

BUGS DON'T HUG

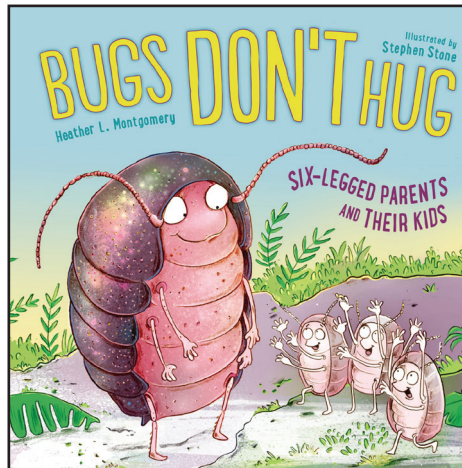
SIX-LEGGED PARENTS AND THEIR KIDS

A TEACHER'S GUIDE

DEVELOPED BY HEATHER L. MONTGOMERY

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Heather L. Montgomery
Illustrated by Stephen Stone
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About the Book

Daddy beetles who do diaper duty? Mommy bees who snuggle their little ones? Who knew that some insects “parent” their young? Meet the mamas and papas of the insect world in this fresh and funny nonfiction look at how bugs are like us.

“A thoroughly amusing way to introduce kids to bug behavior.”
—*Kirkus Reviews*



About the Author

Heather L. Montgomery is wild about animals. She loves creeping, crawling critters—but she didn’t always. As a child she dreaded spiders more than anything. Thankfully, her mother helped her overcome that fear. Since then, Heather has earned a B.S. in biology and a M.S. in environmental education and has written over a dozen books about weird, wacky animals. When she is not teaching or writing, you can find her knee-deep in a creek, climbing a tree, or catching insects.

www.HeatherLMontgomery.com

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The Read Aloud

NGSS LS1-1, LS1-2, LS2-1

CCSS RIT 1, 2, 6, 7

Introduction

Introduce the students to *Bugs Don't Hug* by examining the front and back covers plus the title. Elicit their questions and thoughts about the subject of the book. Then share the subtitle. Does that change their thoughts about the subject?

Primary and Secondary Texts

Each insect example in the book is presented via primary text (large font at the top of the page) and secondary text (smaller font at bottom of the page). During the first read-aloud, try reading only the primary text. This speeds up the reading and leaves the listeners with lots of questions. Those questions are a great opportunity to dive back into the secondary text in search of answers.

Note: the book also contains two other types of text—speech bubbles and back matter (great for diving in even deeper).

Paired Reading

The primary/secondary text design can also be used for paired reading. The primary text (large font at the top of the page) is ideal for struggling readers paired with stronger readers. The stronger reader should read the speech bubbles and the secondary text (smaller font at bottom of the page).

Note: alert readers that the font size on the first and last page is different.

Fact or Fiction

Before reading, ask students if they think the book is fiction or nonfiction. Why? Preview some of the images with the students.

Read aloud (reading both primary and secondary texts), stopping after the factual information about the ambrosia beetle on page 10.

Ask students if they think the book is fiction or nonfiction. Why?

Encourage the students to compare and contrast the two types of illustrations (cartoon and realistic) presented for each type of insect. Did the illustration style impact their ideas about whether the book was fiction or nonfiction?

Making Predictions

After page 10, the factual information about the ambrosia beetle, pause and ask students if they have noticed any patterns in the text.

If they need prompting, reread the primary texts about crickets and ambrosia beetles.

Discuss the repeated use of the idea "Bugs don't..." and "Bugs do..."

Read page 11 ("Bugs don't play peekaboo.").

Ask students to predict the text on page 12.

Instruct them to pay attention to see if the pattern changes as you read further. They may notice a change starting on page 20 with the information about burying beetles.

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Opinion Pieces

NGSS LS1-1, LS1-2, LS2-1

CCSS RIT 6, 8; Writing 1, 7, 8, 9

Looking For Support

After reading the book, reread pages 2–3. Point to the statement: “Bugs aren’t like us.” Ask the students if it is a fact or opinion. Reread the book’s final page: “Bugs aren’t are like us.” What support did the author provide for changing that statement? Use a T-chart to record reasons listed in the book that support each of those opinions. Allow students to provide their own reasons for either column.

Writing

Give students time to write and illustrate their own opinion pieces. Ideas for topic sentences:

- Bugs aren’t like us.
- Bugs are like us.
- Bugs don’t hug.
- Bugs do hug.

Or they may want to select a different type of animal (dogs, cats, snakes, etc.) and conduct their own research to support their opinions.

- _____ aren’t like us.
- _____ are like us.

Examples

Bugs aren’t like us

Bugs don’t tie shoes.

Bugs don’t cook scrambled eggs.

Bugs don’t wear diapers.

Bugs are like us

Some insect parents take care of their young.

An Arctic bumblebee mother keeps her baby warm.

Bess beetle parents tuck their young in.

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Exaggeration Exercises

Exaggeration is fun. Comparing and contrasting animals to humans is fun. As author Heather L. Montgomery began this book, she started with an insect behavior that was similar to a human behavior and then exaggerated it. For example, she read that adult ambrosia beetles kick poop out of their tunnels. She thought that was like humans taking out the trash. She exaggerated the action with the idea of bug parents cleaning up diapers.

As a class, brainstorm other animal actions that are similar to human actions:

- Cats wipe their face with their paws.
- Elephant young hold their mother's tail to keep from getting lost.
- Squirrels chatter when a dog comes too close.

Allow students to conduct research as necessary. For advanced learners, either limit the type of animal (i.e. only reptiles) or limit to parent/young interactions.

As a class, exaggerate a few examples:

- A cat using a cloth napkin to dab food from its chin.
- An elephant calf holding its mother's hand to cross the road.
- A squirrel putting up a "Do not enter" sign on the trunk of its tree.

Write a Book!

NGSS LS1-1

CCSS RIT 8; Writing 2, 4, 5, 7, 9

Research and Writing

As a class, select one animal, then research and draft text using the pattern modeled in *Bugs Don't Hug*: Primary Text A, Dialogue, Primary Text B, Secondary Text, and Back Matter.

Example:

Primary Text A ("Animals don't . . .")

"Before crossing the road, elephants don't hold hands."

Dialogue (cute or humorous speech bubble)

"Wait for me!"

Primary Text B ("But animals do . . .")

"But elephant babies do hang onto their mommy's tail."

Secondary Text (factual information)

"A mother elephant keeps a close eye on her little one when crossing a river, a log, or a road. With her trunk she guides him to safe footing and gives him a boost or nudges him in the right direction."

Back Matter (additional specific information)

"Out on the African savannah, an elephant mother takes care of her calf for the first sixteen years of its life. When it's little, she nurses it with 20 pints of milk a day—that's two and a half gallons (9.5 liters)! She plays with it. Uses her trunk to sprinkle it with water for a bath. And when it's time to move, she lets it hang onto her tail."

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Have each student select one animal and draft text. Challenge the class to develop a title, sequence their animals, revise, and create a class book.

Advanced Writers

Challenge advanced writers to match their drafts to the book text as closely as possible in tone, sentence structure, use of singulars and plurals, etc.

Example:

Primary Text First Draft

"An elephant calf does not hold its mommy's hand when it crosses the road."

Primary Text Final Draft

"Before crossing the road, elephants don't hold hands."

- The book uses the generic "bugs" instead of referring specifically to parents or young.
- Specialized nouns such as "calf" only appear in the back matter.
- Prepositional phrases are used at the beginning of the sentence.

Write a Book!

NGSS LS1-1

CCSS RIT 8; Writing 2, 4, 5, 7, 9

Extension

Reverse the concept. Have students rewrite and illustrate a book using human behaviors that are similar to insect behaviors. For example: people don't fly, carry pollen on our legs, walk up the wall, etc., but we do use hang gliders, carry food in a backpack, rock climb, etc.

Bonus Challenge

Bugs Don't Hug was written in a through-the-day structure. Actions happen from breakfast to bedtime. Can the students incorporate the through-the-day structure as they write their book?

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Six-Legged Science

After Reading (NGSS LS1-1, LS1-2, LS2-1; CCSS SL 1, 2, 5; RIT 1, 2)

Who's Who? (CCSS RIT 1, 4, 7, 9; SL 1, 2, 4)

A Bug's Life (NGSS LS1-1, LS1-2, LS2-1; CCSS RIT 6, 7)

Bug Hunting (NGSS LS1-1, LS2-1, CCSS Writing 1, 2, 4, 7)

After Reading

Ask students to list ways that insect parents help their young survive. Have them draw and label a picture of one behavior that surprised them. Challenge advanced learners to group the behavioral adaptations (i.e. all those that provide food, those that provide shelter, those that provide both).

Who's Who?

This book is about insects. Not spiders, not centipedes, not roly polies. Technically, it is not about "bugs." Only one order of insects are "true bugs." This group includes stink bugs, giant water bugs, and parental shield bugs. Pair the students and have them discuss why the author might have chosen to use the term "bugs." In this lesson, students observe characteristics in order to develop an understanding of animal classification systems.

Beetles

- Ask students to observe the realistic illustrations of the burying beetle and the bess beetle.
- Have the pairs use a Venn diagram to compare and contrast the adult insects. They should look for characteristics such as number of legs, presence of antennae, etc.
- Have each pair share with another pair.
- Discuss the characteristics common to beetles (hard shell, three body parts, large third segment). Introduce the terms *head*, *thorax*, and *abdomen*. Tell students that although they may not notice them in the illustration, beetles have wings.

Beyond Beetles

- Ask student pairs to compare the realistic illustration of the short-tailed cricket to that of the beetle. What characteristics does the adult cricket share with the beetle?
- Are there any characteristics also in common with the bee?
- Identify the common characteristics of adult insects: three body parts, six legs, antennae, and wings.

Note: there are many exceptions, including the pill roach.

Sing Along

Teach the basic insect body parts with a rousing round of "Head, Thorax, Abdomen," sung to the tune of "Head, Shoulders, Knees and Toes."

Head, thorax, abdomen, abdomen (point to your head, put your hands on your trunk, and pat your hips to the beat).

Head, thorax, abdomen, abdomen (point to your head, put your hands on your trunk, and pat your hips to the beat).

And eyes and mouth, antennae too (point to eyes, point to mouth, make antennae out of your fingers).

Six legs and there's an insect for you (use three fingers of each hand to make legs beside your trunk and shake your body)!

Video examples can be found online.

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Bug Hunting (NGSS LS1-1, LS2-1, CCSS Writing 1, 2, 4, 7)

Additional information

- An insect's head may have two compound eyes (made of many lenses designed to spot motion) as well as two to three simple eyes (used for detecting light).
- The middle segment, called the thorax, is where the six legs and four wings attach.
- The abdomen is in the rear and contains small holes for breathing called spiracles.
- Beetles have four wings: the two forewings which act as a hard shell and two delicate hindwings folded under the forewings (and used to fly).

Extension

Advanced learners can compare and contrast live insect examples and/or insects with non-insects such as slugs, spiders, or scorpions. They may also want to research "true bugs" and learn about the main insect orders. A key to ten insect orders can be found at http://www.backyardnature.net/in_order.html.

A Bug's Life

Explain that insects experience metamorphosis as they grow. Metamorphosis is a process that may include drastic changes in both the animal's body and behavior. There are two common types of metamorphosis: simple and complete.

Show the realistic image of the tortoise beetles. Tortoise beetles experience complete metamorphosis with four stages: egg, larva, pupa, and adult. The larva (illustrated in the book) is active and does not look

like the adult. Write the terms on the board. Have students describe differences between the larvae and adults.

Show the realistic illustration of the short-tailed crickets. Crickets experience simple metamorphosis with three stages: egg, nymph, and adult. Nymphs are active and look like tiny adults without wings. Write the terms on the board. Have the students list the characteristics shared by the nymphs and adults.

Two additional insects in the book go through simple metamorphosis. Searching the illustrations and the back matter, can the students find them?

Answer: Parental shield bug, pill roach

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Bug Hunting (NGSS LS1-1, LS2-1, CCSS Writing 1, 2, 4, 7)

Bug Hunting

To learn about bugs, direct observation is best. Take students bug collecting. Demonstrate observing the insects in their natural habitat before collecting them.

Safe bug collecting techniques

- When looking under a log or rock, roll it towards you so that the opening is away from your body. If a snake lives under the log, it will slither away from you.
- Red, yellow, and black are warning colorations— insects with those colors often sting.
- Never put your hands where your eyes can't see (under rocks, in holes, etc.).

Tools

- Clear plastic container with lid (recycled food containers work well).
- Plastic spoon or cotton swab (for tiny creatures and humans who don't want to touch).
- Magnifier/jeweler's loupe.

Observation

- Allow students time to quietly observe insects.
- Have students identify whether their insect is a juvenile (larva, pupa, or nymph) or an adult and document evidence to support their claim.
- Students should record whether or not their insect was found living on its own or in a group. They can collect evidence, conduct additional research in texts, and form an argument as to how that lifestyle helps the insect survive.

- Ask them to select one body part to sketch, label, and describe. They should include any observations about how the insect uses that part, what they think the purpose of the structure is and how it might help the insect survive.
- Return the insects to their homes.