



TEACHER'S GUIDE
Pioneer and Trailblazer
Vol. 19 No. 4



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Educational consultant **Stephanie Harvey** has helped shape the instructional vision for this Teacher's Guide. Her goal is to ensure you have the tools you need to enhance student understanding and engagement with nonfiction text.

Lexile® Framework Levels

Pathfinder

To Catch a Thief	640
Gorongosa's Elephants.....	590
Deep Dive	670

Adventurer

To Catch a Thief	510
Gorongosa's Elephants.....	530
Deep Dive	530

Standards Supported

- Common Core State Standards (CCSS)
- Next Generation Science Standards (NGSS)
- C3 Framework for Social Studies State Standards (C3)

See each lesson for the specific standard covered.

Log in at **ExplorMag.org**
 to access additional resources including:

- Interactive Digital Magazine with videos and activities
- Projectable PDF for one-to-one instruction

National Geographic Learning Framework

INTRODUCTION

BACKGROUND

Since 1888, the National Geographic Society has funded scientists and explorers and shared their findings with the world. To support educators who use our resources, we have created a Learning Framework, which lays out what we believe students should learn from their experiences with the Society.

PURPOSE

The Learning Framework was designed to convey the Society's core beliefs and values. It is built around a set of attitudes, skills, and knowledge that embody the explorer mindset.

To determine the learning outcomes within the Learning Framework, we dug deep into national standards in key subject areas. We also sought advice from subject matter and child development experts, along with the combined expertise of NG instructional designers, researchers, and content developers. To learn more, go to: <https://www.nationalgeographic.org/education/learningframework/>.

IMPLEMENTATION

Each article in this magazine has a knowledge-based link to the Learning Framework.

MINDSET OF AN EXPLORER: KEY FOCUS AREAS

Attitudes



CURIOSITY An explorer remains curious about how the world works throughout his or her life. An explorer is adventurous, seeking out new and challenging experiences.

RESPONSIBILITY An explorer has concern for the welfare of other people, cultural resources, and the natural world. An explorer is respectful, considers multiple perspectives, and honors others regardless of differences.

EMPOWERMENT An explorer acts on curiosity, respect, responsibility, and adventurousness and persists in the face of challenges.

Skills



OBSERVATION An explorer notices and documents the world around her or him and is able to make sense of those observations.

COMMUNICATION An explorer is a storyteller, communicating experiences and ideas effectively through language and media. An explorer has literacy skills, interpreting and creating new understanding from spoken language, writing, and a wide variety of visual and audio media.

COLLABORATION An explorer works effectively with others to achieve goals.

PROBLEM SOLVING An explorer is able to generate, evaluate, and implement solutions to problems. An explorer is a capable decision maker—able to identify alternatives and weigh trade-offs to make a well-reasoned decision.

Knowledge



THE HUMAN JOURNEY An explorer understands where we came from, how we live today, and where we may find ourselves tomorrow.

OUR CHANGING PLANET An explorer understands the amazing, intricate, and interconnected systems of the changing planet we live on.

WILDLIFE AND WILD PLACES An explorer reveals, celebrates, and helps to protect the amazing and diverse creatures we share our world with.

LANGUAGE ARTS Ask Questions as You Read

Second Grade Standard Supported

- CCSS Reading Informational Text: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (2-1)

Third Grade Standard Supported

- CCSS Reading Informational Text: Ask and answer such questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-1)

What You'll Need

- "To Catch a Thief" (Explorer, pages 2–9)
- Think Sheet (Teacher's Guide, page 5)
- Clipboards
- Pencils

CONNECT & ENGAGE (20 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up pages 2–3 in the magazine.

Say: *Take a look at these pages. What do you notice? Turn to each other and talk.*

Kids turn and talk about what they notice on the pages.

Say: *The title of this article is "To Catch a Thief." Turn and talk about what you think the title means.*

Kids turn and talk about what the title might mean. Some may have an idea; others may not.

Say: *I think this title has something to do with turtles and the woman pictured on page 3. I am inferring this because they are pictured on the pages. I'm curious about the thief, though. I'm wondering if the woman is the one who is trying to catch a thief. Does this have something to do with turtles? That's a question I have. I'm anxious to find this out. It's like a mystery story! Let's read the text on page 3.*

Read the text aloud.

Say: *Okay, so now we know a little bit more, and my question is answered. We learned that Kim Williams-Guillén found a way to track poachers who steal turtle eggs. That's fascinating! Does anyone know what a poacher is? Can you infer the meaning from what we already know?*

Let a few kids share their thoughts and make sure the correct definition is shared.

Say: *I'm still curious about this story though. Are you? Turn and talk about what else you'd like to find out about Kim Williams-Guillén, her creation, the poachers, and the turtles.*

Kids turn and talk.

MODEL (10 minutes)

Kids sit in a group on the floor, with you in a low chair in front of them.

Say: *This article about Kim Williams-Guillén is nonfiction, which, as you know, includes real, true information. Nonfiction writers write nonfiction to give us information, to teach us something. Nonfiction readers read to learn new information. One of the most important nonfiction reading strategies is to ask questions as you read. Sometimes we have questions when we read. If we stop to talk about our questions and read on to see if we find the answers, it can help us understand what we are reading and learning.*

Say: *I am going to read through a bit of this article and show you my thinking. When I have a question about something, I'm going to write it on a sticky note. Let me show you how this works for me.*

Read aloud the first two paragraphs on page 4.

Say: *These first two paragraphs let me know that the thief steals the turtle eggs. I have a question about that. I'm going to write it down: Why does the thief want the turtle eggs? But I'm going to keep reading to see if there is more information.*

Read on.

Say: *There it is—the answer to my question. It says that people in some cultures eat the turtle eggs. Poachers are what they call people who steal the eggs. I'm going to put an "A" for "Answer" on my sticky note where I wrote my question.*

Mark the sticky note with an "A."

LANGUAGE ARTS Ask Questions as You Read

Say: *I'm going to mark my note with an "A" so I know my question is answered in the text. But remember that sometimes questions are answered, and sometimes they are not.*

Say: *Now I wonder about the idea the scientist had to catch poachers. It sounds like it is pretty tough to know about the routes the poachers take. I'll write the question "What was the scientist's idea?" on another sticky note.*

Say: *Before we move on, though, let's look at page 5. This shows more about the sea turtles. Look at and read the different steps, and then turn and talk about this and any questions you have.*

Give kids time to turn and talk to understand the process. Talk about any questions they may have.

GUIDE (10 minutes)

Hand out Think Sheets and have kids attach them to their clipboards. Kids remain in a group in front of you on the floor.

Say: *So, what did you see me do as I was reading? Turn and talk about what you noticed me doing.*

Kids talk and share out things such as "I noticed you asked questions as you were reading." "I noticed you write questions on sticky notes." "I noticed you wrote an "A" for "Answer" on the sticky note when your question was answered in the text."

Say: *Good thinking. I am going to read on. I'm thinking that this next part should give us some information on the idea the scientist had, and I'm sure we'll have some new questions, too. What do you think?*

Say: *Now it's your turn. As I read page 6, when you have a question, jot it down on a Think Sheet. Use those squares like I used my sticky notes.*

Read aloud the first section, "Looking for a Solution," on page 9.

Say: *Well, it looks like we have the start of an answer to my question about the scientist's idea. Sounds like she wanted to create a fake turtle egg with a tracker in it. I'm going to put an "A" on my sticky note. If you have other questions, write them down on your Think Sheet.*

Read the next section, "A New Idea," on page 9

Say: *Wow! Some amazing information here! If you have a question, write it down on your Think Sheet.*

Say: *Okay, now turn and talk, sharing what you learned and any questions you had.*

Kids turn and talk.

Say: *Who would like to share their new learning and any questions they had?*

Several kids share out.

Say: *Great stuff! And remember, if your question was answered, you can write an "A" so you know the text has answered this question.*

Say: *Now, let's take some time to look at, read, and talk about the photos and captions on page 7.*

Give kids time to really look at and study the photos and read the captions.

Say: *Can you believe that? I would never have been able to pick out the fake egg. How about you? I hope the poachers aren't able to either!*

How do they
get the fake egg
into the nest?



LANGUAGE ARTS Ask Questions as You Read

COLLABORATE (25 minutes)

Say: Now it's time for you to read the rest of the article with a partner.

Say: Remember to jot down any questions you have on your Think Sheet. Questioning is the strategy that keeps us reading. Our curiosity drives us to find answers. If you find the answer to a question, mark your Think Sheet with an "A" for "Answer" next to the question.

Partners read and practice the "ask questions as you read" strategy. Move around the room, conferring with partners.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle with you and share out, using respectful language.

Say: Okay, now it's time to share any questions you had, answers you found, and any new learning. Choose a Think Sheet square with a question you would like to share. I am going to invite someone to start. Then, when finished sharing, that person can pick another person to share. Remember to always use respectful sharing language—calling on people by name, saying "thank you," and paying close attention when others are sharing.

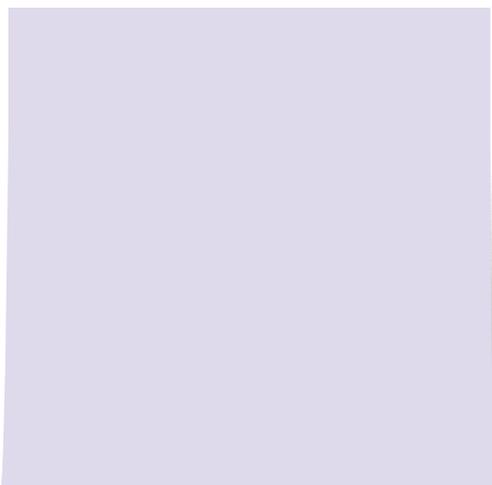
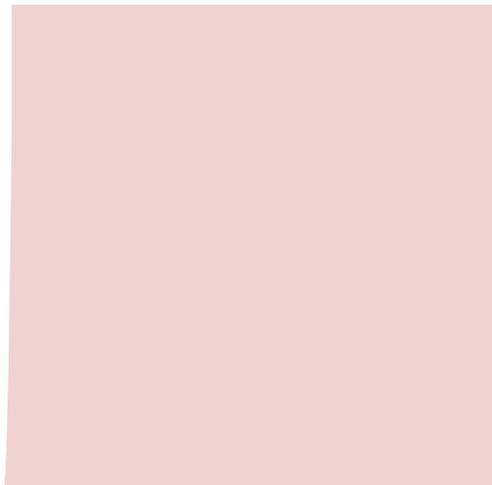
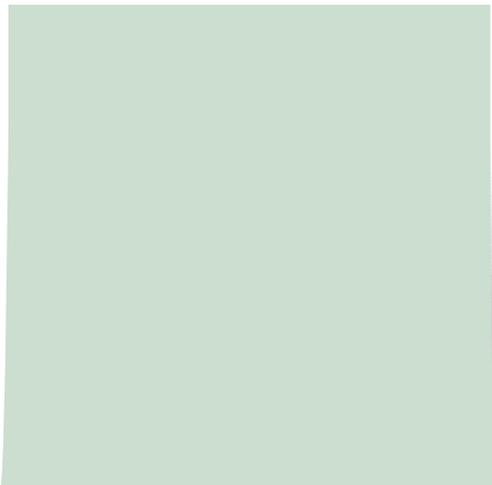
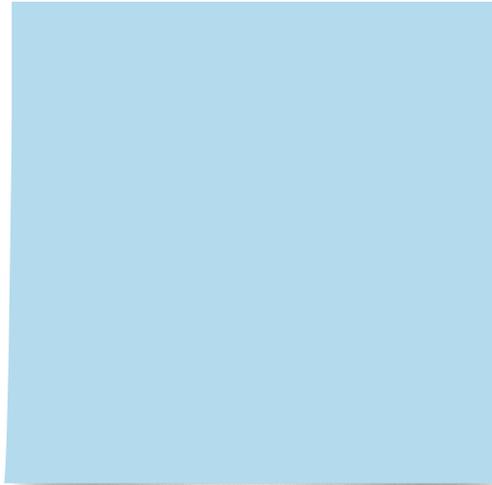
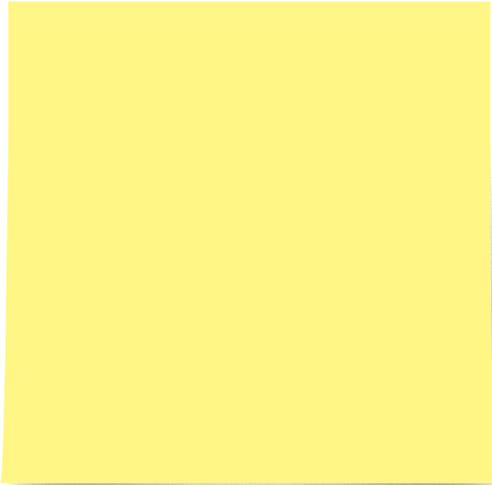
Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

Say: We had lots of questions answered today, but it seems as if there are still some questions even the scientists have. And those questions will keep them working to find out new ways to track poachers and help protect the sea turtles.

Say: So, remember when you read nonfiction, it is important to ask questions as you read, jotting down your questions and noting when you find an answer. Nonfiction is all about reading to learn and actively thinking about the text and asking questions when we have them. Great Job today, readers!

THINK SHEET

Use these note squares to write questions you have as you read.
When you find an answer, write "A" next to the question.



LESSON FRAME Ask Questions as You Read

What You'll Need

- Nonfiction text
- Think Sheet template
- Clipboards and pencils

This frame is a kind of template of the lesson we just worked on. It has the instructional moves and language of the lesson, but the specific content has been removed. This way you can use the Lesson Frame for the other articles in the issue or for any nonfiction text you might be teaching.

CONNECT & ENGAGE (20 minutes)

Kids are in a group on the floor in front of you. Sit on a low chair and hold up the article.

Say: *Take a look at these pages. What do you notice? Turn to each other and talk.*

Kids turn and talk about what they notice on the pages.

Say: *The title of this article is "_____." Turn and talk about what you think the title means.*

Kids turn and talk about what the title might mean. Some may have an idea; others may not.

Say: *I think this title has something to do with _____. I am inferring this because _____. I'm curious about _____. That's a question I have. I'm anxious to find this out. Let's read the text on page _____.*

Read the text aloud and then have kids turn and talk about the title and the text.

Let a few kids share their thoughts with the class.

MODEL (10 minutes)

Kids sit in a group on the floor, with you in a low chair in front of them.

Say: *This article about _____ is nonfiction, which, as you know, includes real, true information. Nonfiction writers write nonfiction to give us information, to teach us something. Nonfiction readers read to learn new information. One of the most important nonfiction reading strategies is to ask questions as you read. Sometimes we have questions when we read. If we stop to talk about our questions and read on to see if we find the answers, it can help us understand what we are reading and learning.*

Say: *I am going to read through a bit of this article and show you my thinking. When I have a question about something, I'm going to write it on a sticky note. Let me show you how this works for me.*

Read aloud a few paragraphs on page _____.

Say: *These paragraphs let me know that _____. I have a question about that. I'm going to write it down: _____? But I'm going to keep reading to see if there is more information.*

Read on.

Say: *There it is—the answer to my question. It says _____. I'm going to put an "A" for "Answer" on my sticky note where I wrote my question.*

Mark the sticky note with an "A."

Say: *I'm going to mark my note with an "A" so I know my question is answered in the text. But remember that sometimes questions are answered, and sometimes they are not.*

LESSON FRAME Ask Questions as You Read

Say: Now I wonder about I'll write the question " _____?" on another sticky note.

Give kids time to turn and talk to understand the process. Talk about any questions they may have.

GUIDE (10 minutes)

Hand out Think Sheets and have kids attach them to their clipboards. Kids remain in a group in front of you on the floor.

Say: So what did you see me do as I was reading? Turn and talk about what you noticed me doing.

Kids talk and share out things such as "I noticed you asked questions as you were reading." "I noticed you write questions on sticky notes." "I noticed you wrote an "A" for "Answer" on the sticky note when your question was answered in the text."

Say: Good thinking. I am going to read on. I'm thinking that this next part should give us some information about _____, and I'm sure we'll have some new questions, too. What do you think?

Say: Now it's your turn. As I read page ____, when you have a question, jot it down on a Think Sheet. Use those squares like I used my sticky notes.

Read aloud page ____.

Say: Well, it looks like we have an answer. I'm going to put an "A" on my sticky note. If you have other questions, write them down on your Think Sheet.

Say: If you have a question, write it down on your Think Sheet.

Say: Okay, now turn and talk, sharing what you learned and any questions you had.

Kids turn and talk.

Say: Who would like to share their new learning and any questions they had?

Several kids share out.

Say: Great stuff! And remember, if your question was answered, you can write an "A" so you know the text has answered this question.

COLLABORATE (25 Minutes)

Say: Now it's time for you to read the rest of the article with a partner.

Say: Remember to jot down any questions you have on your Think Sheet. Questioning is the strategy that keeps us reading. Our curiosity drives us to find answers. If you find the answer to a question, mark your Think Sheet with an "A" for "Answer" next to the question.

Partners read and practice the "ask questions as you read" strategy. Move around the room, conferring with partners.

SHARE THE LEARNING (10 minutes)

Kids join a sharing circle with you and share out, using respectful language.

Say: Okay, now it's time to share any questions you had, answers you found, and any new learning. Choose a Think Sheet square with a question you would like to share. I am going to invite someone to start. Then, when finished sharing, that person can pick another person to share. Remember to always use respectful sharing language—calling on people by name, saying "thank you," and paying close attention when others are sharing.

Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

Say: Always remember when you read nonfiction, it is important to ask questions as you read, jotting down your questions and noting when you find an answer. Nonfiction is all about reading to learn and actively thinking about the text and asking questions when we have them. Great Job today, readers!

To Catch a Thief

SCIENCE

Standards Supported

- **NGSS ETS1.B: Developing Possible Solutions:** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-3)
- **NGSS LS4.D: Biodiversity and Humans:** Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

Resources

- Projectable PDF or interactive digital magazine
- Content Assessment Master (page 10)
- Article Test (page 15)

Science Background

Sea turtles are an endangered species. Although one female may lay hundreds of eggs at a time, few baby sea turtles—perhaps one in 10,000—live long enough to become adults.

Sea turtles face many natural threats, but their biggest threat is people. And some of the worst human offenders are poachers who steal eggs from turtle nests and sell them to people who consider the eggs to be an edible delicacy.

Hoping to stop poachers in their tracks, National Geographic Explorer Kim Williams-Guillén hatched a plan. She used a 3-D printer to make a fake egg with a hidden electronic transmitter. Hollywood makeup artist Lauren Wilde fine-tuned the egg's appearance and wildlife biologist Helen Pheasey planted the eggs in turtle nests. So far, the project is working. Williams-Guillén's goal is to find poachers, map their network, and stop the illegal trade of sea turtle eggs.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about sea turtles.

EXPLORE

Display the **"To Catch a Thief"** article with the projectable PDF or the interactive digital magazine. As a class, brainstorm ideas about why it would be important to catch a thief who was stealing sea turtle eggs.

EXPLAIN

After reading, discuss what a poacher is and reasons why what they do is illegal. **Ask:** *How does stealing eggs from a nest harm sea turtles?* (Sea turtles are an endangered species. When the eggs are stolen, even fewer turtles can be born.) Have students turn and talk as they discuss National Geographic Explorer Kim Williams-Guillén's idea for stopping poachers. Challenge them to identify problems she faced, solutions she found, and proof that her idea works. Encourage students to brainstorm ideas about how a map showing where the eggs are traded could help sea turtle populations recover in the future.

ELABORATE

Remind students that Kim Williams-Guillén is fighting to save sea turtles by going after poachers, or the people who supply the eggs to buyers. Brainstorm ideas about how this problem could also be addressed by cutting demand. Then challenge students to create a plan that would encourage people to stop eating sea turtle eggs.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Then have them take the **Article Test**. Encourage them to share and compare their results in small groups.

CONTENT ASSESSMENT: To Catch a Thief

Summarize the problem National Geographic Explorer Kim Williams-Guillén wanted to solve and her idea for a solution.

Problem	Solution

Draw pictures to show what her solution looked like.

Inside	Outside

Explain how other people helped her carry out her plan.

Tell what she plans to do next and how it might help protect sea turtles.

Gorongosa's Elephants

SCIENCE

Standards Supported

- **NGSS Connections to Nature of Science: Scientific Knowledge is Based on Empirical Evidence:** Scientists look for patterns and order when making observations about the world. (2-LS4-1)
- **NGSS LS3.B: Variation of Traits:** The environment also affects the traits that an organism develops. (3-LS3-2)

Resources

- Projectable PDF or interactive digital magazine
- Content Assessment Master (page 12)
- Article Test (page 16)

Science Background

Gorongosa National Park lies in central Mozambique on the southeastern side of Africa. First established as a hunting reserve in 1920, the area became a 5,300 square kilometer (2,046 square mile) national park in 1960.

But just 15 years later, a civil war started and before it ended in 1992, the park was nearly destroyed. Since then, conservation efforts have helped the park undergo a remarkable rebirth.

Among the animals impacted by the war were elephants, whose numbers plummeted from around 2,500 before the war to about 200 after. Surviving elephants remember the trauma they endured and don't trust people. This leads to conflicts with people. Hoping to find ways for elephants and people to coexist peacefully, National Geographic Explorer Dominique Gonçalves studies the behavior and movement of elephants in the park.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about elephants.

EXPLORE

Display the "**Gorongosa's Elephants**" article with the projectable PDF or the interactive digital magazine. As a class, discuss how years of war could affect elephants and the places they live.

EXPLAIN

After reading, remind students that the elephants Africa's Gorongosa National Park suffered greatly during the civil war in Mozambique. **Ask:** *What happened to the elephants?* (Most were killed. Many were injured.) Have students turn and talk to discuss how and why the war still affects Gorongosa's elephants today. Then have them discuss how National Geographic Explorer Dominique Gonçalves is trying to help. Encourage students to discuss how her efforts to understand these elephants' behaviors could lead to a brighter future for elephants in Gorongosa National Park.

ELABORATE

Instruct students to conduct research to learn more about National Geographic Explorer Dominique Gonçalves and how her work is helping the park's elephants recover from their experience during the civil war. Encourage them to make a list of her discoveries and to collect evidence that proves the elephants are recovering from the traumas of war.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Then have them take the **Article Test**. Encourage them to share and compare their results in small groups.

CONTENT ASSESSMENT: Gorongosa's Elephants

Answer each question about Gorongosa's elephants.

<p>What happened to the elephants at Gorongosa National Park?</p>	
<p>How did this affect the way the elephants behave toward people?</p>	
<p>How is National Geographic Explorer Dominique Gonçalves trying to help?</p>	

Write three facts you learned about the elephants in Gorongosa National Park.

1.	
2.	
3.	

Deep Dive

SOCIAL STUDIES

Standards Supported

- **C3: History: Historical Sources and Evidence:** Explain how historical sources can be used to study the past. (D2.His.10.K-2)
- **C3: History: Causation and Argumentation:** Generate possible reasons for an event or development in the past. (D2.His.14.K-2)

Resources

- Projectable PDF or interactive digital magazine
- Women Explorers posters (teacher's edition)
- Content Assessment Master (page 14)
- Article Test (page 17)

Social Studies Background

In the mid-1990s, National Geographic Explorer Beverly Goodman was a graduate student exploring the ruins of Caesarea, an ancient city on the Israeli coast. She was with a team of divers searching for find evidence that explained why the harbor had sunk into the sea nearly 2,000 years ago.

What they found was a mixture of sediments and artifacts that indicated something massive had happened all at once. And the radiocarbon dates matched up with an ancient earthquake in Turkey in 115 AD. The harbor, as ancient texts had hinted, had been hit by a tsunami.

Today, Goodman is a geoarchaeologist. She uses her skills and knowledge of geology, archaeology, and anthropology, to explore ancient mysteries buried by the sea. But her discoveries don't just reveal secrets of they past. The evidence she finds can also educate people about risks and help them prepare for similar disasters if they were to occur today.

ENGAGE

Encourage students to flip through the article and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about underwater exploration.

EXPLORE

Display the "**Deep Dive**" article with the projectable PDF or the interactive digital magazine. As a class, brainstorm a list of items a geoarchaeologist might search for when diving along a coastline.

EXPLAIN

After reading, remind students that National Geographic Explorer Beverly Goodman is a marine geoarchaeologist. As a class, discuss what that is and how each science Goodman studies—archaeology, geology, and anthropology—might influence her work. Then have students turn and talk with a partner to discuss Goodman's expedition along the Israeli coast. Encourage students to identify the tools she used and how they helped her prove that a tsunami hit the coastline long ago. Challenge students to explain why it was important for Goodman to collect that evidence, even though she had already found written records about big waves in the area long ago.

ELABORATE

Display and review both sides of the "**Women Explorers**" poster to introduce students to some of the amazing female National Geographic explorers who have helped shape our understanding of the world. Encourage students to conduct research to learn more about these women. Or, have them go to National Geographic's Explorer site (<https://www.nationalgeographic.org/explorers/>) to meet more fabulous women explorers who are working to change the world.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Then have them take the **Article Test**. Encourage them to share and compare their results in small groups.

CONTENT ASSESSMENT: Deep Dive

Use this organizer to answer questions about National Geographic Explorer Beverly Goodman and her research.

1. What was Beverly Goodman looking for in Israel? _____

2. What did she find? _____

3. What did her discovery prove? Why? _____

Identify three tools Goodman used. Describe how each tool helped her either collect evidence or record her findings.

ARTICLE TEST: To Catch a Thief

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. What kind of scientist is Kim Williams-Guillén?
Ⓐ ecologist
Ⓑ geologist
Ⓒ biologist

2. Why is she trying to help sea turtles?
Ⓐ They are gentle animals.
Ⓑ They are an endangered species.
Ⓒ Nobody else is trying to help them.

3. What is her idea to stop poachers?
Ⓐ to collect all of the eggs herself
Ⓑ to hide turtle nests on unguarded beaches
Ⓒ to create fake turtle eggs with trackers

4. What can she learn from her idea?
Ⓐ where the poachers go
Ⓑ why the poachers steal
Ⓒ where sea turtles live in the ocean

5. How did Williams-Guillén perfect her idea so it would fool poachers?

ARTICLE TEST: Gorongosa's Elephants

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Where is Gorongosa National Park?
Ⓐ Africa
Ⓑ Asia
Ⓒ Australia

2. Why don't the elephants here trust people?
Ⓐ People live too close to their habitat.
Ⓑ People harmed them during a war.
Ⓒ People kept the elephants in a herd.

3. Why does Dominique Gonçalves put collars on elephants?
Ⓐ to identify the matriarch
Ⓑ to track their movement
Ⓒ to make the elephants sleepy

4. What is Gonçalves's goal?
Ⓐ for people and elephants to live peacefully
Ⓑ for elephants to come into contact with people
Ⓒ to put a collar on every elephant in Gorongosa National Park

5. Why is it important for Gonçalves to gain the trust of the matriarch of an elephant herd?

ARTICLE TEST: Deep Dive

Read each question. Fill in the circle next to the correct answer and then write your response on the lines.

1. Which of these sciences does a geoarchaeologist use in her work?
Ⓐ genetics
Ⓑ geology
Ⓒ astronomy

2. What causes a tsunami?
Ⓐ a hurricane
Ⓑ an earthquake
Ⓒ climate change

3. Where does Beverly Goodman go to study tsunamis?
Ⓐ to the deepest part of the ocean
Ⓑ around coral reefs
Ⓒ along coastlines

4. What tool did she use to look at the layers of a tsunami deposit?
Ⓐ a water dredge
Ⓑ a written record
Ⓒ an underwater notebook

5. What did Goodman and her team prove? How?

Pioneer and Trailblazer

ANSWER KEY

To Catch a Thief

Assess Content, page 10

Problem: Poachers are stealing endangered sea turtle eggs.

Solution: She created fake eggs with trackers inside to catch them.

Draw: Students' drawings should resemble the inside and outside of turtle eggs as depicted in the article's photos.

Explain: Makeup artist Lauren Wilde added paint and glue to make the eggs look real. Scientist Helen Pheasey hid the eggs in turtle nests.

Tell: She plans to hide more fake eggs to collect more data so she can make a map to show where the eggs are being traded. This will help her catch the poachers.

Article Test, page 15

1. A; 2. B; 3. C; 4. A; 5. Possible response: She used plastic and a 3-D printer to make a fake egg and hid a tracker inside. A makeup artist added paint and glue to make the eggs look real and another scientist hid the fake eggs in turtle nests where poachers would find them.

Gorongosa's Elephants

Assess Content, page 12

Possible answers include:

1. The elephants were injured or killed during a long civil war.
2. The elephants remember what happened. They don't trust people and are scared of people. When they see people, they fight or run away.
3. She is studying elephants and where they go. She wants to find a way to help people and elephants live together peacefully.

Facts will vary but should come from the article.

Article Test, page 16

1.A; 2. B; 3. B; 4. A; 5: The matriarch leads the herd. If she gains her trust, the rest of the heard might trust her, too.

Deep Dive

Assess Content, page 14

1. She was looking for proof that a tsunami hit the coastline there long ago.
2. She found materials from the shallow sea, beach, and land all mixed together.
3. Her findings proved that a tsunami had occurred here. A tsunami is the only thing that could have caused these things to be mixed together.

Students may choose to describe the water dredge or core sampler, which helped Goodman collect evidence, or the waterproof notepad and camera that helped her record her findings.

Article Test, page 17

1. B; 2. B; 3. C; 4: A; 5. They proved that a tsunami had occurred off the Israeli coast long ago. The mix of materials they collected could have only been caused by a tsunami. And the age of the materials matched written accounts of big waves.