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Author: Van Belle, Leah

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A SENSE OF THE BEAUTIFUL: LIFE CYCLES AND INSECTS

Bugs Up Close. Diane Swanson. Kids Can Press, Tonawanda, NY, 2007. 40 pp., illus. $16.95 (ISBN 9781554531387 cloth).

Face to Face with Caterpillars. Darlyne A. Murawski. National Geographic Children's Books, Washington, DC, 2007. 32 pp., illus. $16.95 (ISBN 9781426300523 cloth).

The Insect World Series. Sandra Markle. Lerner, 2007. 48 pp., illus. $27.93 each (ISBN 9780822572947 cloth).

It's A Butterfly's Life. Irene Kelly. Holiday House, New York, 2007. 32 pp., illus. $16.95 (ISBN 9780823418602 cloth).

What Lives Under the Carpet? John Woodward. Gareth Stevens, Strongsville, OH, 2007. 48 pp., illus. $27.00 (ISBN 9780836878622 cloth).

I still remember vividly my preschool and kindergarten students' reactions almost 20 years ago when I read aloud *Ladybugs and Other Insects* from the Scholastic First Discovery series (Jeunesse and Peyrols 1989). The book, still in print, has transparent overlays that reveal with each page turn the fascinating life cycle of ladybugs. The pages are filled with abundant white space, drawing the young reader to the details of the insects. This was the first science book that had my students absolutely mesmerized. They often wanted to hear works of fiction read aloud again, but this was the first time they begged to be read a science book over and over again. And even though they couldn't yet read many of the words by themselves, they poured over the illustrations during free reading time.

We looked for and carefully netted insects on our walks around the schoolyard and through the adjoining woods. Our classroom filled with terrariums fashioned into temporary insect abodes and observatories. We cowrote observations in an oversized science notebook. We wondered together about all sorts of entomological questions that, in turn, led us to read more books about insects. This single book fueled an explosive interest in insects; it tapped into the children's sense of wonder about the natural world in a way that had a profound impact on our classroom. Good books have amazing potential for connecting with children.

For most scientists and educators, Rachel Carson's famous words about nurturing a child's thirst for learning ring true and familiar: "If a child is to keep alive his inborn sense of wonder…, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in" (Carson 1965).

What is often overlooked, however, is that Carson wasn't speaking merely about helping children gain scientific understandings about biology. Carson goes on to say:

> It is not half so important to *know* as to *feel*. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil. Once the emotions have been aroused—a sense of the beautiful, the excitement of the new and the unknown, a feeling of sympathy, pity, admiration or love—then we wish for knowledge about the object of our emotional response. Once found, it has lasting meaning. (p. 42)

While scientific accuracy is critical, other things matter when evaluating children's science trade books. It was not simply a factually accurate book that inspired my students; it was a book that aroused emotion by incorporating beautiful visual elements into an innovative graphic design—all contributing to a child's scientific understanding. With the limited amount of time for reading these days, it is imperative that the books we make available to our children have all these qualities.

How do we evaluate "quality"? The National Science Teachers Association and the Children's Book Council collaborate annually to name the Outstanding Science Trade Books for K–12. The books are evaluated on the basis of three primary criteria: accuracy and readability, quality of format and illustrations, and content reflecting current scientific understanding of the topic. (The Robert F. Sibert Informational Book Award and the Orbis Pictus Award for Outstanding Nonfiction for Children each have separate criteria for evaluating books, but both committees evaluate accuracy, organization, design, and style.)

Awards such as these emphasize the need for high-quality science in nonfiction books for children. As Temple and colleagues (2006) point out in *Children's Books in Children's Hands*: "Even though informational books have a long history, they have often been relegated to second-class status. For much of its history, the genre had the reputation of being boring, best used mainly for report work, and unpleasantly difficult for children to read. In other words, applying the term 'nonfiction' to a book was like adding 'unsweetened' to chocolate—likely as not, synonymous with 'disappointment'" (p. 428).

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Elia T. Ben-Ari (1998) argues in "The Ideals and Realities of Science Books for Children" that children will find science texts more engaging if the authors convey their passion and excitement for the subject, and if the information is conveyed in a way that highlights how things are interrelated and connected. One book that does this beautifully is *Face to Face with Caterpillars,* by Darlyne A. Murawski (ages 9 to 12). Named as an Outstanding Science Trade Book for K–12, it presents the world of caterpillars with multiple layers and connections, moving beyond the traditional approach of showing just the life cycle to also include rich information about a caterpillar's habitat, diet, defenses, and behaviors. Photographs provide closeups of these tiny creatures in the stunning detail that so fascinates children.

Another book that uses illustrations not simply to support text but to create something more powerful than words alone is *It's a Butterfly's Life* (ages 4 to 8), written and illustrated by Irene Kelly. The visual elements, from the delicate drawings and watercolor paintings to the stylized font and notebook layout, immediately draw the reader into the world of the butterfly.

Bugs Up Close (ages 7 to 11), by Diane Swanson, also provides outstanding visual images of insects to accompany accurate and engaging text. The photographs by Paul Davidson bring even the smallest insect details into our view. The text provides a helpful discussion of how to distinguish insects from other small creatures; these explanations are too often missing from children's picture books that deal with entomology. *Bugs Up Close* emphasizes the forms and functions of insect anatomy using imagery to effectively illustrate points from the text.

One book that understands a child's fascination not just with "pretty" insects but also with those often maligned by society is John Woodward's *What Lives Under the Carpet?* (ages 8 to 11). The book explores insects and arachnids that can be found around the home. Arranged by location (in the carpet, under the sink, in the basement, etc.), the book combines a scrapbook layout with greatly enlarged photos, electron microscope images, and text boxes to bring into focus the tiny animals all around us. Youngsters will pour over these images, amazed at the creatures that share their homes—and even their beds.

It is rare to find an entire children's book devoted to a particular species of insect, but each volume in the Insect World series (ages 7 to 11), by Sandra Markle, does so. Books such as *Termites: Hardworking Insect Families, Luna Moths: Masters of Change,* and *Praying Mantises: Hungry Insect Heroes* provide in-depth explorations of the species' anatomy, behavior, life cycle, and habitat. The eight books in the series are filled with closeup photographs, interesting facts in text boxes, rich glossaries, reference lists, and suggested activities to inspire young entomologists. The text and visual elements of this series weave together beautifully.

Carson was right when she argued that an aesthetic and emotional response to nature can ignite a hunger for deeper scientific understanding. Shouldn't our children's science books also evoke such responses?

As Diane L. Barlow (1991) noted in "Children, Books, and Biology," trade books often provide a child's introduction to scientific concepts. Read aloud by a teacher or caregiver, or perused by the child on his or her own, trade books can play an important role in developing scientific understandings and interests. The use of trade books for science education has grown, and quality trade books can be useful tools for learning in and out of the classroom (Bamford and Kristo 2000, Galda and Cullinan 2006). This learning can be facilitated not only by a book's text but also by its illustrations, design, and graphic elements.

With a wealth of science trade books being published today, it is important to look for more than accuracy. Yes, accuracy must always be the first consideration. If a book is not accurate, it doesn't much matter how engaging the writing or visual elements are. However, accuracy is not enough; we need to consider the quality of writing and how all the elements of design motivate a child's understanding of scientific concepts. How much richer and more exciting the world of science can be when facts are presented in a book that also engages children's sense of wonder.

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LEAH VAN BELLE
Leah van Belle (e-mail: vanbelle@umich.edu) is a doctoral candidate in educational studies at the University of Michigan in Ann Arbor and adjunct associate professor of education at Madonna University, Michigan. She is a member of the Robert F. Sibert Informational Book Award committee.

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