

# ScienceWorld®

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ISSUE DATES	9/3	9/17	10/8	10/22	11/12-26	12/10	1/14	2/4	2/18	3/10	3/31	4/21	5/12
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In this issue's cover story, "Coyotes on the Move," *Science World* looks at how America's changing landscape is affecting coyote populations. What changes is your hometown or region experiencing? We hope this issue prompts a rich discussion between you and your students on the changes that you've seen in your lifetimes, and what the future may hold.

As always, we continue to welcome your comments and suggestions. Be sure to submit "Teacher to Teacher" tips (*see below*) and have your students send in "Ask *Science World*" questions to [scienceworld@scholastic.com](mailto:scienceworld@scholastic.com). See you in 2008. — The Editors

## Features

PAGE	CONTENT	TITLE SUMMARY	NATIONAL SCIENCE EDUCATION STANDARDS	LESSON IDEAS
6	Life: Animal Adaptations	<b>Coyotes on the Move</b> Learn why coyotes are roaming into big cities.	<b>Grades 5-8:</b> Diversity and adaptations of organisms • Populations and ecosystems <b>Grades 9-12:</b> Interdependence of organisms	Students will learn more about coyotes with the <b>chart-reading activity</b> on <b>TE 6</b> .
10	Physical: Chemistry	<b>Name That Element!</b> Our popular chemistry game returns.	<b>Grades 5-8:</b> Properties and changes of properties in matter <b>Grades 9-12:</b> Structure of atoms • Structure and properties of matter	Test students' vocabulary with the <b>crossword puzzle</b> on <b>TE 7</b> .
14	Earth: Gems and Minerals	<b>Jade Hunter</b> Discover the origins of a rare type of jade.	<b>Grades 5-8:</b> Structure of the earth system <b>Grades 9-12:</b> Geochemical cycles	Have your students speak up about the environment! Direct them to visit Science Exploration's Kids' Environmental Report Card at: <a href="http://www.scholastic.com/reportcard">www.scholastic.com/reportcard</a>

### Coming Next Issue

- Ski-jumping physics
  - Teen scales Mount Everest
  - Daredevils freedive to ocean's depths
  - Deadly scorpions
- plus a poster!*

## Teacher to Teacher

### Tips for using *Science World* in the classroom

**Dwight Sieggreen, science teacher at Hillside Middle School in Northville, Michigan,** suggests using this activity to help boost student discussions while reading "Coyotes on the Move" (p. 6):  
 Divide students into groups of four. Then, instruct them to do the following: Read the article as a group; while reading, brainstorm a list of the reasons why a coyote would want to move into cities or suburbs. After reading the article, have each group make a map of their hometown and pinpoint where coyotes might be attracted to living, and provide reasoning why. Remind students that they should consider places where a coyote might find good shelter, abundant food, and few predators.



Dwight Sieggreen





LIFE: Animal Adaptations

## Coyotes on the Move

### PRE-READING PROMPTS

- Where do coyotes live? What do they eat?
- How might you react if you were to see a coyote in your neighborhood?

### DID YOU KNOW?

- Coyotes are monogamous; they mate for life. Coyote parents raise their pups together until the babies are approximately one year old.
- Coyote pups are born blind. They open their eyes to see when they are about 10 days old.
- Coyotes can live for up to 10 years in the wild and 18 years in captivity. Approximately 30 to 50 percent of all adult coyotes die each year. Many die from disease, starvation, and predation. But most coyote deaths are due to human activities, including hunting, trapping, and vehicle collisions.
- Coyotes are canids, or members of the dog family, which includes wolves, jackals, dogs, and foxes. *Canis Latrans*, the Latin name for coyote, means “barking dog.”

### CRITICAL THINKING:

- What wild animals have you seen living near your home? Which of these might be considered nuisance animals? What attracts these animals to your area?

### CROSS-CURRICULAR CONNECTIONS:

**GEOGRAPHY:** Today, coyotes are found in every U.S. state except Hawaii. Have students do research to learn about the historical ranges of coyotes. Then, have them create maps to show how coyotes’ ranges have expanded throughout the years.

### RESOURCES

- For a fact sheet on coyotes, visit this Web site from the Animal Diversity Web: [http://animaldiversity.ummz.umich.edu/site/accounts/information/Canis\\_latrans.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Canis_latrans.html)
- “City Slickers,” by Doug Stewart, *National Wildlife*, Oct/Nov 2006. [www.nwf.org/nationalwildlife/article.cfm?issueID=110&articleID=1404](http://www.nwf.org/nationalwildlife/article.cfm?issueID=110&articleID=1404)
- “Coyotes Eke to City Streets,” by Rachel Metz, *WIRED*, February 2006. [www.wired.com/science/discoveries/news/2006/02/70136](http://www.wired.com/science/discoveries/news/2006/02/70136)
- To learn more about how to coexist with coyotes, visit this Web site from the Massachusetts Division of Fisheries and Wildlife: [www.mass.gov/dfwle/dfw/wildlife/living/living\\_with\\_coyotes.htm](http://www.mass.gov/dfwle/dfw/wildlife/living/living_with_coyotes.htm)



PHYSICAL: Chemistry

## Name That Element!

### POST-READING DISCUSSION

- Most elements’ chemical symbols are abbreviations of their common names. Why is silver’s chemical symbol, Ag, so different from its common name? (Answer: Its Latin name is argentum.) What other elements have “unusual” chemical symbols?
- Silver helps repair holes in teeth left by cavities. What causes cavities? Can you prevent them? How? (For information, visit: [www.healthyteeth.org](http://www.healthyteeth.org))

### DID YOU KNOW?

- Silver is more malleable than any other element, except gold. One gram (.04 ounces) of silver can be stretched into a wire two kilometers (1.2 miles) long.
- The photography industry uses one third of the world’s supply of silver. That’s because camera film is coated with a silver compound that reacts to light to form an image.

### CRITICAL THINKING:

- During long space flights, astronauts recycle their water supply. They use a water purification system that contains silver ions to clean waste water. Why do you think silver is used in this process?

### CROSS-CURRICULAR CONNECTIONS:

**COMPUTER:** Parts of the Western U.S. use cloud seeding to produce rain during periods of drought. Have students select a Western state and research its weather modification program. Then, have them design a PowerPoint presentation to educate the public about cloud seeding in the selected state. The students’ presentations should include an illustration of the cloud-seeding process.

### RESOURCES

- Learn more about silver at [www.silverinstitute.org](http://www.silverinstitute.org)
- For hands-on activities and classroom resources on oral hygiene, check out the American Dental Association’s Web site: [www.ada.org/public/education/teachers/ideas.asp](http://www.ada.org/public/education/teachers/ideas.asp)
- Ingesting large amounts of silver can cause argyria. This medical condition is harmless but leaves a person’s skin permanently tinged blue! For more silver safety information, visit: [www.atsdr.cdc.gov/tfacts146.html](http://www.atsdr.cdc.gov/tfacts146.html)
- How were each of the elements discovered? To unravel the history of one of the fundamental parts of chemistry, read *The Mystery of the Periodic Table* by Benjamin Wiker, Bethlehem Books, 2003.



## EARTH: Gems and Minerals **Jade Hunter**

### PRE-READING PROMPTS

- What is jade? Where does jade come from?
- If a scientist were to explore in a foreign country and look for a mineral such as jade, why might it be helpful for him or her to enlist the help of local people?

### DID YOU KNOW?

- The word jade refers to either of two different stones, jadeite and nephrite. Jadeite is harder and rarer than nephrite.
- Jade is the official gemstone of the state of Alaska, as well as British Columbia, Canada. That's because there are large deposits of jade in some of their regions.

### CRITICAL THINKING:

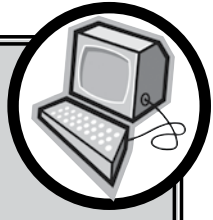
- Gemstones like jade are often very expensive. In most cases, they are used as jewelry or decoration. What benefits do people gain from owning gemstones? Are those benefits worth the cost of the stones?
- Many beautiful jade objects are kept in people's houses, but some are put in museums where people can see them. Which do you think is a better place for the jade objects? Why?
- Is it better for jade objects to be placed in a museum near where they were made, or be in a museum somewhere else so people can learn about the country where they were made? Why? Besides going to a museum, in what other ways can people learn about a country and its artwork?

### CROSS-CURRICULAR CONNECTIONS:

**LANGUAGE ARTS:** In China, jade is considered a special stone; it symbolizes luck and beauty. Poetry is also an important part of Chinese culture. Have students do research on jade and then write a poem about what they find special about jade.

### RESOURCES

- To learn more about jade, visit this kid-friendly Web site from the American Museum of Natural History: <http://ology.amnh.org/earth/jade/index.html>
- The International Colored Gemstone Association offers a detailed history of jade. Visit: [www.gemstone.org/gem-by-gem/english/jade.html](http://www.gemstone.org/gem-by-gem/english/jade.html)



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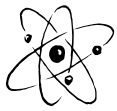
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And if you want to share your teaching tips and lesson ideas on the cover of our Teacher's Edition, send your "Teacher to Teacher" tips to

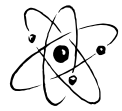
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Name: \_\_\_\_\_



# Science News



**DIRECTIONS:** Read the Science News section on pages 3 to 5.

Then, test your knowledge by filling in the letters of the correct answers below.

**1. Which of the following is NOT characteristic of meerkats' mobbing behavior?**

- (A) raise their tails
- (B) run toward the enemy
- (C) make angry noises
- (D) dig their claws into the enemy

**2. To avoid a MRSA infection, you should do all of the following EXCEPT**

- (A) wash your hands frequently.
- (B) put clean, dry bandages over cuts.
- (C) keep surfaces touched by others clean.
- (D) share a towel with a friend.

**3. Antibiotics are drugs used to kill disease-causing**

- (A) viruses.
- (B) bacteria.
- (C) parasites.
- (D) fungi.

**4. Which statement best describes Clean Gum compared with regular chewing gum?**

- (A) Clean Gum has a less gooey texture so it isn't sticky.
- (B) Unlike regular gum, Clean Gum has a special chemical that causes a film of water to form around the gum when chewed.
- (C) Regular gum is easier to remove from sidewalks.
- (D) A compound in Clean Gum repels water, making it less sticky.

**5. From July 2004 to December 2005, the highest percent of MRSA cases occurred**

- (A) in schools.
- (B) during hospital stays.
- (C) after hospital stays.
- (D) in the general public.

**6. How did a scientist discover that the Colorado streams have been restocked with the wrong fish species?**

- (A) She studied the genes of the fish species.
- (B) She compared the appearance of the different fish species.
- (C) She studied hatchery records.
- (D) She counted the number of fish in Colorado waterways.

**7. The fish-restocking mix-up means that greenback cutthroat trout**

- (A) are no longer endangered.
- (B) are fewer in numbers than believed.
- (C) are plentiful, but Colorado River cutthroat trout are going extinct.
- (D) can no longer be found in Colorado.

**8. The asteroid that killed off the dinosaurs is believed to have originated from**

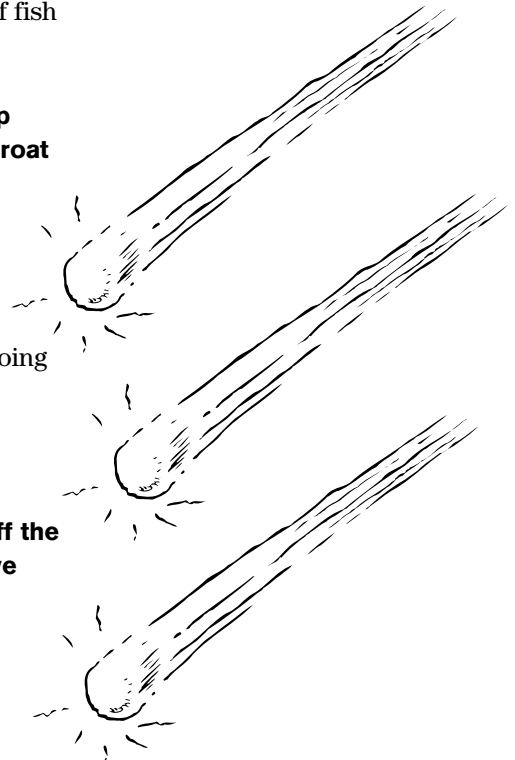
- (A) a passing comet.
- (B) the Asteroid Belt.
- (C) outside our solar system.
- (D) Jupiter.

**9. This year, 10,000 migrating wildebeests died in Kenya**

- (A) due to a drought.
- (B) because of an increase in poaching.
- (C) while trying to cross a fast-moving river.
- (D) due to starvation.

**10. Light travels at a speed of 299,792,458 meters per second. About how far does light travel in a minute?**

- (A) 4,996,540 meters
- (B) 9,993,081 meters
- (C) 17,987,547,480 meters
- (D) 8,993,773,740 meters



Name: \_\_\_\_\_

PAGE **6** Coyotes on the Move**DIRECTIONS:** Answer the following in complete sentences.

1. Historically, where did coyotes live in the United States? What do coyotes traditionally prey on?
2. Why have coyote populations flourished in the United States in the last 50 years?
3. Why might people hardly notice the coyotes that live near them?
4. Scientists say: As long as coyotes are left alone, people have little to fear. Explain this statement.
5. What are three things that humans can do to coexist peacefully with coyotes?

PAGE **10** Name That Element!**DIRECTIONS:** *Defend* or *dispute* the following statements. (**Hint:** Defend means to explain why a statement is correct. Dispute means to explain why a statement is incorrect.)

1. Bandage manufacturers are adding silver to bandages.
2. Silver can cause rain to fall from clouds.
3. Pure silver is very sturdy, so craftsmen often use it to create decorative items.

Name: \_\_\_\_\_

# Windy City Coyotes

In “Coyotes on the Move” (p. 6), you learned that many coyotes live in cities without people even noticing them. Those that are trapped by wildlife officials are usually released into the wild. Complete this activity to learn how many coyotes have been captured in the Chicago area.

**Number of Coyotes Captured as Nuisances\* in the Chicago Area, by Year**

Year	Number of Coyotes
1991	25
1992	123
1993	56
1994	126
1995	176
1996	259
1997	218
1998	265
1999	322
2000	326
2001	372
2002	321
2003	357
2004	267
2005	374
2006	295

SOURCE: ILLINOIS DEPARTMENT OF NATURAL RESOURCES

\* Scientist Stan Gehrt of Ohio State University says that while the coyotes were captured “as nuisances,” they weren’t necessarily doing anything bad.



**PART A: GRAPH IT!**

On a separate piece of paper, construct a line graph showing the number of coyotes captured in the Chicago area for all the years featured on the chart.

(Hint: Label the *x*-axis as the year and the *y*-axis as the number of coyotes. Remember to give your graph a title.)

**PART B: ANALYZE IT!**

Use the data table and your line graph to answer the following questions in complete sentences.

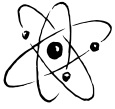
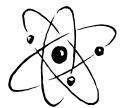
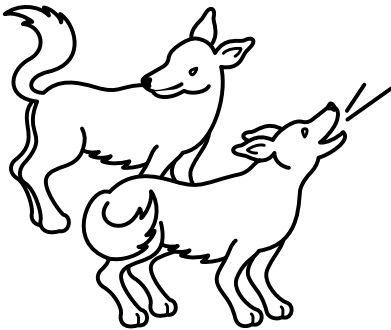
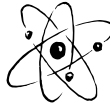
1. In 1999, how many coyotes were trapped in the Chicago area?
2. According to the chart, in which year was the highest number of coyotes trapped?
3. How many more coyotes were trapped in 2001 than in 1993?
4. What was the average number of coyotes captured each year between the years 1991 and 2006? What was the average number of coyotes trapped each year from 1999 to 2006? (Round your answers to the nearest whole number.)
5. Describe the trends in the chart. Use details from the story to help you reason why the coyote populations in the Chicago area may be increasing or decreasing.

ANSWERS ON TE 8

Name: \_\_\_\_\_

# Word Roundup

**DIRECTIONS:** First, read the feature articles in this issue. Then, solve the clues below to complete this crossword puzzle.

**ACROSS**

1. Mixture of mercury and one or more metals:  
\_\_\_\_\_
2. Coyotes are \_\_\_\_\_ feeders.
3. Coyote poop: \_\_\_\_\_
4. Electricity flows through a path called a  
\_\_\_\_\_.
5. Metal-containing rocks: \_\_\_\_\_

**DOWN**

6. Bacteria-killing drugs: \_\_\_\_\_
7. A \_\_\_\_\_ metal bends easily.
8. Light sensitive: \_\_\_\_\_
9. An \_\_\_\_\_ is a mixture of metals.
10. Coyotes are primarily \_\_\_\_\_, or active at night.
11. Giant slabs of rock that make up Earth's outer shell: \_\_\_\_\_ plates
12. \_\_\_\_\_ is a metal mixture containing at least 92.5 percent silver.

ANSWERS ON TE 8

*answers in print edition of  
teacher's edition*

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