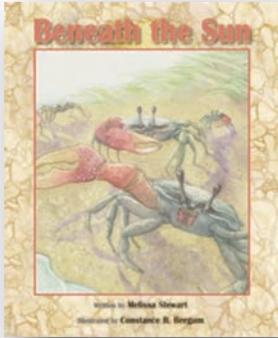


TEACHER'S GUIDE



Beneath the Sun

Written by Melissa Stewart • Illustrated by Constance R. Bergum

ISBN: 978-1-56145-733-5 • HC • \$16.95

Ages 4–8 • Nonfiction • Nature

ABOUT THE BOOK

Using clear, simple language, *Beneath the Sun* offers young readers a lyrical look at the surprising ways animals living in fields, deserts, wetlands, and seashores endure the hottest days of the year. Some creatures seek shade or rest underground, but others stay active. Jackrabbits lose heat through their enormous ears, and herring gulls pant to stay cool. A fiddler crab's shell lightens to reflect the sun's rays, and spittle bugs build a foamy home to stay moist and cool.

THEMES

- Habitats
- Weather
- Animal adaptations
- Heat energy
- Light energy
- Animal groups (mammals, reptiles, amphibians, insects)
- Diversity of plants and animals

SKILLS REINFORCED

- Observation
- Description
- Compare and contrast
- Sorting and sequencing
- Size and scale

BEFORE YOU READ

Grades K–1

- After looking at the cover of the book and reading the title, ask students what they think *Beneath the Sun* will be about. Write their responses on chart paper. **CCSS ELA RIT #1 & 2**
- Provide a list of vocabulary words and discuss their meanings. **CCSS ELA RIT #4**
- Encourage students to list reasons why the sun is important. **NGSS PE K-PS3-1 & K-LS1-1**
- Ask students what they think wild animals do on hot days. Have them consider a rabbit, an eagle, and a salamander. **NGSS PE 1-LS1-1**
- Assign each student one of the animals mentioned in the book.

MEETING THE STANDARDS

The activities in this guide directly address a variety of standards across the curriculum. Following each activity, you'll find an abbreviation for the standard(s) it supports. For a complete list of the Common Core Math and English Language Arts Standards, Next Generation Science Standards and Fine Arts Standards addressed, please see page 5.

Grades 2–3

- Ask students to predict the main idea of *Beneath the Sun*. Write their responses on chart paper. **CCSS ELA RIT #2**
- Have students discuss the following questions in small groups. Before reading the book, compile the groups' answers on chart paper. **NGSS PE 2-LS4-1 & 3-LS4-3**
 1. What is a habitat?
 2. What kinds of plants live in a field, a desert, a wetland, and at the seashore?
 3. What kinds of animals live in each environment?
 4. How does the sun help plants and animals? How can it harm them?
- Provide a list of vocabulary words. Encourage students to buddy up and work together as they look up the words in a dictionary and write definitions. **CCSS ELA RIT #4**

AS YOU READ

Grades K–1

- Ask students to raise a hand when you mention the animal you assigned them. They should be ready to tell the class how that animal survives on hot, sunny days. **CCSS ELA SL #2**
- Ask students to think about the main idea of the book. **CCSS ELA RIT #2**

Grades 2–3

- Ask students to think about the main idea of the book. Do they hear details that can support that main idea? They may want to make notes on a piece of paper. **CCSS ELA RIT #2**
- Students should also think about the ideas you recorded on chart paper. Are there things they would like to change or add? They may want to make notes on a piece of paper. **NGSS PE 2-LS4-1 & 3-LS4-3**

AFTER YOU READ

Grades K–1

- Ask students to identify the main idea of *Beneath the Sun*. Work with them to find details that support that idea. List them on chart paper. **CCSS ELA RIT #1 & 2**
- Have students draw a picture showing what their assigned animal does when the sun beats down. Ask them to explain their pictures to the rest of the class. **NGSS PE 1-LS1-1**

Grades 2–3

- As a class or in groups, have students add new information to or erase incorrect information from

the ideas you compiled on chart paper before reading the book. **NGSS PE 2-LS4-1 & 3-LS4-3**

- Working in groups of three or four, students should compare the habitats described in the book. Ask them to consider the plants, animals, and water availability in each habitat. Then have students create Venn diagrams to highlight the similarities and differences among the four habitats. **NGSS PE 2-LS4-1**

CLASSROOM ACTIVITIES

SCIENCE

Grades K–1

- On hot days, some animals lie in the shade. To find out why, take the class outdoors. Have half the students spend ten minutes sitting quietly in the shade. The rest of the students should sit in the sun.
 - Both groups should record what they see, hear, feel, and smell. Then have the students switch. Students who were in the shade should move to a sunny spot, and vice versa.
 - When you go back indoors, review the class's observations and record them on chart paper. Ask the children why they think some animals prefer to rest in the shade on hot days. **NGSS PE K-PS3-1**
- Divide the class into groups and have each team line the inside of a bowl with aluminum foil, folding down any parts that stick over the edge. Give each group a thin stick (such as a chopstick) a little shorter than the bowl's width.
 - Ask students to slide a marshmallow onto the stick and place it in the bowl. Next, ask students to cover the bowl with plastic wrap. They should use a rubber band to hold it in place.
 - Encourage each group to choose a sunny spot for the bowl. The children should check the setup every 15 minutes and respond to the following questions:
 - How long does it take for the marshmallow to feel warm and soft?
 - Do different groups get different results? Can students figure out why?
 - Can they think of a way to make their marshmallow "cook" more quickly or slowly? **NGSS PE K-PS3-1 & K-PS3-2**

Grades 2–3

Divide the class in half and have each team create a Book Fact Scavenger Hunt for the other team. Students

should look through *Beneath the Sun* and other books about the sun or how the sun affects animals living in a particular habitat. (See Related Reading at the end of this guide for suggestions.)

Each team should choose a few interesting facts and turn them into questions. Here are some examples:
—According to *Beneath the Sun*, how does a turkey vulture cool its body?

—According to *Here Is the Southwestern Desert* by Madeleine Dunphy (Web of Life Books, 2007), how many kinds of deserts are there in North America?

Type each team's questions, print them out, and cut them so each question is on a separate strip of paper. Place the questions in two bags or boxes, so the students on the opposite team can pick one question at a time and compete to see which team can answer the most questions. **CCSS ELA RIT #9, Writing #7 & 8, NGSS PE 2-LS4-1 & 3-LS4-3**

MATH

Grades K–1

- Using the information below, students can create a bar graph that compares animal sizes. **CCSS Math MD A.1, A.2, B.3**
Caterpillar: 1.5 in.
Horned lizard: 4 in.
Crayfish: 1.5 in.
Jackrabbit: 24 in.
Earthworm: 4 in.
Ringtail: 30 in.
Fiddler crab: 2 in.
Woodchuck: 24 in.
Golden eagle in flight: 80 in.
Siren salamander: 16 in.
- Help students identify each animal as a mammal, reptile, amphibian, insect, or other. Which group of animals tends to be the largest? Which tends to be the smallest? Does size affect an animal's behavior on hot, sunny days?
- Invite students to choose three animals from the list above and draw them to scale. They can also color the animals using the art in *Beneath the Sun* as a guide. **CCSS Math MD A.2**

Grades 2–3

Give each student a copy of the Math Activity Sheet at the end of this guide. Ask students to illustrate and then solve each problem. **CCSS Math OA A.1 & A.2**

Answers: 1) 6 worms; 2) 72 miles; 3) Yes, it has one day to spare; 4) 11 females laid three eggs, 89 eggs

LANGUAGE ARTS

Grades K–1

- Have students create as many words as possible with the letters in the title: *Beneath the Sun*. Ask the children to sort the words by number of letters in each word or by word families, such as at, eat, ant, and us (suggestions below). They can also alphabetize the words. **CCSS ELA FS #2**
First round: at, hat, sat, bat, bats
Second round: eat, seat, neat, heat, beat, beats
Third round: ant, ants
Fourth round: us, bus
- Have students choose one of the animals in *Beneath the Sun* and fill in the blanks in the following sentences and then take turns reading their statements to the class.
I live in a _____ (habitat).
I am (color) _____ and (color) _____.
When it is hot and sunny, I _____ (movement)
Who am I? _____
Can the class guess which animal the student has selected? **CCSS ELA FS #3**

Grades 2–3

- Have students research one of the four habitats mentioned in *Beneath the Sun*, including information about the diversity of plant and animal life and whether the habitat is increasing or decreasing in North America. Students should also find out if their assigned habitat exists in your state. Encourage them to include any fun facts they discover.
Use a digital camera with a video setting to film the students as they present reports orally. Then work with the class to create short videos using Adobe Premiere Elements or another inexpensive video editing software program. See examples at melissa-stewart.com/video/index.html.
The videos can be posted on the school website, a classroom blog, or TeacherTube. Author Melissa Stewart would also be happy to post them. You can contact her at mas@melissa-stewart.com. **CCSS ELA RIT #9, Writing #6 and 7, SL #2, 3 & 5**
- Ask students to read *When Rain Falls* or *Under the Snow* by Melissa Stewart. Then have them make text-to-text connections between *Beneath the Sun* and one of the other books mentioned above. After discussing ways the texts are similar, ask them to write a paragraph about their connections. Each paragraph should include two specific examples from the text. **CCSS ELA RIT #9, Writing #2**

All Grades

- Download a copy of the Readers Theater script written to accompany *Beneath the Sun* from the author's website <http://www.melissa-stewart.com> and lead the class in performing it. **CCSS ELA RIT #4**
- Have students write letters to or draw pictures for author Melissa Stewart, telling or showing her what they liked best about *Beneath the Sun*. Send the letters to Author Fan Mail, Peachtree Publishers, 1700 Chattahoochee Ave., Atlanta, GA, 30318-2112. If you include an e-mail address, Melissa will send an e-mail to your class. **CCSS ELA Writing #1**
- Have students take turns reading pages from *Fun Dog, Sun Dog* by Deborah Heiligman (Marshall Cavendish, 2010). Discuss the book's language and why the text seems to roll right off the reader's tongue. Then ask the students to write their own poems about how the sun's heat and light affect us. **CCSS ELA RL #4, Writing #8**
- Divide the class into teams of three or four for a game of Sun Boggle. Choose one of the animals discussed in *Beneath the Sun* and give students three minutes to think of as many words as possible from the letters in the animal name.

One member of each team should record the answers. As each group reads its words, other teams cross off any repeats. The team with the most original words wins. Repeat the game with other animal names, so that each student has a chance to be the recorder. **CCSS ELA FS #3**

ART

All Grades

- Have students make hats representing one of the animals in *Beneath the Sun*. They can wear their hats while performing the Readers Theater script created to accompany the book.
- Ask students to create an imaginary animal that would have no trouble surviving on the hottest days of the year. They should think about its size, color, type of body covering, special body parts, and where it lives. **NGSS PE 1-LS1-1 & 3-LS4-3**
- Have students look carefully at the background art on each two-page spread of *Beneath the Sun*. As a class, list the questions the book's illustrator, Constance Bergum, had to ask herself about each spread before beginning her paintings.

Possible questions: What plants grow in the habitat? What time of day is it? What time of year is it? What are the animals in each illustration doing?

Next, list various ways the illustrator might have

done research to make the habitats as realistic as possible. Using this list of questions, have students research and create a mural that depicts a sunny/rainy/snowy natural habitat in your community.

CCSS ELA RIT #7

GEOGRAPHY

Grades 2–3

As a class, look at a map of your town or city. See how many of the habitats mentioned in *Beneath the Sun* exist in your community. Make a list of other habitats on Earth (forest, tundra, etc.). Discuss why some natural habitats do not occur in your community or your state.

RELATED READING

Asch, Frank. *The Sun Is My Favorite Star*. New York, NY: Sandpiper, 2008.

Branley, Franklyn M. *The Sun: Our Nearest Star*. New York, NY: HarperCollins, 2002.

Dunphy, Madeleine. *Here Is the Southwestern Desert*. Berkeley, CA: Web of Life Books, 2007.

Fredericks, Anthony D. *In One Tidepool: Crabs, Snails, and Salty Tails*. Nevada City, CA: Dawn Publications, 2002.

Heiligman, Deborah. *Fun Dog, Sun Dog*. Tarrytown, NY: Marshall Cavendish, 2010.

REVIEWS

“An engaging peek into how various creatures cope with the hottest of days...

A well-designed, well-written book that offers readers a greater awareness of and sense of relationship to the other inhabitants in their environments.”

— *Kirkus Reviews*

“The short text tells just enough about each animal to make its story interesting, while the handsome watercolor paintings illustrate each species and its habitat effectively.

A quiet, informative read-aloud choice for the dog days of summer.” — *Booklist*

THE ACTIVITIES IN THIS GUIDE DIRECTLY ADDRESS THE FOLLOWING STANDARDS:

COMMON CORE FOR ENGLISH LANGUAGE ARTS STANDARDS

- Reading Informational Text #1 and 2: Identifying Key Ideas and Details
- Reading Informational Text #4: Craft and Structure
- Reading Informational Text #7 and 9: Integration of Knowledge and Ideas
- Reading Literature #4: Craft and Structure
- Writing #2: Text Types and Purposes
- Writing #4 and 6: Production and Distribution of Writing
- Writing #7 and 8: Research to Build and Present Knowledge
- Foundation Skills: Phonological Awareness #2
- Foundation Skills: Phonics and Word Recognition #3
- Speaking and Listening: Comprehension and Collaboration #2 and 3
- Speaking and Listening: Presentation of Knowledge and Ideas #5

COMMON CORE FOR MATH STANDARDS

- Operations & Algebraic Thinking A.1, A.2
- Measurements & Data A.1, A.2, B.3

NEXT GENERATION SCIENCE STANDARDS PERFORMANCE EXPECTATIONS

- K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
- K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.
- K-PS3-2. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.
- 1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

NATIONAL EDUCATION STANDARD FOR FINE ARTS: THEATER (K-4):

- NA-T.K-4.2. Acting by Assuming Roles & Interacting in Improvisation



ABOUT THE AUTHOR

Melissa Stewart is the award-winning author of more than 150 books for children. She has a B.S. in biology from Union College in Schenectady, NY, and a M.A. in science journalism from New York University. Melissa speaks frequently at conferences for educators and serves on the Society of Children's Book Writers and Illustrators' board of advisors. Melissa has taught fiction and nonfiction writing classes for children and adults, and is available for school visits.

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ABOUT THE ILLUSTRATOR

Constance R. Bergum has illustrated a number of children's books, including *When Rain Falls*, *Under the Snow*, *Beneath the Sun* and *Daniel and His Walking Stick*. She holds an MFA in illustration from Marywood University and lives in Montana.

Peachtree Teacher's Guide for
BENEATH THE SUN
prepared by Melissa Stewart

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Beneath the Sun
Math Activity Sheet
Fun in the Sun

Name: _____ **Date:** _____

1. Three earthworms were resting in the soil to the left of the big rock. Two earthworms were resting in the soil to the right of the rock. One more earthworm was under the rock. How many worms were there?

2. When a black-tailed rabbit spots a coyote, it dashes away at top speed. If the rabbit runs 36 miles per hour, how far can it run in two hours?

3. If a tadpole takes eleven days to grow its legs, five days to lose its legs, and another three days to become a froglet that can survive on land, can it grow up in a pond that dries up twenty days after it hatches?

4. Herring gulls usually nest in large colonies. In a colony with fifty nests, twenty two females laid one egg and seventeen females laid two eggs. How many females laid three eggs? How many eggs were there in all?