A Guide to Science Picture Books
November is STEM Picture Book Month

By Terrence E. Young, Jr.

November is Picture Book Month. The website commemorating the month-long event is chocked full of information: calendar, activities, media promo kit, and partners (organizations and authors). In recognition of Picture Book Month, we are celebrating STEM picture books.

Results of the 2016 Bayer Making Science Make Sense® initiative Back-to-School Survey reveal that parents can do more to nurture their children’s innate interest in science by leveraging everyday science activities, such as cooking, doing the laundry, or exploring in the backyard, as science lessons for the family. Key insights include: science is the number one subject kids are interested in outside the classroom; the most popular extracurricular science activities parents provide for their kids include taking them to the museum (61%), encouraging them to read science books (54%); and watching science-oriented TV shows (53%). However, far fewer parents (39%) demonstrate the science behind everyday activities.

Dianne de Las Casas, founder of Picture Book Month, an international literacy initiative that celebrates the print picture book during the month of November each year says, "Both fiction and nonfiction picture books are great vehicles to encourage students to explore science. For example, Jane Yolen's fiction picture book series, How Do Dinosaurs...?, has a tangible connection to archaeology. Kids are truly fascinated with dinosaurs! Author and illustrator Diana Hutts Aston explores the dynamic nature of seemingly quiet rocks in A Rock is Lively. Students learn that rocks have adventures too. Colorful illustrations and informative texts contribute to the quality of science education available in picture books. For kids interested in STEM, the closest new discovery might just be in a picture book."

A picture book is defined as a book in which the illustrations are as important as the text. Picture books are essential to early literacy instruction and are widely used by early childhood teachers and caregivers in shared reading activities (Caswell & Duke, 1998). Science picture books provide informational texts either in the main text, sidebars, and/or in the end matter. Whether young children independently read or are read to, the informational texts begin the discussion process while providing rich opportunities for them to connect science to their experiences and interests.
Science picture books can be used to teach children to infer, hypothesize, question, identify, explain, and compare. By making the “invisible visible” the young child can understand the ways science content will affect their lives, future careers, and global issues. In addition, science picture books can provide relevance and context for meaningful science learning; develop visual and text literacy, and present science as an approachable, interesting discipline, and may lead to an interest in a science career!

AAAS has been reviewing children’s science books since it started publishing its Science Books lists in the early 1960s. Beginning in 2005, we have been awarding the AAAS/Subaru SB&F Prizes for Excellence in Science Books. The prizes celebrate outstanding science writing and illustration for children and young adults and are meant to encourage the writing and publishing of high-quality science books for all age group.

In celebration and support of the 2016 Picture Book Month, SB&F presents some outstanding science picture books from the past few years and a few old-time favorites. Consult the November 2012 issue of SB&F for another article on favorite picture books from the past. Check with your book jobber or the publisher for e-book availability. The three books pictured below (What is Science?, What Is a Scientist? and Scientists Ask Questions) should be a starting point to begin the process of promoting science picture books. All begin the foundation for a meaningful science experience.

Our Recommended Picture Books


The latest title in the About… series takes us to the waters of the planet to explore marine mammals. In her brief but depth-driven text, Cathryn Sill presents a variety of marine mammals and things they must do to live: eat, breathe, and survive in their ocean environment. John Sills’ paintings bring the text to life so that the readers feel they are there with the marine mammals. As with the other 16 titles in the series, the back matter includes: Afterword for each page, Glossary, and Suggestions for Further Reading (Books and Websites). This series should be in every library and many of the titles are also available in bilingual editions.


The computer programming language, Ada, was named after her...so she must have been important...and indeed she was. Mathematics was her life. It consumed her mind and play. Although for a period of time in her youth she was blind and couldn’t walk, she could think math. Her mother
recognized her passion for math and bombarded her with tough math questions, and then hired Mary Fairfax Summerville, a scientist and mathematician, as her tutor. Mary introduced Ada to Michael Faraday, Charles Wheatstone, and Charles Babbage. Babbage, age 42, recognized Ada, age 17, as a math wizard and took her under his tutelage. The two-page color illustrations are vibrant and period appropriate.

**Ada Twist, Scientist.** By Andrea Beaty. (Illus. by David Roberts.) Abrams, 2016. np. ISBN 9781419721373

“ADA MARIE! ADA MARIE! Said not a word till the day she turned three. She bounced in her crib and looked all around, observing the world but not making a sound.” Such begins the life of this female scientist of color, beginning with the scientific process of observation. Of course, as she makes her observations she begins to question. Ada is on a mission to use science to understand her world. Color illustrations make this a comfortable read-aloud for young scientists.


*An Ambush of Tigers* is fun—for children and adults. Collective nouns for animal groups are full of unfamiliar names, although ones that often make sense: a —stench of skunks, a —tower of giraffes. What makes this book especially nice is the addition of a glossary that provides the usual definitions of the words, such as stench and tower. The drawings, too, are fun, even if the animals are portrayed engaged in human activities—so not strictly accurate as natural history. This is a book that should be read aloud, but with plenty of opportunity for the audience to scrutinize the pictures.


How can a firefly find the one, among so many? Exquisite photographs and poetic text evoke a sense of mystery and magic. “Here I am. She sent a silent call. Over here. Look! I’m here. Is it possible that he will see her too?” Children who have seen fireflies are fascinated by them and often collect them in jars. For the less fortunate, this book presents the firefly mating ritual with grace and style. Scientific information about lighting bugs (fireflies) is included.

*Among a Thousand Fireflies*


The book teaches in a light-hearted mode and provides a wealth of details (cleverly disguised) in text blocks and through cartoon illustrations. Children too young to read will enjoy having it read to them. The drawings are especially intriguing. A “timeline” at the beginning of the book is very well done. The information is accurate and organized in 13 chapters plus an Index and Glossary that convey accurate science but simplified appropriately.

**Boy Were We Wrong about the Human Body!** By Kathleen V. Kudlinski. (Illus. by Debbie Tilley.) Dial, 2015. np. ISBN 9780803737921.

Debunking old (and sometimes silly) myths about the human body, this new addition to the Boy,

This is the 2015 winner in the children’s category for the AAAS/Subaru SB&F Prize for Excellence in Science Books. Celebrated author-illustrator Robin Page leads a step-by-step, question-and-answer-style journey through the world of chickens. Along the way you'll explore different breeds, discover different types of coops, and learn everything there is to know about chicken reproduction and hatching. Bright, colorful illustrations will keep the reader’s interest. The book includes bibliographical references along with More Chicken Questions.


The Alligator’s Smile and Other Poems shows how we discovered modern biology and medicine. From healing by applying leeches, to the ancient practice of acupuncture, to the discovery and study of DNA, this is the story of what we know about our bodies and how we still have lots to learn. The line and water-color illustrations are comical and will keep the reader’s focused. The journey of scientific discovery is presented in a humorous and entertaining format. This book is a perfect selection for Common Core or STEM collections. End matter includes Human Body Discovery Timeline (3500 BC to 1990 [Human Genome Project], and References for You to Explore.

In her dynamic poetic style, Jane Yolen shows how alligators hunt, keep warm, and care for their young. A colorful sidebar presents the science facts on which the poem is based. Stemple’s photographs are close-up and personal and reinforce both the content of Yolen’s poem and the scientific information. Back matter includes More Gator Facts, Glossary, and To Learn More (print and digital resources).


“Baby ducks will follow the first thing that they see….whether it’s their mother or a baby chimpanzee.” Meet a menagerie of the animal kingdom's babies! Award-winning illustrator Charles Fuge pairs unlikely baby animal friends—big, small, slimy, and furry—to show what makes our favorite stars of the natural world unique. Along with vibrant illustrations, Fuge presents silly, funny, laugh–out–loud rhymes to stir a child's fascination with animals. Learn what makes each amazing animal baby unique and what they all have in common. A great read aloud for the very young.


This is the sixth title in the series that began with An Egg is Quiet, the 2007 AAAS/Subaru SB&F Prize for Excellence in Science Books in the children’s category. Double-page spreads begin with a simple statement: “A beetle is kaleidoscopic” or “A beetle is tasty” accompanied by descriptive text of specific beetles and vibrantly illustrated with Long’s watercolors. All six titles should be in every school and public library collection. Many of the titles have been translated into other languages.


“A howl in the night. A watchful eye in the darkness.
A flutter of movement in the distance.” A mother coyote is on her nightly hunt in a suburban neighborhood to secure food for her family. After several unsuccessful pounces, she is successful just as dawn approaches. Full-color two-page spreads provide the cover of darkness and the new day dawning. Sharp, quick, action text keeps the reader cheering for either the coyote or the intended prey. Coyote Facts are included.

“The sun shines on Earth, bringing the light and warmth of day. Do you know these daylight visitors?” So begins the presentation of 23 animals: diurnals, nocturnals, and some are crepusculars. The text compares and contrasts these animals in Minor’s signature style: warm, detailed gouache and watercolor illustrations. Fun Facts are in the appendix.

A concise main text highlights how feathers aren’t just for flying. They can also protect a bird’s skin like sunscreen, attract attention like fancy jewelry, or even distract a predator like a bullfighter’s cape. This title introduces young readers to sixteen birds, from the sleek Emperor penguin to the fluffed-up Blue jay and describes just how positively practical feathers can be. More curious readers are invited to explore informative sidebars, which underscore specific ways each bird uses its feathers for a variety of practical purposes. Budding naturalists and bird-watchers will love this scrapbook-style picture book introduction to the many uses of feathers.

The partner team of Jenkins and Page never disappoint. The torn- and cut-paper collages present leaping lemurs, tumbling toads, jet-propelled jellyfish, and many more surprising ways that animals move. The common names of the animals appear in bold-face type alongside the illustration displaying the animal on the move. The animals are grouped by movement in the back matter along with additional information about each animal. The movement grouping: walking, leaping, swimming, climbing, flying, rolling, and jetting.

Vivienne became an environmental activist in her community. She started a new school on the day the teacher began Class Project: Community Action. Similar to a scientist, the plan’s steps included: Identify, Plan, Take Action, Tell the Story, Reflect. She found her issue: Loggerhead baby sea turtles and the project theme “lights out for loggerheads.” “When baby sea turtles hatch, they follow the strongest light they see [usually beach houses] So if they head away from the sea, they get dehydrated and die.” The watercolor, colored ink, and colored pencil illustrations bring Viv and her classmates’ story to life. A plethora of back matter makes for a great teaching unit.
NOVEMBER IS STEM PICTURE BOOK MONTH


The collaborative team of Fleming and Caldecott Medalist Rohmann are at it again. The giant squid is one of the most elusive creatures in the world. You may have seen the depiction of a giant squid in movies (*20,000 Leagues Under the Sea, Finding Dory*). This title presents the real-life story of a fascinating sea creature. It was only two years ago that a giant squid was filmed in its natural habitat. Fleming’s poetic words and Rohmann’s colorful paintings seduce the reader into the depth of the oceans into the habitat of the giant squid. Extensive back matter provides a plethora of information, additional resources, etc.


A class field trip to the museum has budding young scientists asking the questions like: How did this meteor get here? This third entry in the award-winning Got to the Museum series traces how a rock broke from its billion-year orbit to fall from space onto the trunk of a teenager’s car, then to several natural history museums. This book details the steps that brought a meteor from outer space across the eastern United States to the roof of a car in Peekskill, New York, and was then verified, tested, and exhibited (police, firefighters, geologists, curator, cosmetologist) before it became an exhibit at the American Museum of Natural History. Illustrations are colorful, playful paintings that complement the engaging text. Back matter includes information about the scientist who first examined the meteorite. Great read aloud.


Nature poetry is beautiful when it stands alone, but when paired with natural photographs a new strength of poetry emerges. From trickling streams to deafening thunderstorms to soaring mountains, discover majestic photography perfectly paired with contemporary (such as Billy Collins), classics (such as Robert Frost), and never-before-published works. A great book to read a quick poem but especially during April is Poetry Month. Literature and science come together in this amazing collection of poems.


Nature’s repeating patterns, better known as fractals, are beautiful, universal, and explain much about how things grow. A fractal is a shape that has smaller parts that look like the whole shape. Fractals, identified in 1975 by scientist Benoit Mandelbrot, can also be quantified mathematically. Here is an elegant introduction to fractals through examples that can be seen in parks, rivers, and the reader’s own backyards. The Campbells’ glossy, close-up photographs, definitively translate the text into real life examples.
Peeking under the City. By Esther Porter. (Illus. by Andres Lazano; from the What’s Beneath series.) Picture Window Books, 2016. np. ISBN 9781479586653. To share this book you have to rotate it 90 degrees. Children see the world of city from the ground up. What goes on below ground level is a lot! Power, water, travel, artifacts, burial grounds, pilings, drainage, and other interesting facts bring the behind scenes of what makes a city. The illustrations are mostly cross-cutting view of the city above and city below. Do You Know? facts throughout the book provide interesting trivia. As with all Capstone titles, there is the ISBN code to enter at www.facthound.com for safe Internet resources.

Pink is for Blobfish: Discovering the World’s Perfectly Pink Animals. By Jess Keating. (Illus. by David DeGrand.) Knopf, 2016. 48pp. ISBN 9780553512274. Is the blobfish the world’s ugliest animal? Author and zoologist Jess Keating presents the weird and wonderful seventeen of the most bizarre animals that have something in common—they are all shades of pink. Each two-page spread begins “Pink is for...” and includes a dynamic photograph that by itself would capture your attention. With the accompany text, cartoonish illustrations, and quick facts, though, it makes for a great exploration of these unique pink creatures. The end matter includes a map of their locations along with additional resources. Check out the YouTube promotional video https://www.youtube.com/watch?v=YKCGtE693T4

Plants Can’t Sit Still. By Rebecca E. Hirsch. (Illus. by Mia Posada.). Millbrook, 2016. np. ISBN 9781467780315. Do plants really move? ABSOLUTELY!! You might be surprised by all the things plants can do: wiggle, reach, creep, slither, crawl, climb, walk up, hide, snap, and even sleep, nod, and fold. The cut paper collages and watercolors bring this book to life and actually make the reader feel like they are outdoors with the plants. Scientific facts about each illustrated plant are in More About Plants, Glossary, and More Information (books and websites) in the back matter.

Raindrops Roll. By April Pulley Sayre. Beach Lane Books, 2015. 40pp. ISBN 97811481420648. In less than 100 words written on 36 pages, April Sayre presents Mother Nature’s rain in all its glory. Close up photographs, most with two word descriptions (“It thuds. Makes mud. Raindrops settle. They slip. They dot. They drip.”) give rain a personal quality. Readers will revel in the wonder of rain and how it does more than just come down. A great read aloud. A Splash of Science after the text provides answers to common misconceptions about rain and also presents readers interesting observations and facts about raindrops.

A Rock Can Be. By Laura Purdie Salas. (Illus. by Violeta Dabija.) Millbrook, 2015. 32pp. ISBN 9781467762977. “A rock is a rock. It’s sand, pebble, stone. Each rock tells a story, a tale of its own.” A rock can be a tall mountain, or a lake skimmer or a seaside home plus 20 other things. Readers are introduced to some of the various forms that rocks take in the natural world. Two words on each page are supported by...
NOVEMBER IS STEM PICTURE BOOK MONTH

colorful, descriptive illustrations that make this title a great earth science read aloud. More about Rocks in the end matter expands upon the two words on each page. Glossary and Further Reading are also included.


“What does a scientist do?” Using photographs of young children and scientists, this book introduces the basis of science: asking questions. Take a quick tour of questions an inquisitive child might ask: “How do I get ketchup out of this plastic bottle?” Introduce this book along with *What is Science?* and *What Is a Scientist?*


This is not a storybook, as such, but a science book relating a series of incidents involving animals in African savanna. The incidents illustrate animal predator-prey relationships, animal communication, and social structure, with some physics of sound thrown in. There is plenty to discuss about what’s going on and what might happen next on nearly every page. In addition, the authors provide additional material and activities about sound waves, and an activity about predators and prey. The illustrations are adequate to provide support to the text.


What do you want to be when you grow up? Kathy Sullivan was one of the first six women astronauts to train with NASA and the first American woman to walk in space. As a young child, she was encouraged to follow the traditional career path for a female: teacher, nurse, or mom. BUT Kathy was different. The watercolor and ink illustrations complement the simple text and together provide a positive role model for girls pursuing their interest and passion.


All around the world—in the sea, in the soil, in the air, and in your body—there are living things so tiny that millions could fit on an ant’s antenna. They’re busy doing all sorts of things, from giving you a cold and making yogurt to eroding mountains and helping to make the air we breathe. If you could see them with your eye, you’d find that they all look different, and that they’re really good at changing things into something else and at making many more microbes like themselves! Nicola Davies is a zoologist as well as a writer. In *Tiny Creatures,* Davies tackles what is undoubtedly an uncommon topic for a children’s picture book. In doing so, she demonstrates how a conceptually difficult concept can be effectively introduced to the very young. Throughout the book, Davies focuses on the basic essentials of the concept “microbe” in a text that is perfectly complemented by Emily Sutton’s endearing illustrations. The combination makes this important scientific subject engaging to the youngest learners. *Tiny Creatures* was the winner in
the 2015 AAAS/Subaru SB&F Prize for Excellence in Science Books in Children’s Science Picture Book category.


Open wide! Find out why teeth come in so many different shapes and sizes. This picture book will keep you guessing as you read about how human teeth are like—and unlike—those of other mammals. The question and answer format encourages the reader to think about how it would feel to have the teeth of other animals. “What kind of mammal would be if you had...” begins the process. Exaggerated heads and teeth on the characters bring the topic home. The colorful illustrations bring together science facts and fun.


Discover nature by the numbers in this question counting book. The natural world is full of sets of numbers: from birds’ wings in twos and clover leaves in threes to deer hooves in fours and octopus arms in eights. This book uses playful rhyming text to explore these numerical sets in vibrant detail, ending with the stars in the sky—a number set too big to count! Each question is answered with simple text accompanied by vivid, colorful, and detailed illustrations that highlight the nature number. Readers will be encouraged to look for numerical sets in the world around them.


In answering this question asked by the title, over 30 topics are cited in the rhymed text: “What is science? So many things. The study of stars and Saturn’s rings.... The study of soil, of oil and gas.” “We question, we wonder, we hunt and explore the secret of caves, the dark ocean floor....What IS science? So many things!” The bright cartoony illustrations of children and the outdoors add to the appeal of the text. The reader can ask questions about the details in the pictures, getting the very young children to identify objects. For children who can read and write, have them draw on slips of paper with one of the thirty-odd science topics listed in the book. They can do some research and give an oral report to the class about the particular topic.


In this picture book collection of nature poems, children discover how some animals stay alive in
the winter and learn about their secret lives happening under the snow. The poems are paired with stunning linoleum print illustrations by Rick Allen that celebrate nature’s beauty and power. The poems are coupled with descriptions of how each event occurs in the natural environment prove to be an innovative and enlightening technique. The poems and their corresponding explanations reveal how animals are impacted by winter and what they must endure to survive this arduous season.


This picture book biography tells the story of the inventor of the Super Soaker and how it became one of the top twenty toys of all time and it was invented entirely by accident. Trying to create a new cooling system for refrigerators and air conditioners, African-American inventor Lonnie Johnson instead created the mechanics for the iconic toy. A love for rockets, robots, inventions, and a mind for scientific creativity began early in his life. Lonnie’s persistence and a passion for problem solving became the cornerstone for a career as an engineer and his work with NASA. But it is his invention of the Super Soaker water gun that has made his most memorable splash with kids and adults.

**References**


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