience Antarctica" for FAQs about penguins and other wildlife, current weather conditions, and lots more.

Here are some picture books about the lives of emperor penguins:

The Emperor's Egg by Martin Jenkins (Candlewick, 2002).

A Mother's Journey by Sandra Markle (Charlesbridge, 2005).

The Emperor Lays an Egg by Brenda Guiberson (Henry Holt, 2001).

Antarctic Antics by Judy Sierra (Gulliver Books, 1998). If you'd rather learn about emperors in fun-to-read, humorous poems, here's your book!

ACTIVITY IDEAS

A Penguin Year

As students read "The Emperors' Challenge," have them use the [student page](#) to record what the penguins do in each season. With these notes, they can then create a poster or picture book about the penguins' year. Encourage them to use both words and drawings to explain what happens in each season and show how the cycle begins anew every year. You could also point out that the penguins' winter takes place during our summer (and demonstrate why by using a globe and a light source to represent the sun).

Synopsis of the penguins' year: *Summer*—Hunting for fish, krill, and squid in Antarctic Ocean. *Fall*—Marching inland from edge of sea ice to site of winter colony. *Winter*—Males and females pair up and mate. Females lay eggs and return to the sea for food. Males incubate eggs. Chicks hatch after two months. Females return and males go to sea. *Spring*—Parents take turns tending chicks and feeding. Chicks molt, then take their first swim as summer begins again.

TIME:

60 Minutes

MATERIALS:

[A Penguin Year student page](#)
Poster board or drawing paper
Art supplies

Penguin Math

Ask students to crunch some penguin numbers. Design your own questions using numbers from the story, or try some of these ideas:

- Emperors are the largest of all penguins: up to 4 feet (1.2 m) tall and 90 pounds (41 kg). Calculate the difference between your own measurements and those of an emperor (or, for more advanced math, convert your measurements to a percentage or fraction of the penguin's).
- A male emperor can lose up to a third of his body weight or more while he tends his egg. If three penguins started out weighing 90, 86, and 82 pounds, how much would each one weigh after losing one third of that weight?
- The meals parents bring to their chicks can weigh a third as much as the chick. If a chick weighs 25 pounds, how much dinner might it get?
- To withstand the frigid temperatures and icy wind of Antarctica, emperors have 80 feathers per square inch. Estimate the number of square inches of surface area on an entire penguin and calculate a rough approximation of its total feather count.

TIME:

30 Minutes

MATERIALS:

Paper
Pencils

Penguins at the Movies

After students read "The Emperors' Challenge," ask them to imagine that they are making a movie about this story. What would they want to include? At what point in the penguins' life cycle would they want to begin and end? What aspects would be especially powerful as visual images, and what would be difficult to show? What main ideas or themes would they focus on? Then show the film *March of the Penguins* (Warner, 2005), a documentary about the lives of emperor penguins. After watching the film, have students draw connections between what they learned in the *Ranger Rick* article, their own ideas about what they'd put in a movie, and what was actually depicted.

TIME:

90 minutes for film
30 minutes each for pre- and post-film discussion

MATERIALS:

March of the Penguins
DVD

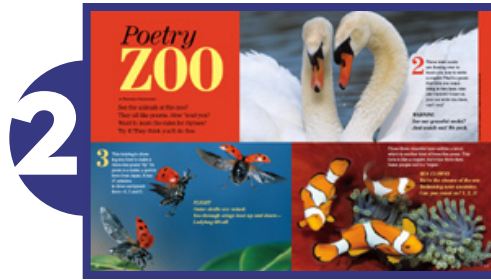
1. On the chart below, describe what emperor penguins are doing in each season.

<p>SUMMER</p>	<p>FALL</p>
<p>SPRING</p>	<p>WINTER</p>

2. Now use your notes above to design a poster or picture book about the penguins' year.

Poetry Zoo

pages 16-19



Learning Links:

This story introduces seven different poetry forms using a whole “zoo” of animals to help with the explanations and inspiration. Accompanying samples encourage readers to try their own hand at writing poems.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- How would you define poetry? What makes it different from other kinds of writing?
- Do you have any favorite poems? Why do you like them?

Comprehension Check:

- In this story, what is the connection between the photos and the poems?
- How can you tell if a poem is a haiku?
- What's the difference between a couplet and a tercet?
- Do two couplets make a quatrain?
- If you wanted to write a funny five-line poem, what form could you use?

Critical and Creative Thinking Connections:

- Why do you think the author of this story chose animal photos to illustrate each kind of poem? Do the photos help you understand the form of the poems?
- Which of these poems are your favorites? Do you prefer poems that rhyme or don't rhyme? Poems that are silly or serious? Poems that are short or long?
- Look at the titles of these poems. Are any of them necessary to help you understand the poem? How do they add to the meaning?
- Read the two five-line poems. How would you describe the mood of each one? Does the form of the poem help create the mood?

RESOURCES

<http://falcon.jmu.edu/~ramseyil/pochild.htm> A wealth of resources for children's poetry, including poetry forms, examples, lesson plans, and activities.

Zoo's Who by Douglas Florian (Harcourt, 2005). More titles by this prolific author include *Mammalabilia*; *Beast Feast*; *Lizards, Frogs, and Polliwogs* and others.

Alphabestiary by Jane Yolen (Boyd's Mills Press, 1995). An anthology of animal poems from A to Z, collected from a wide range of sources and time periods.

The Beauty of the Beast: Poems from the Animal Kingdom selected by Jack Prelutsky (Knopf, 1997). Another excellent collection of poems about animals, illustrated with beautifully expressive watercolors by Meilo So.

Read a Rhyme, Write a Rhyme by Jack Prelutsky (Knopf, 2005). A collection of poems on a variety of kid-friendly topics with irresistible “poemstarts” on each spread that invite readers to become writers too.

ACTIVITY IDEAS

Explore a Poem

Invite students to explore the descriptions and poems in "Poetry Zoo." Can they identify how the sample poems fit the forms? (And can they find another haiku hidden somewhere else in the magazine? A careful search will reveal it on page 2!) Challenge them to answer some of the comprehension and critical thinking questions on the previous page. To further develop their ability to identify the forms, write the name of each type of poem on an index card. Then gather or write more examples of each form and paste each onto a separate card. Have students match the examples with their names.

TIME:

30 Minutes

MATERIALS:

Index cards (optional)

Write a Poem

Have students write their own poems to go with the pictures in "Poetry Zoo." They could also look through the rest of the issue to find other pictures they'd like to write about. Encourage them to try several of the types of poems described in the story. After students have some polished poems in their portfolios, they can copy them onto the leaves on the [Plant a Poet-Tree student page](#). Find a fallen tree branch and "plant" it in a bucket of soil or sand. Then invite students to hang their leaves on the "Poet-Tree" and read the poems others hang. They could also add favorite poems they discover from published collections.

TIME:

Variable

MATERIALS:

[Plant a Poet-Tree](#)

[student page](#)

Tree branch

Bucket of soil/sand

Hole punch

String

Art supplies

Pick a Poem

Provide students with an assortment of poetry to browse through. See the resources section for some good collections of animal poetry. Have each student select a favorite poem to read (or memorize and recite) for the rest of the class. Ask the student to explain what she or he likes about the poem and whether it matches any of the poetry forms described in "Poetry Zoo."

TIME:

45 Minutes

MATERIALS:

**Books of poetry
about animals or
other subjects**

Find a Poem

Take students outdoors to look for animals, plants, trees, rocks, or other things grouped in pairs, threes, fours, or fives. Ask them to consider how they are grouped, what they look like, and what they seem to be saying. Encourage students to first make sketches or take photos and then to write poems inspired by what they saw.

TIME:

60 minutes

MATERIALS:

Sketchpads

Optional: cameras

Paper and pencils

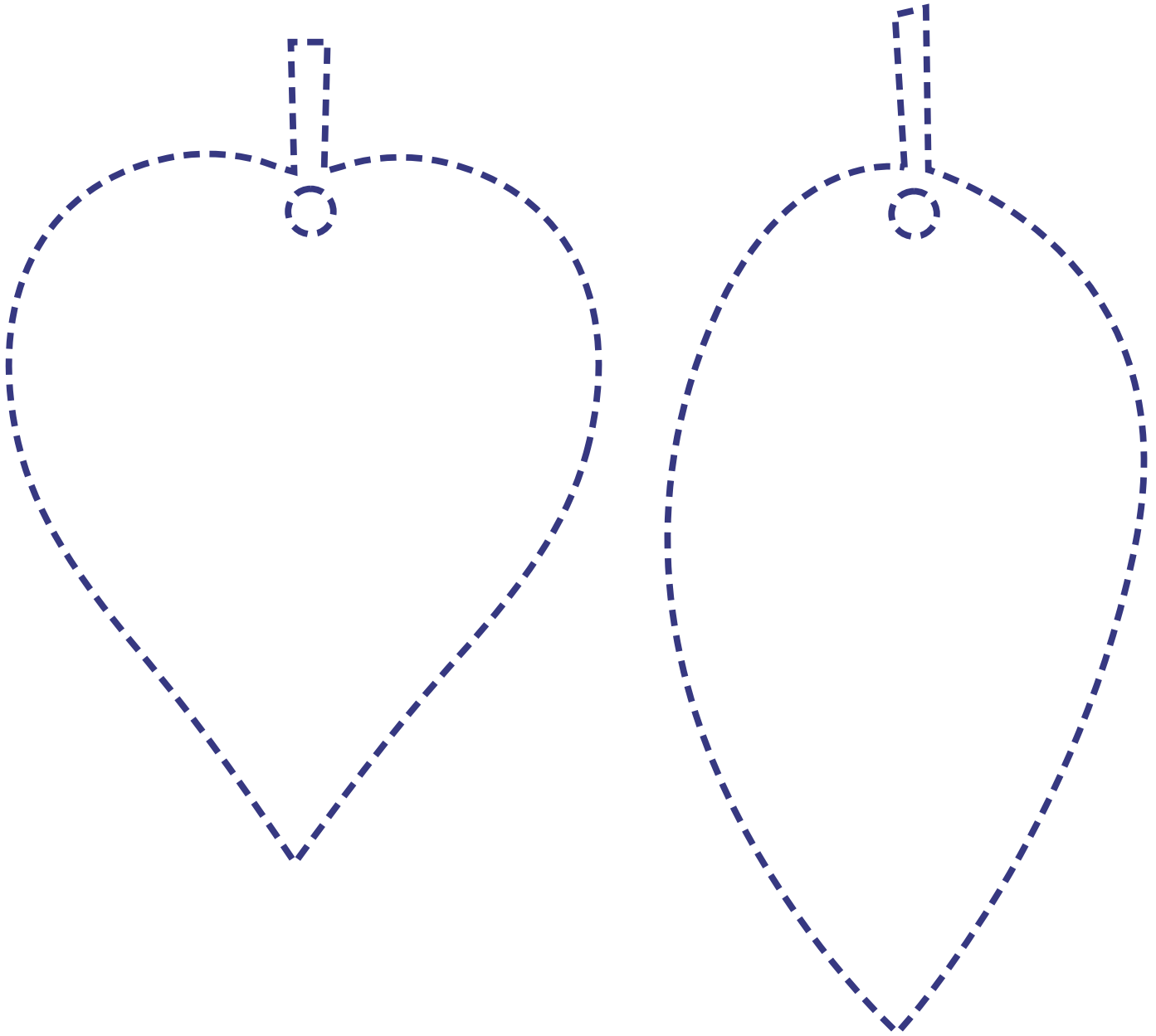
PLANT A POET-TREE

It's winter outside, but spring can arrive in a poem any time of the year.

Copy one of your favorite poems onto each of the leaves below.

Cut out the leaf and color it. Punch a hole and add a loop of string.

Then hang it on your own poet-tree!



What a Way to Get a Meal!

pages 22-28



Learning Links:

Getting dinner can be a challenging endeavor. The animals in this story illustrate some of the many adaptations—both physical and behavioral—that help them get their food.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Let's say you're feeling hungry. How would you go about getting a meal?
- Then imagine that your refrigerator's empty, the cupboards are bare, and all the stores and restaurants are closed. Now what would you do? (Be creative!)

Comprehension Check:

- What's that cleaner shrimp doing inside the gaping mouth of a big fish?
- Describe two ways that animals use tricks to lure their prey.
- Name two animals from the story that use tools to get food. How do they do it?
- Explain how two animals from the story use a built-in body part to capture a snack.

Critical and Creative Thinking Connections:

- Compare the strategies used by animals in this story with things people do to get food. What are the similarities? The differences?
- Do any of these animals use camouflage to help them get a meal?
- Do any of these animals use senses other than sight to locate food?
- Choose one group of animals. Within this group, how many different strategies for getting food can you list? (*For birds, for example: hummingbirds sip nectar from flowers, woodpeckers pry under bark for insects, kingfishers dive for fish, pelicans scoop up fish, swallows pluck insects from air, hawks snag prey with talons, etc.*)
- What other wild ways can you think of that animals use (or might use) to get dinner?

RESOURCES

Animals Eating by Pamela Hickman (Kids Can Press, 2001). Explores the weird and wonderful ways animals eat and drink.

Animal Snackers by Betsy Lewin (Henry Holt, 2004). Rhyming text presents the eating habits of a variety of animals.

ACTIVITY IDEAS**Boxed Meals**

Before students read “What a Way to Get a Meal,” have them make a chart with the following categories: Cooperation, Tricks, Tools, Special Body Parts, and Other. Ask them to fill in the names of animals in the story that use each of these strategies for getting a meal. Then challenge them to research at least one more animal that fits each category. More advanced students could create their own categories for the chart.

TIME:**30 minutes****MATERIALS:****Paper****Pencils****Books/Internet for research****Who's Been Eating in My Yard?**

Head outdoors for a scavenger hunt to look for signs of animals eating. What might you find? Chewed leaves, nipped-off buds or twigs, tracks or seed hulls beneath a feeder, perhaps even some feathers or fur. Have students make notes or sketches of what they find, and suggest that they indicate whether they saw evidence or the animal itself “caught in the act.” Challenge them to continue their lists in their own yard or neighborhood.

TIME:**30 minutes****MATERIALS:****Notebooks****Pencils****Outdoor gear****Invent an Animal**

Discuss the adaptations displayed by animals in this story. Then have students brainstorm other adaptations—both physical characteristics and behaviors—that animals could use to help them get food. Ask each student to choose one of these ideas and then invent an animal with this adaptation. Next, provide an assortment of materials students can use to create models of their made-up animals. (Check the recycling bin for interesting supplies.) Give each student a chance to demonstrate how the adaptation works and explain why this would be a good strategy.

TIME:**30 minutes****MATERIALS:****Model-making supplies:
various containers,
clay, toothpicks,
pipecleaners, etc.****Living Science**

After reading about these strategies for getting a meal, you may be thinking we humans have it pretty easy! Opening up the fridge, swinging by the store, or calling for pizza hardly requires a major effort. Of course, these aren't the only ways people get food. Ask students to think of a time when they've worked hard for a meal, such as fishing, hunting, growing vegetables in a garden, milking a cow, berry-picking, baking a homemade loaf of bread, etc. Invite them to write or tell a story about the experience. Was the process satisfying? How did the food taste when they finally got to eat it? Do they think people miss out on anything if all their food comes in a package from a store?

TIME:**30 minutes****MATERIALS:****Paper****Pencils**

Ranger Rick's Adventures: "What a Way to Go!"

pages 30-33



Learning Links:

Ranger Rick and his friends discuss the drawbacks of cars and trucks that burn petroleum-based fuels, and then learn about biodiesel as a promising alternative.

DISCUSSION QUESTIONS & WRITING PROMPTS

Pre-Reading Questions:

- Getting from place to place is something we all need and want to do. How many different forms of transportation can you name?
- Which of these methods do you use regularly?

Comprehension Check:

- What is fuel? How does the fuel that runs a car compare with the kind of fuel Rick thanks Boomer for at the end of the story?
- What are the problems caused by driving cars and trucks that burn petroleum-based fuels?
- What's biodiesel? Why is it a good alternative?
- What are some other good ways to avoid the problems of petroleum-based fuels?

Critical and Creative Thinking Connections:

- What does Scarlett mean when she says a bike is a "green" way of getting around?
- Is Boomer really saving energy when he decides not to go for a bike ride?
- What's the difference between a *need* and a *want*? Make a list of some of your needs and wants.
- What kinds of transportation do you use? What are the advantages and disadvantages of each of these options?
- Are there certain things you'd be willing to give up in order to make your transportation choices more environmentally friendly? What things? What would you not be willing to give up?

RESOURCES

www.biodiesel.org/resources/fuelfactsheets/default.shtm Explore biodiesel fact sheets from the National Biodiesel Board (including "Biodiesel for Kids").

www.eere.energy.gov/afdc/resources/educational_tools.html Here you'll find educational resources from the Alternative Fuels Data Center, including teaching materials, activities for kids, and competitions.

www.grassolean.com Meet some of the people in the growing biodiesel movement.

Have Fries - Will Travel! by Linda Hempel (New Society Publishers, 2005). Describes the adventures of an eco-rap singer and his biodiesel-burning car.

ACTIVITY IDEAS

Biodiesel Basics

Explore www.biodiesel.org/resources/fuelfactsheets/default.shtm to learn more about biodiesel. Direct students to the "Biodiesel for Kids" fact sheet and send them on a quest for answers to the following questions: What is biodiesel made from? Could you run a school bus on biodiesel? What does biodiesel exhaust smell like? Is biodiesel a renewable or nonrenewable fuel? Why is biodiesel better for the environment than regular diesel?

TIME:

15 Minutes

MATERIALS:

Internet access

Is Green Cool?

Scarlett says, "You can't beat a bike for a 'green' way to get around." Eyeing a big truck for sale, Boomer replies, "I'd rather be 'cool' than green!" Engage small groups of students in a discussion about these statements. What makes something "cool" or "uncool"? What makes something "green"? Ask groups to list what's cool and uncool about driving a truck or big SUV, and what's cool and uncool about riding a bike. In their opinion, when is green cool, and when is it uncool? Is it more important to be cool or to be green? If being green is important to them, how could they help this become something more kids want to do?

TIME:

30 Minutes

MATERIALS:

Optional:

**chart paper to record
discussion points**

Miles per Gallon

Have students calculate how many miles per gallon various vehicles get. You could supply the numbers, or better yet, have them gather numbers themselves from their families' vehicles. Here's how: Check the odometer the next time you fully fill the tank with gas. At the next fill-up, check the odometer again and note how many gallons it took to fill the tank. Then divide the number of miles traveled by the number of gallons used. Try to get numbers from a variety of types of vehicles, such as an average sedan, a truck, an SUV, a hybrid, and a motorcycle. Students could graph the results and calculate the cost to travel a certain number of miles at current gas prices for each vehicle. They could also compare these numbers with a bicycle: When food calories used while biking are compared with calories of energy in gasoline, a bike comes in at around 900 miles per gallon! Here's a fun Web site to explore this concept:

www.verinet.com/~pedal/900-2.htm.

TIME:

45 Minutes

MATERIALS:

**Access to vehicles to
check the odometer
Paper
Pencils
Calculators (optional)**



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!*

WINTER WARM-UPS

Read “At Home in the Cold” on [pages 14-15](#). Talk about how you survive the cold part of the year. Then bundle up and go for a walk around your neighborhood. As you walk, look for clues about how wildlife near you is staying warm and surviving. Do you see signs of animals out and about in the cold? What other animals do you think are hidden but nearby, waiting for spring? A good read for adults on this subject is *Winter World: The Ingenuity of Animal Survival* by Bernd Heinrich (HarperCollins, 2003).

BIRD BRAINS

Use the instructions for “Critter Doodles” on [page 21](#) to try drawing your own penguin doodles. Then think of some birds that live near you. Can you turn the first letter of their names into a drawing that looks like them?

SNOW DAYS

Is there snow on the ground where you live? If so, go out for some “Snow Fun” ([pages 34-37](#)) of your own! Whether you like to roll in the snow, slide down hills, throw snowballs, or take a flying leap into a pile of powder, you just can't beat a snowy day! What if you live in no-snow country? Well, don't let that stop you. We bet you could have a lot of fun with an imaginary snowball fight!

PENGUINS ON THE BIG SCREEN

Have you seen the film *March of the Penguins*? If not, perhaps after you read “The Emperors' Challenge” on [pages 4-11](#) your family would enjoy watching this documentary about the lives of emperor penguins. Check your local movie rental store for the DVD.

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

NATIONAL SCIENCE EDUCATION STANDARDS

Emperor Penguins
Poetry Zoo
Ways to Get a Meal
Adventure: Biodiesel

1	2	3	4

Science as Inquiry

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

Physical Science

- K-4 Properties of objects and materials
- K-4 Position and motion of objects
- K-4 Light, heat, electricity, and magnetism
- 5-8 Properties and changes of properties in matter
- 5-8 Motions and forces
- 5-8 Transfer of energy

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
