

**NATIONAL GEOGRAPHIC**

SPECIAL ISSUE:  
**WOMEN  
IN SCIENCE**



# Explorer



**Kim Williams-Guillén 2**



**Dominique Gonçalves 10**



**Beverly Goodman 18**

## TEACHER'S GUIDE Pathfinder and Adventurer 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 .....	720
Gorongosa's Elephants.....	670
Deep Dive .....	820

#### Adventurer

To Catch a Thief .....	850
Gorongosa's Elephants.....	770
Deep Dive .....	970

### 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.



Looking for a fun way to test your student's recall? Each story in this issue of Explorer has an accompanying Kahoot! quiz.

Log in at **ExplorerMag.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 to Discover Answers

### Fourth Grade Standard Supported

- CCSS Reading Informational Text: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-1)

### Fifth Grade Standard Supported

- CCSS Reading Informational Text: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-1)

### 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 in front of you. 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 created a way to track poachers who steal sea 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, with you 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 to discover answers. 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: What is the thief going to do with the turtle eggs now? 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 sea turtle eggs. Poachers steal the eggs and smuggle them into cities to be eaten. The demand for these eggs is high. I'm going to put an "A" for "Answer" on my sticky note where I wrote my question. This lets me know that the answer can be found in the text.*

## LANGUAGE ARTS Ask Questions to Discover Answers

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.*

**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.

**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 to Discover Answers

## 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 to discover answers" 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.

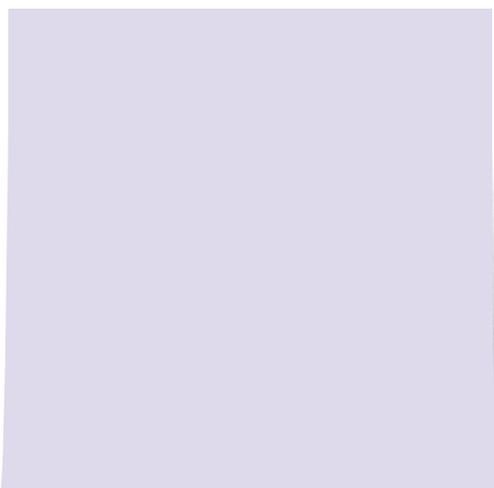
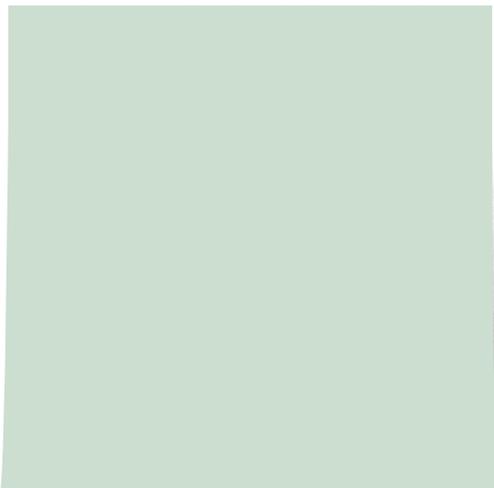
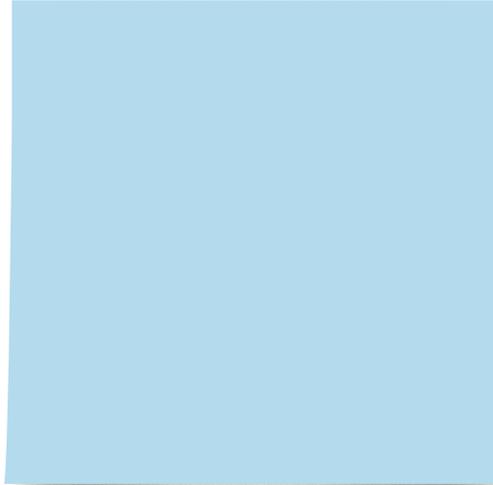
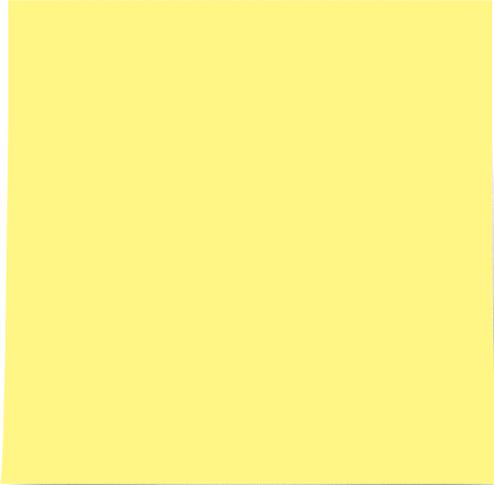
Kids share out and invite others to share, always using the respectful sharing language that was modeled. There should be time for about 3 or 4 kids to share out with the whole group. Once they are finished, have everyone turn and share with the person next to them, so that all have a chance to be heard.

**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 to Discover Answers

## 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 (5 minutes)

Kids are in a group in front of you. 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, with you 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.

**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.

## LESSON FRAME Ask Questions to Discover Answers

### GUIDE (10 minutes)

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

**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)

*Now it’s time for you to read the rest of the article with a partner.*

*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 to discover answers” 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: Designing Solutions to Engineering Problems:** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- **NGSS ESS3.C: Human Impacts on Earth Systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

### 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. Then remind students that people, including poachers, are the greatest threat sea turtles face. **Ask:** *Why are poachers such a threat to sea turtles?* (Females of a species may only lay eggs in one stretch of coastline, so robbing all of the nests in that place can threaten the entire species.) 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 identify other problems sea turtles face and to brainstorm ideas to solve each of those problems.

### 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 curbing 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.



Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/947d689d-1622-41fd-8400-4fca2f9617c2>

**CONTENT ASSESSMENT: To Catch a Thief**

Describe the problem and solution identified in the article.

Problem	Solution

Summarize how National Geographic Explorer Kim Williams-Guillén tested and improved her idea to help sea turtles.

What do you think would be the best way to use data from her project? Why?

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# Gorongosa's Elephants

## SCIENCE

### Standards Supported

- **NGSS LS1.D: Information Processing:** Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. (4-LS1-2)
- **NGSS ESS3.C: Human Impacts on Earth Systems:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

### 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.



Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/65cbebb3-eb8e-435d-80b6-7de57ef55c4b>

### 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 impact elephants and the places they live.

### EXPLAIN

After reading, remind students that years of civil war took a devastating toll on elephants in Africa's Gorongosa National Park. **Ask:** *How does the war still impact elephants today?* (The elephants that remain were physically and emotionally scarred by the war. They don't trust humans.) Have students turn and talk to discuss how and why Gorongosa's elephants behave differently from elephants in other places. 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 identify more animals that live in Gorongosa National Park. Challenge them to identify how these animal populations were impacted during the civil war and how the war's legacy still affects the animals today. Encourage students to also learn more about National Geographic Explorer Dominique Gonçalves and how her work is helping the park's elephants recover from their experience during the 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>Why don't the elephants in Gorongosa National Park trust people?</p>	
<p>How has this mistrust impacted National Geographic Explorer Dominique Gonçalves and her research?</p>	
<p>What does Gonçalves hope to achieve through her research?</p>	

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

1.	
2.	
3.	
4.	
5.	

# Deep Dive

## SOCIAL STUDIES

### Standards Supported

- **C3: History: Historical Sources and Evidence:** Summarize how different kinds of historical sources are used to explain events in the past. (D2.His.9.3-5)
- **C3: History: Causation and Argumentation:** Use evidence to develop a claim about the past. (D2.His.16.3-5)

### 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 archaeological items someone might find while searching the ocean floor.

### 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 how Goodman plans and carries out her investigations. Encourage students to identify the tools she uses to observe and collect evidence. Challenge them to explain how those tools helped her and a team of researchers collect evidence to prove a theory about an ancient tsunami. Then challenge students to explain how those tools could also help her collect evidence that identifies the location of coastal prehistoric villages that were drowned after the last ice age.

### 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.



Click here for the Kahoot! quiz:  
<https://play.kahoot.it/#/k/21570d9d-04e9-47e6-ac80-0cf9d21d63d1>

**CONTENT ASSESSMENT: Deep Dive**

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

1. What kind of a scientist is Beverly Goodman? What does she study? \_\_\_\_\_

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2. Why did Goodman and her team think a tsunami hit the ancient city of Caesarea?

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3. How did they confirm their suspicions? Give details. \_\_\_\_\_

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4. What is Goodman searching for now? \_\_\_\_\_

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5. What kinds of evidence do you think she might find? What would it reveal?

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**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. Where does Explorer Kim Williams-Guillén go to study sea turtles?  
Ⓐ Pacific Ocean  
Ⓑ Caribbean Sea  
Ⓒ Central American beaches
  
2. How do poachers harm sea turtle populations?  
Ⓐ They grab newly hatched babies.  
Ⓑ They steal eggs from turtle nests.  
Ⓒ They catch turtles in fishing nets.
  
3. Why do people buy sea turtle eggs from poachers?  
Ⓐ to have a sea turtle as a pet  
Ⓑ to eat the eggs  
Ⓒ to save the eggs from the poachers
  
4. What does data collected from the eggs show?  
Ⓐ how sea turtles lay their eggs  
Ⓑ which designs are best at fooling poachers  
Ⓒ where sea turtle eggs are traded
  
5. What does the data collected by Williams-Guillén's fake sea turtle eggs reveal?

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**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?  
Ⓐ Mozambique  
Ⓑ Portugal  
Ⓒ Zimbabwe
  
2. Why do elephants here behave differently from other elephants?  
Ⓐ They were raised in captivity.  
Ⓑ They are afraid of people.  
Ⓒ They are too trusting of people.
  
3. What are the elephants doing when they act aggressively?  
Ⓐ marking their territory  
Ⓑ fighting for food  
Ⓒ protecting the herd
  
4. What does Dominique Gonçalves hope to achieve through her work?  
Ⓐ for people and elephants to peacefully coexist  
Ⓑ for elephants to have free range of the park  
Ⓒ for soldiers to treat elephants better

5. How does Gonçalves track elephants' movements in the park?

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**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. What does a geoarchaeologist like Beverly Goodman study?  
Ⓐ geology, biology, and chemistry  
Ⓑ geography, anthropology, and physics  
Ⓒ geology, archaeology, and anthropology
  
2. What causes most tsunamis?  
Ⓐ earthquakes  
Ⓑ hurricanes  
Ⓒ gravity
  
3. How are archaeological sites on coastlines and tsunami deposits alike?  
Ⓐ They both form suddenly.  
Ⓑ They contain the same materials.  
Ⓒ They are both underwater.
  
4. What does a water dredge do?  
Ⓐ create very strong waves that batter the seashore  
Ⓑ take core samples using long pipes  
Ⓒ collect evidence during underwater archaeological excavations

5. What are three things you learned about the geoarchaeology?

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# Pathfinder and Adventurer

## ANSWER KEY

### To Catch a Thief

#### Assess Content, page 10

**Problem:** Poachers are stealing endangered sea turtle eggs.

**Solution:** National Geographic Explorer Kim Williams-Guillén used a 3-D printer to create fake sea turtle eggs that contain electronic transmitters that can track and find the poachers.

**Summary:** Possible response: She used a 3-D printer to print fake eggs with electronic trackers inside them. A special effects and makeup artist made the eggs look more realistic. Then a wildlife biologist hid the eggs in turtle nests. When poachers take them, the eggs send back signals so they can find the poachers.

**Question :** Answers will vary..

#### Article Test, page 15

1. C; 2. B; 3. B; 4. C; 5. Possible response: The data reveals the date and time that an egg is at a certain location. It also shows how fast an egg is moving, which can help them determine the kind of transportation used to move the egg.

### Gorongosa's Elephants

#### Assess Content, page 12

Possible answers include:

1. The elephants were hurt both physically and emotionally and they remember the trauma.
2. The elephants don't behave like other elephants do. So she must study the elephants to understand them. She must be ready for aggressive behaviors.
3. She wants to find ways to help people and elephants peacefully coexist.

Facts will vary but should come from the article.

#### Article Test, page 16

1.A; 2. B; 3. C; 4. A; 5: She searches in a helicopter to find the right elephant, uses a tranquilizer dart to put the elephant to sleep, and then fits a collar around its neck. The collar sends data every hour for up to two years, telling her where the elephant is located in the park.

### Deep Dive

#### Assess Content, page 14

1. Beverly Goodman is a geoarchaeologist. She studies archaeology, geology, and anthropology.
2. Some writings suggested that a tsunami had happened there in the past.
3. They used a water dredge to collect evidence. It revealed a mixture of materials that could only come from very strong waves. Then they discovered that the age of the deposits matched the age of a historically described event. It proved that a tsunami had occurred.
4. She is searching for the location of coastal prehistoric villages that were drowned after the last ice age.
5. Answers will vary.

#### Article Test, page 17

1. C; 2. A; 3. B; 4: C; 5. Answers will vary but should come from the article.