

NATIONAL GEOGRAPHIC Explorer!

Pioneer Edition

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Dear Educator:

Our final issue of the 2007-2008 school year leads you and your students to explore in diverse dimensions.

We begin by scaling the heights of the Amazon rain forest. Climbing from the bottom to the top of this remarkable ecosystem, readers will explore the “Layers of Life” that are home to half the plant and animal species on Earth. Students will have a chance to use visualizing to deepen their understanding of each layer.

Just in time for the Beijing Olympics, we then jet to China. A first-person account of walking the length of the “Wall of Wonder” provides an intimate look at Earth’s most populous nation. Students will write their own personal narratives, using the author’s story as a model.

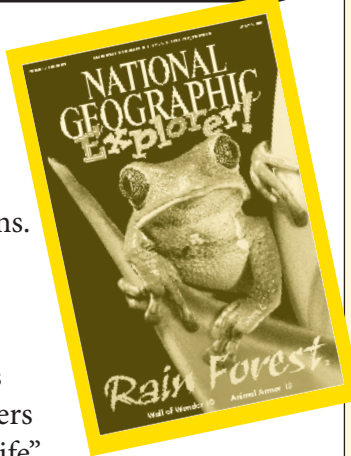
Finally, we meet diverse animals with a unique feature—a shell. Readers will learn how shells serve as homes and as defenses, using the making connections strategy to link prior knowledge with new information gleaned from reading.

It’s been great exploring with you and your students this year, and we look forward to new journeys together in September.

Sincerely yours,



Jacalyn Mahler
Editor in Chief



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In This Issue

LAYERS OF LIFE

PP. 2-9

Curriculum Connections

- Language Arts • Life Science

Standards Correlations

- **Language Arts:** Use a strategy to comprehend and appreciate text
- **Life Science:** Ecosystems, Diversity and adaptations of organisms

Literacy Skills

- **Reading Strategy:** Visualize
- **Vocabulary:** Compound Words, Plurals
- **Writing:** Lively Verbs

WALL OF WONDER

PP. 10-17

Curriculum Connections

- Language Arts • Social Studies

Standards Correlations

- **Language Arts:** Genre (personal narrative)
- **Social Studies:** Culture; Time, continuity, and change

Literacy Skills

- **Reading Strategy:** Plan and Monitor
- **Vocabulary:** Verb Forms
- **Writing:** Personal Narrative

ANIMAL ARMOR

PP. 18-23

Curriculum Connections

- Language Arts • Life Science

Standards Correlations

- **Language Arts:** Specialized vocabulary
- **Life Science:** Characteristics of organisms

Literacy Skills

- **Reading Strategy:** Make Connections
- **Vocabulary:** Academic Vocabulary
- **Writing:** Point of View

Answer Key

Layers of Life • Teacher's Guide, p. 3

Emergent Layer. See small, waxy leaves, butterflies, eagles. Hear rain and wind. **Canopy.** See vines, ferns, orchids, fruit bats, toucans, macaws, snakes, sloths, tree frogs, monkeys. Hear birdcalls, sounds from monkeys. **Understory.** See bushes, vines, small trees, wild cats, bats, owls, spiders, poison frogs. Hear animal sounds. **Forest Floor.** See ants, termites, worms, huge leaves, water lilies, dead plants and animals on ground. Hear footsteps, rustle of dead leaves.

Review • Teacher's Guide, p. 8

1. b 2. c 3. b 4. d 5. c 6. a 7. d 8. c

Next Issue

This is our last issue for 2007-2008.
EXPLORER will return in September.

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Layers of Life



About the Story

Students explore the Amazon rain forest, Earth's largest, from the ground to the treetops, meeting plants and animals that live in each layer.

Fast Facts

- Rain forests cover only about 6 percent of Earth, yet they are home to half the planet's species.
- Scientists identified some 280 different tree species in a single hectare (2.5 acres) of rain forest in South America.

Vocabulary

- **Compound Words:** Have students find *anteater* in the second sentence (p. 4). Ask what two words they see inside the word (*ant* + *eater*). Explain that *anteater* is a compound word. That is a word made of two or more shorter words. Then have students search the page for *earthworms* and *sunlight*. Have them identify the smaller words that make up these compounds (*earth* + *worms*, *sun* + *light*). Point out that thinking about the meanings of the two smaller words can sometimes help them understand the compound. (Other compounds in story: *understory*, *nearby*, *treetops*, *butterflies*).
- **Plurals With Y:** Direct attention to the final section of the story (The Top Layer, p. 8). Have students find *stories*, *butterflies*, and *monkeys*. Point out that they are plurals of words that end in *y*. Explain that if a consonant precedes the *y*, the plural often forms by changing the *y* to an *i* and adding *-es*. If a vowel precedes the *y*, though, the plural often forms by simply adding *s*.

Before Reading

Preview: Direct attention to the photos on pp. 2-3. Identify them as, from left to right, a scarlet macaw, an Amazon tree boa, and a jaguar. Then point out the headline: “Layers of Life.” Explain that the animals shown generally live in different layers. The bird lives in the treetops. The snake slithers through trees, though it can also be found on the ground. The jaguar lives on the forest floor.

Reading Strategy

Visualize: Discuss with students how picturing what they are reading can help them get more out of the text. Explain that they will be reading about the four layers of the Amazon rain forest. Starting at the ground, these are the forest floor, the understory, the canopy, and the emergent layer. Encourage students to pause as they read about each layer and imagine what they would see and hear in that part of the rain forest.

After Reading

- **Reinforce Understanding:** Distribute and explain the directions on the Content Literacy work sheet. Tell students to review what the story says about each rain forest layer, then write what they would see and hear in that layer.
- **Ecology:** Explain that rain forests around the world are in danger of being destroyed. Assign students to research the threats that rain forests face and to present their findings in a report.
- **Writing:** Point out that the story contains a number of vivid verbs: Earthworms *feast* on dead plants (p. 4), strangler vines *steal* food (p. 6), rain and wind *pound* leaves (p. 8). Direct students to circle any verbs in the story that capture their imagination, then use three of the verbs in sentences of their own.
- **Science:** Display the “Living in Layers” poster. Have students write research reports about one of the animals shown on the poster.

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Layers of Life



Read “Layers of Life” in NATIONAL GEOGRAPHIC EXPLORER. Then answer the questions about each layer of the Amazon rain forest.

Emergent Layer

What would you see and hear in this layer?

Canopy

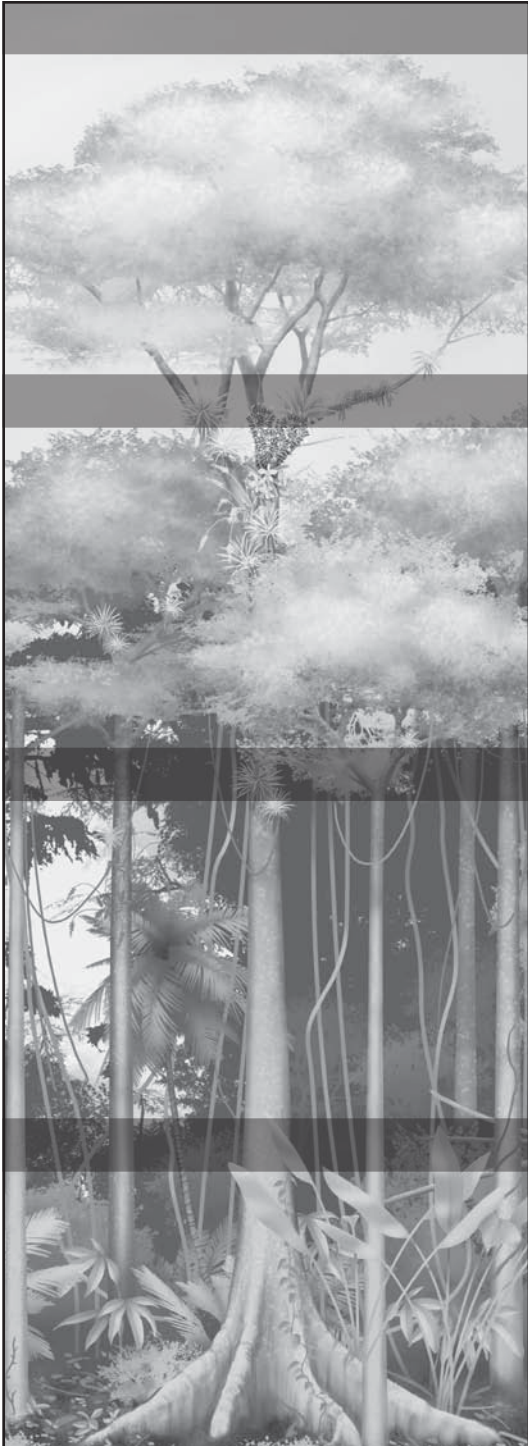
What would you see and hear in this layer?

Understory

What would you see and hear in this layer?

Forest Floor

What would you see and hear in this layer?



PRECISION GRAPHICS (AU)

Wall of Wonder



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About the Story

In this story, students will learn firsthand what it is like to walk the Great Wall of China. Nathan Hoturoa Gray recounts his adventures, including encounters with some of China's diverse cultures. Readers will also learn the history behind the construction of the Wall.

Fast Facts

- The start of construction on the Wall is thought to be 221 B.C., when China's first emperor ordered that existing walls be joined to form a unified fortification. The work took the lives of some 400,000 laborers. Legend says thousands of them were buried inside the Wall.
- The Wall was originally built of stones, dirt, and wood. Soldiers were the main builders, but common people and prisoners also worked on it.
- The Great Wall took its current shape when Ming emperors had it rebuilt in brick and stone during the 1400s and 1500s. Many portions of the Wall have crumbled, and there are gaps on its long route across China.

Vocabulary

Verb Forms: Ask students to find the following words on p. 12: *stretched*, *wanted*, *hoped*. Have students look at the words to see what they have in common. (They all end in *-ed*.) Ask students what the letters *-ed* at the end of a word usually tell us. (The word is a past-tense verb.) Have students identify the present-tense form of the verbs (*stretches*, *want*, *hope*).

Next tell them to find these other past-tense verbs on the same page: *stood*, *was*, *brought*, *began*. Ask students to identify the present-tense form of each verb (*stand*, *is*, *brings*, *begins*). Discuss how some verbs, such as these, have irregular past-tense forms. Encourage students to use what they know about verb forms to follow events in the story. Point out that the story tells about past events.

Before Reading

Build Background: Guide students in locating China on the map (p. 13). Explain that they are going to learn about a 4,000-kilometer (2,500-mile) wall that was built across China thousands of years ago. Ask them to locate the Great Wall on the map. Then discuss why they think the author would want to walk the whole length of the Wall. Suggest that they keep this question in mind as they read.

Reading Strategy

Plan and Monitor: Help students plan their reading by reminding them of their purpose for reading "Wall of Wonder": to find out why the author walked the Great Wall. Distribute the work sheet. Have students record their purpose for reading by completing the sentence at the top. Suggest that as they read, they use the write-on lines to take notes about what the author saw along the way.

After Reading

- **Summing Up:** Review the story by asking students to read their notes about the things the author saw. Then have students answer the two questions at the bottom of the page. Invite volunteers to share their answers.
- **Personal Narrative:** Invite students to write about a trip they have taken. For example, they might write about a family vacation, their first time traveling on a plane or a bus, or going off to camp. Ask students to answer these questions as they plan their writing: *What was special about this trip? How did I feel about it? What special parts of the trip should I describe? What did I learn from my experience?*
- **Persuasive Writing:** A hundred million people recently voted on a new list of the seven wonders of the world. Have students write a persuasive paragraph about whether they would have voted to include the Great Wall on the list. Remind students to give reasons for their conclusions. They can see the list at new7wonders.com.

Wall of Wonder



Before you start reading the story, decide what you want to learn.

I want to find out _____.

As you read the story, think about your purpose. Use these lines to write notes about the things the author saw.

After you read the story, sum up what you learned.

1. Why did the author walk the Great Wall of China?

2. What was the most surprising thing you learned from this story?



Animal Armor

About the Story

Shells help protect mollusks, crustaceans, and other animals. In this story, students learn about shell formation, molting, and defense.

Fast Facts

- Giant squid, weighing about 2,000 kilograms (4,400 pounds), are the largest mollusks.
- Around 45 million years ago, the ancient ancestor of the modern-day nautilus was a huge predatory sea creature.
- There are around 65,000 species of gastropods.

Vocabulary

Academic Vocabulary: Write *crustacean* and *mollusk* on the board. Direct students to look the words up in a dictionary or encyclopedia. Invite volunteers to draw crustaceans and mollusks on the board. Then challenge students to identify, perhaps with help from reference books, whether each animal is a crustacean or mollusk: clam (mollusk), crab (crustacean), lobster (crustacean), nautilus (mollusk), oyster (mollusk), shrimp (crustacean).

Before Reading

Activate Prior Knowledge: Write the word *armor* on the board. Ask: *What do you know about armor? Think of any stories you have read that told about armor. What did the armor do?* Help students understand that armor is a type of protection. Knights wore it long ago to keep from getting hurt in combat. Explain that in the story, students will learn about animal armor, the shells that help protect some creatures from danger.

Reading Strategy

Make Connections: Remind students that good readers connect what they already know about a subject with new information they learn while reading. Distribute the work sheet and have students answer item 1 by writing what they know about shells. Tell them to keep the work sheet handy as they read and to complete item 2 as they learn new things from reading. Encourage them to keep asking themselves: “How can I connect what I already know with the new things I am learning from the story?”

After Reading

- **Reflect on Reading:** Direct students to complete item 3 on the work sheet. Then invite them to discuss how their ideas about shells changed as a result of connecting old and new information while reading.
- **Life Science:** Form five groups. Assign each group to research and create a poster about one of the animals discussed in the story: coconut crab, giant clam, lobster, nautilus, and turtle. Topics to cover might include appearance, size, habitat, diet, and behavior.
- **Writing:** Direct attention to the photo of the lion and the turtle (p. 22). Point out that it is an example of a situation that can be seen from very different points of view. Have students write a paragraph that describes the situation from the turtle’s point of view. Then have them write a second one that presents the lion’s point of view.



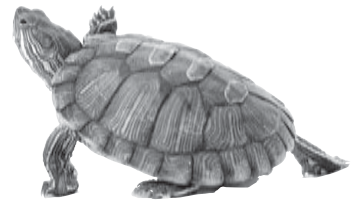
SHUTTERSTOCK (ALL)

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Animal Armor



Read “Animal Armor” in EXPLORER. Complete the items below.

Before Reading

1. Write some things you know about shells.

While Reading

2. As you read, write down new things you learn about shells.

After Reading

3. Tell how the story changed your ideas about shells.



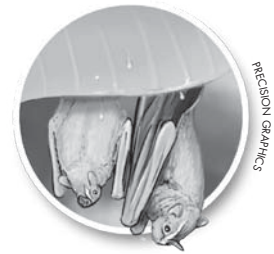


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COMPREHENSION CHECK

Answer each question. Fill in the circle by the correct answer.

- Why did people build the Great Wall of China?
 - to prevent floods
 - to keep out enemies
 - to divide China into two parts
 - to plant crops on farms
- How long is the Great Wall of China?
 - 40 kilometers
 - 400 kilometers
 - 4,000 kilometers
 - 40,000 kilometers
- What do the coconut crab, the nautilus, and the turtle have in common?
 - They are all reptiles.
 - They all have shells.
 - They all have thick skin.
 - They are all mollusks.
- How do shells help animals?
 - Shells protect animals.
 - Shells help animals move.
 - Shells help animals get food.
 - all of the above
- Which of these is *not* a crustacean?
 - crab
 - lobster
 - nautilus
 - shrimp
- What is the name of the top layer of a rain forest?
 - emergent layer
 - canopy
 - understory
 - forest floor
- Where is the Amazon rain forest?
 - Africa
 - Australia
 - North America
 - South America
- How many of Earth's plant and animal types live in the Amazon rain forest?
 - one-tenth
 - one-third
 - one-half
 - two-thirds



PRECISION GRAPHICS



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