

Grade 5: Module 2A: Unit 2: Lesson 1 Introduction to *The Most Beautiful Roof in the World*: Why does Meg Lowman Research the Rainforest? (Pages 2–4)





Why does Meg Lowman Research the Rainforest? (Pages 2–4)

Long-Term Targets Addressed (Based on NYSP12 ELA CCLS)

I can make inferences using quotes from the text. (RI.5.1)

I can determine the main idea(s) of an informational text based on key details. (RI.5.2)

I can determine the meaning of academic words or phrases in an informational text. (RI.5.4)

I can determine the meaning of content words or phrases in an informational text. (RI.5.4)

I can compare and contrast the organizational structure of different informational texts. (RI.5.5)

I can follow our class norms when I participate in a conversation. (SL.5.1)

Supporting Learning Targets	Ongoing Assessment
• I can make inferences about Meg Lowman, a rainforest scientist.	Journal (Meg Lowman KWL chart)
• I can explain which features of <i>The Most Beautiful Roof in the World</i> make it an informational text.	Meg Lowman Note-catcher
• I can determine what motivated Meg Lowman to become a rainforest scientist using details from the text as evidence.	
• I can determine the meaning of new words in <i>The Most Beautiful Roof in the World</i> .	
• I can actively listen to my group members during discussions.	



Agenda	Teaching Notes
Opening A. Engaging the Reader: Interviewing Meg Lowman (10)	 Because this lesson involves setting up so many routines for this unit, it may take more than 60 minutes. Consider building in time during the "slush" parts of the day.
minutes) B. Introduce Learning Targets (5 minutes)	In advance: Read and become familiar with the book <i>The Most Beautiful Roof in the World</i> by Kathryn Lasky. This become account to a continuous book and the second book and the second book and the second book and the second book are second. This participates is intended to the second book and the second book are second.
 Work Time A. Text Structure: Scanning The Most Beautiful Roof in the World (10 minutes) 	 This lesson opens with a quick activity about Meg Lowman and her research. This activity is intended to build students' background knowledge, but more importantly to pique their curiosity. Do not worry if their knowledge about Meg Lowman is quite limited during the initial KWL charting. They revisit the KWL many times throughout the unit, and rely on their KWL notes during their end of unit assessment.
B. Group Read and Discussion: Who Is Meg Lowman? (15 minutes)	• Review: Concentric Circles protocol (see Appendix 1).
C. Key Vocabulary to Deepen Understanding (15 minutes)	• Students will be partnered with another student in the Concentric Circles protocol. If the class does not have an even number of students, have one group of three students work together and direct students in that triad to take turns playing each role. If the circles seem too complicated, consider simply having
3. Closing and AssessmentA. Debrief and Review Learning Targets (5 minutes)4. Homework	 students stand and talk in pairs. Throughout this unit, students will remain in the same groups of four for reading time. Group students heterogeneously, and be intentional about grouping students together who may benefit from extra support from peers.
	• The Most Beautiful Roof in the World does not have numbered pages. For ease of accessing the text during each lesson, ask students to number each page with a pencil or a sticky note with the number written on it. Begin with the number 1 on the page with the photograph of Meg Lowman and the first section titled "Pioneer in the Rainforest." Be sure students number every single page, including the pages with photos. Starting with this page (in other words, do not include the copyright pages and other "front matter"), there are 43 pages of text total, ending with the glossary.
	 Throughout this unit, students will participate in routine close reads and interactive vocabulary activities. Become familiar with passages and/or vocabulary addressed in each lesson in order to support students during Work Time.



Teaching Notes (continued)
• In this unit, students regularly work with both scientific (domain-specific) vocabulary and more general academic vocabulary. Remember, students need to learn more than just the science terms; they also need to learn the general academic words that will help them make sense of the text as a whole. Each specific lesson prioritizes academic vocabulary from the specific section of the texts students are working with that day. Lessons prioritize specific academic vocabulary words that both will help students navigate the specific section of text and will transfer to when students encounter other complex texts.
• In this lesson, these important concepts about the vocabulary work in this unit are presented during Part C of Work Time. Review this closely in advance. Students keep two separate glossaries, for science words and academic words.
• It is very important that students realize they are not expected to learn or memorize every single word they are exposed to in these lessons. Rather, the vocabulary instruction in this unit is designed to heighten students' awareness of vocabulary in general, and to teach some high-leverage words. Do not quiz students on long lists of vocabulary words or do other "rote memorization" activities that might undermine the deeper intent of vocabulary work in this module.

Lesson Vocabulary	Materials
features, determine, inferences, gadgets, biodiversity, eureka, samples, canopy, relationships, herbivory, conservation (2); base, treetops, environmentalist, intrigued, fascinated (4)	 Meg Lowman Interview Questions and Answers (one per student; students read this text in partnerships) Highlighters (two colors per student) Meg Lowman, Rainforest Scientist KWL anchor chart (new; teacher-created; see supporting materials) The Most Beautiful Roof in the World (book; one per student) Features of Informational Text anchor chart (from Unit 1, Lesson 3) Listening Criteria rubric (one per student) Meg Lowman Note-catcher (one per student)



Opening	Meeting Students' Needs
 A. Engaging the Reader: Interviewing Meg Lowman (10 minutes) Launch the unit by revisiting key points from Unit 1: "We studied several rainforest scientists in Unit 1, and learned about the ways they communicate their research." Invite several students to share what they remember about who those scientists were, where they researched, and/or what they studied (e.g., Bryson Voirin in Panama studying sloths, Eve Nilson in Brazil studying frogs). Tell students that in this unit, they are going to go much more in-depth about one rainforest scientist, named Meg Lowman. Today, they will begin by reading two very short excerpts from interviews with Dr. Lowman. Distribute the Meg Lowman Interview Questions and Answers and highlighters to students. Review the Concentric Circles protocol with students (see supporting materials): Place students in two concentric circles (an even number of students in an inner and an outer circle). Be sure every student is facing a partner in the other circle. Assign students in the outer circle to be Meg Lowman. Ask students to focus just on questions and answers A and B. Give them I minute to preview the text, highlighting what they will read out loud. Then ask students to take 1 to 2 minutes to "interview" their partner, reading aloud A and B. Next, ask students to shift two places to the left to face a new partner. Ask students to repeat the same process for questions C and D. This time, they reverse roles: Students in the outer circle are Meg Lowman. Students in the inner circle are the interviewer. Ask students to share with their new partner: "What do you now know about Meg Lowman?" 	 Consider providing smaller chunks of text (sometimes just a few sentences) for some students. Teachers can check in on students' thinking as they write or speak about their text. ELL language acquisition is facilitated by interacting with native speakers of English who provide models of language. Students needing additional supports may benefit from a partially filled-in Meg Lowman, Rainforest Scientist KWL chart.



Introduction to *The Most Beautiful Roof in the World*: Why does Meg Lowman Research the Rainforest? (Pages 2–4)

Opening (continued)	Meeting Students' Needs
• Ask students to return to their seats and open to three new pages in their journal. Display the Meg Lowman, Rainforest Scientist KWL anchor chart (see example in supporting materials). Ask students to create this chart in their journals: one page each for K, W, and L.	
• Say: "Now that you have read excerpts from two interviews with Meg Lowman, what do you know about her?" Invite several students to share out their ideas. Listen for responses such as: "She works in tree canopies; she invents gadgets to help her get to treetops; she studies insects; she won second place in a science fair when she was younger; she discovered half of biodiversity on earth lives in treetops," etc. Record students' responses in the K column of the KWL while they record ideas into their journals.	
• Then ask students: "What else do you want to know about Meg Lowman?" Record students' questions in the W column of the KWL, as students record questions in their journals.	
• Tell them that they will be learning a lot about Meg Lowman and her rainforest research in the coming weeks. They will keep adding to the KWL chart. It is important that students keep good notes, since they will get to use these during the end of unit assessment.	



Why does Meg Lowman Research the Rainforest? (Pages 2-4)

Opening (continued)

B. Introduce Learning Targets (5 minutes)

- Introduce the learning targets: "I can make inferences about Meg Lowman, a rainforest scientist," "I can explain which features of *The Most Beautiful Roof in the World* make it an informational text," and "I can determine what motivated Meg Lowman to become a rainforest scientist using details from the text as evidence."
- Review the word *inferences* with students (which they should be very familiar with based on their study of *Esperanza Rising* in Module 1). Ask for suggestions about the meaning of this word. Listen for students to share ideas such as: "Coming to a conclusion based on evidence or reasoning; coming to a conclusion without the answer explicitly stated in the text," or similar ideas. Clarify the meaning of this term for students as necessary. Ask students to recall the meaning of the words *features* (specific parts, element, quality) and *determine* (decide, figure out, conclude). Ask students to show a thumbs-up if they completely understand the targets, a thumbs-sideways if they understand some of the targets, or a thumbs-down if they need a lot more explanation. Notice the number of students who show a thumbs-down and thumbs-sideways to determine whether or not another explanation of the targets is needed.

Meeting Students' Needs

 Provide nonlinguistic symbols to assist struggling readers in making connections with vocabulary (e.g., a picture of a cluster of tall trees for rainforest, a picture of a person in a lab coat for scientist, a picture of a book or piece of writing for text). These symbols can be used throughout the year. Specifically, they can be used in directions and learning targets.



Work Time	Meeting Students' Needs
 A. Text Structure: Scanning The Most Beautiful Roof in the World (10 minutes) Tell students: "Now we are going to read an informational book called <i>The Most Beautiful Roof in the World</i>, by Kathryn Lasky, to learn more about Meg Lowman's work in the rainforests." 	• When possible, provide text or materials in students' L1. This can help students understand materials
• Distribute <i>The Most Beautiful Roof in the World</i> . Conduct a Book Walk with students. Focus on the front and back cover of the book, the text, and the photos. Ask: "What features in this book hint that this is an informational text?" After 3 to 4 minutes, cold call students to share out what <i>features</i> they notice in the book, listening for responses such as: "summary on the back cover; pictures of real people in the rainforest; chapter titles on the pictures; quotes," etc.	 Presented in English. Consider placing an ELL in a group with a student who speaks the same L1 when discussion of complex
 Bring students' attention back to the Features of Informational Text anchor chart from Unit 1, and write the word <i>book</i> in the Text column of the anchor chart (if it is not already listed). Add students' ideas to the anchor chart. Point out to students that it is often helpful, when beginning a new text, to take time to get oriented to how the text is structured. This will make it easier for them to access information quickly and learn more deeply. 	content is required. This can let students have more meaningful discussions and clarify points in their L1.



Why does Meg Lowman Research the Rainforest? (Pages 2-4)

Work Time (continued)

B. Group Read and Discussion: Who Is Meg Lowman? (15 minutes)

- Place students in their reading groups. Tell students they will stay in these same groups throughout this unit. Introduce the learning target: "I can actively listen to my group members during discussions." Remind students of the listening criteria they used in Module 1, and then display the **Listening Criteria rubric**. Read through each of the four criteria. Invite several students to restate each criterion in their own words. Ask students if they would like to add other criterion; write these on the blank lines provided.
- Distribute the Meg Lowman Note-catcher and display it on a document camera or as a chart on the board.
- Tell students that they will hear the first few pages read aloud. They should follow along and look/listen for ideas that answer two questions:
 - * "What does Meg Lowman study in the rainforests?"
 - * "What were Meg Lowman's interests as a child?"
- Read pages 2–4 aloud, beginning with "Meg Lowman climbs trees" and ending with the sentence, "Harriet Tubman ... one of the first women field naturalists in this country."
- Remind students of the Listening Criteria rubric. Ask students to talk with their group members about what they heard/saw in the text that answers the question: "What does Meg Lowman study in the rainforests?" Ask several students to share their ideas aloud, listening for suggestions like: "plants and insects; herbivory; which insects eat which leaves," etc. Record students' ideas on the Meg Lowman Note-catcher, paraphrasing and/or using single words, in the first box under "Main Ideas," and ask students to record ideas onto their own Note-catchers.
- Then ask students to work with their group members to look back in their books and find the specific details or evidence that supports each main idea. After a few minutes, ask students to share out. Listen for details such as: "The book says she studied plants and insects, because she wants to know about the relationships between plants and insects in the canopy; herbivory is leaf and plant eating by insects and other animals; studying which insects eat which leaves helps Meg Lowman understand how their feeding affects overall growth of the rainforest," etc. Record students' ideas in the first box under "Key Details from the Text," and ask students to record this information onto their own Note-catchers.

Meeting Students' Needs

- Consider allowing students to draw their observations, ideas, or notes when appropriate. This allows all students to participate in a meaningful way.
- Consider providing extra time for tasks and answering questions in class discussions. Some students need more time to process and translate information.



Work Time (continued)	Meeting Students' Needs
• Repeat this process for the second question: "What were Meg Lowman's interests as a child?" Give students time to think, discuss in their groups, and then share out whole class. Listen for students to share ideas such as:	
* Main Idea: fascinated with nature since 6 years old.	
* Supporting Details: "As a child, collected birds' nests, rocks, shells, insects and butterflies, and buds; won second place in science fair; bedroom full of outdoor treasures."	
* Main Idea: Intrigued by two women.	
* Supporting Details: "Harriet Tubman was a pioneer field naturalist; Rachel Carlson was an environmentalist and created the Web of Life."	
• Assign one of the seven sections of text (listed below) to each group. Ask group members to read the passage silently, and then briefly discuss and record any new Main Ideas/Supporting Details on their Note-catchers.	
* Section 1: All of paragraph 1.	
* Section 2: Paragraph 2, sentences 1-3 ("During the past ten years" through "Meg wants to know about the relationship")	
* Section 3: Paragraph 2, sentences 4-7 ("She is especially interested in" through "Meg's Lab")	
* Section 4: Paragraph 3, sentences 1-3 ("Meg cannot remember" through "As a child")	
* Section 5: Paragraph 3, sentences 3-6 ("Her bedroom was stuffed" through "She made a wildflower collection")	
* Section 6: Paragraph 4, sentences 1-3 ("When Meg was ten" through "Meg read that she often")	
* Section 7: Paragraph 4, sentences 4-7 ("But it was not only moss" through "Harriet Tubman, says Meg, was a pioneer")	
• As students read, circulate to support as needed.	
After students have completed reading their sections and taking notes, invite each group to share out very briefly what they added to their Note-catchers. (Record students' ideas on the Meg Lowman Note-catcher.)	



Introduction to *The Most Beautiful Roof in the World*: Why does Meg Lowman Research the Rainforest? (Pages 2–4)

Work Time (continued)	Meeting Students' Needs
• Say to students: "Now that we have read and recorded information about what Meg Lowman studies and what her interests were as a child, what <i>inferences</i> can we make about why Meg Lowman conducts research in the rainforests? What details from the text support those <i>inferences</i> ?" Allow students a moment to think about this question and return to their Notecatchers to review ideas and supporting text. Then ask group members to discuss their ideas. As students are talking, listen in on conversations for ideas such as: "I think she researches the rainforest she's interested in the relationship between plants and insects in the canopy and how insect feeding affects the growth of rainforests; she has been interested in nature since she was 6 years old; she had many collections of items from nature; she was inspired by Harriet Tubman and Rachel Carlson, pioneers in studying nature," etc. Do not have students share whole group; they revisit this question during the debrief.	



Why does Meg Lowman Research the Rainforest? (Pages 2-4)

Work Time (continued)

C. Key Vocabulary to Deepen Understanding (15 minutes)

- Introduce the learning target: "I can determine the meaning of new words in *The Most Beautiful Roof in the World*." Ask a few students to share out what strategies they have learned to help them determine the meaning of unfamiliar words (e.g., use context clues, and break the word into familiar parts).
- Remind students of the glossary they began during Unit 1. During Unit 2, they will work with this in much more depth. They will focus on two different types of words, scientific (words about science) and academic (other words that help them understand concepts). Knowing which words are which types helps them to determine the importance of vocabulary and therefore helps them to understand texts better.
- Point out the glossary at the back of the book and ask students what types of words are listed. Invite a student to share his/her ideas, listening for: "about science; about the rainforest; scientific;" etc.
- Tell students: "For homework every night, you will choose what you think are the most important academic and scientific vocabulary from the lesson and add them to your glossaries."
- Say: "Now we are going to look back and work with some of the vocabulary from the readings today (interview excerpts and book.)"
- Introduce the Word Sort activity by asking students to turn to a new page in their journals, and split it into two columns. At the top of the left-hand column, ask students to write: Scientific Words and in the right-hand column, Academic Words.
- Display the following words from the text (without the definitions/synonyms):
 - * canopy, base, samples, relationships, herbivory, conservation, treetops, biodiversity, environmentalist, intrigued, fascinated
- Tell students that they may not know what all of these words mean. That is fine for now. Give students 5 minutes in their groups to discuss:
 - * Which words are "science" words?
 - * Which words are "academic" words?
- Remind students that during their discussions with group members, they will need to justify why they believe a certain word should go in a certain category (e.g., "Canopy belongs in scientific words, because the canopy describes the tops of trees in the rainforest and the rainforest is the topic they are studying in science").

Meeting Students' Needs

- All students developing academic language will benefit from direct instruction of academic vocabulary.
- Consider providing visuals for all identified vocabulary words and allowing students to categorize the pictures.



Work Time (continued)	Meeting Students' Needs
• Circulate to listen in and ask probing questions: "Why do you think that word belongs in that category?"	
• After students have categorized the vocabulary, focus them on the list of words. Remind them that it is fine if they do not know the meaning of every single word: The point is to start recognizing the two categories of words.	
• Ask several students to share out the meaning of each word. As students share out, listen for:	
* gadgets: tools; equipment (scientific)	
* eureka: aha! discovery; understanding (academic)	
* canopy: tops of the trees in rainforests (scientific)	
* base: bottoms of trees in rainforests (scientific)	
* samples: pieces; examples (scientific)	
* relationships: how things work together; how they depend on each other (academic)	
* herbivory: leaf and plant eating by insects and other animals (scientific)	
* conservation: preservation of a species of plant or animal (scientific)	
* treetops: canopy; tops of trees (scientific)	
* biodiversity: all the living things on earth (scientific)	
* environmentalist: someone who cares about/researches/preserves nature (scientific)	
* intrigued: curious; interested (academic)	
* fascinated: mesmerized; completely focused on; intrigued (academic)	
• Once all vocabulary has been defined, give groups 1 minute to discuss whether they now think a word belongs in the other category than where they had placed it.	
• Invite several students to share out words they thought were difficult to categorize and how they worked with their group members to determine in which category to place the word.	
Note: Be sure students know that they do not need to write down all these definitions at this point; they will choose a few words to focus on for their homework.	



Closing and Assessment	Meeting Students' Needs
 A. Debrief and Review Learning Targets (5 minutes) Ask: "What have we learned about Meg Lowman as a scientist?" Remind students to think about their group discussion about what they think motivates Dr. Lowman to study the rainforest. Invite students to share out ideas about what they learned about Meg Lowman. Add these ideas to the L column of the KWL anchor chart. Students should record these ideas in the L column of their journal KWL also. Read the learning target: "I can actively listen to my group members during discussions" and display the Listening Criteria rubric. Ask students to use the Thumb-O-Meter protocol as each criterion is read aloud to show how they did with each criterion during the book read-aloud and their group discussions. 	• For students needing additional supports producing language, consider offering a sentence frame, sentence starter, or cloze sentence to provide the structure required (e.g. "I learned that Meg Lowman").
Homework	Meeting Students' Needs
 Reread pages 2–4 of <i>The Most Beautiful Roof in the World</i> to someone (or yourself) at home. Be prepared to share something else you learned about Meg Lowman. Choose three academic and two scientific vocabulary words to add to your glossaries. Choose from this list: features, determine, inferences, gadgets, biodiversity, eureka, samples, relationships, herbivory, conservation, canopy, base, treetops, environmentalist, intrigued, fascinated. Note: Collect specimens from nature for the preserving activity in the next lesson (flowers, leaves, plant parts, etc.). (See Teaching Notes in Lesson 2.) 	 For students who may have difficulty determining the most important words to add to their glossaries, consider prioritizing the following words: features, determine, inferences (academic); biodiversity, canopy (scientific). Audio recordings of text can aid students in comprehension. Students can pause and replay
Review pages 7–8 of The Most Beautiful Roof in the World in order to become familiar with Meg Lowman's preserving process. Gather newspaper for pressing specimens, boxes to represent "low-temperature ovens," cardboard, glue, and acid-free (or blank) paper for students to paste specimens on.	Students can pause and replay confusing portions while they follow along with the text.



Grade 5: Module 2A: Unit 2: Lesson 1 Supporting Materials





Meg Lowman Interview Questions and Answers

A. Why spend time in trees?

Almost 50 percent of life on earth is estimated to live in tree canopies, yet this was an unexplored region until about 25 years ago. Much of my work has involved solving the challenge of just getting into the treetops: inventing gadgets, refining hot air balloon design, creating canopy walkways, working from cherry pickers and construction cranes. Once up there, I discovered that insects eat four times more leaf material than we imagined.

B. Is that important?

Lots of things stress forests. And with forests becoming warmer, drier, and more fragmented, insect outbreaks are predictably one of the first responses to climate change.

C. What was your first science project/experience as a child?

In fifth grade, I won second prize in the N.Y. State science fair, surrounded by boys. I was so shy that I did not even dare speak, due to the gender disparity, but it also made me determined to pursue what I loved.

D. What fascinates you the most about canopy ecology?

The amazing "eureka" element. Until recently, when a few of us climbed into the canopy, no human being knew that half of the biodiversity on our terrestrial earth lived in the treetops. For centuries, foresters had assessed forests by looking at the very bottom of the tree. It is almost as if we had been trying to gauge the health of people by just looking at someone's big toe but ignoring the rest. It is also humbling to realize that a kid can come from a small, underserved town (as I did) and make a cool discovery in science, because there is so much left that remains unknown.

Source:

Questions 1 and 2: "Interview: Margaret Lowman" by Marian Smith Holmes. Smithsonian (December, 2006).

Questions 3 and 4: "24 Questions with NRC Director Dr. Meg Lowman" Copyright © 2012 Greater Raleigh Convention and Visitors Bureau. Reprinted by permission. http://blog.visitraleigh.com/



Meg Lowman, Rainforest Scientist KWL Anchor Chart

K W I.	KNOW	WANT	LEARNED
	K	W	L



Listening Criteria Rubric

I focused my attention on what the speaker/reader was saying.

I listened for main ideas.

I took notes about important ideas and details.

I waited until after the speaker was finished before asking questions or making comments.



Meg Lowman Note-catcher

	Main Ideas (paraphrase or list)	Supporting Details for the Text
What does Meg		
Lowman study		
in the rainforests?		
rumorests.		
What were Meg		
Lowman's		
interests as a child?		
cima:		