BOOK REVIEWS

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PRIMATOLOGY

The Primate Family Tree: The Amazing Diversity of Our Closest Relatives. By Ian Redmond. 2008. Firefly Books (ISBN 9781554073788). 176 pages. Hardcover. $35.00.

This well organized and illustrated book discusses more than 270 species of primates. After a great foreword by renowned conservationist Jane Goodall, the first chapter sets any reader up for success by introducing six key characteristics of primates (forward-facing eyes, eye sockets, grasping hands, fingerprints, and large brains), species distributions around the world, social structures, communication, and more. Redmond adds interest by relating the distinguishing features of primates to the corresponding features in humans. He presents the evolution of Darwin's "ideas about primate origins" without bias and notes that "each new study published confirms that many discoveries are yet to be made."

This book could serve as a meaningful supplement to any secondary-level biology course. It covers similarities and differences between humans and other primates, threatened species and habitats, conservation, detailed species profiles, and additional resources. We give it three frogs for use in a general biology class, and four if it is to be used in a course on zoology or evolution.

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ANIMAL EVOLUTION

Creatures of Accident: The Rise of the Animal Kingdom. By Wallace Arthur. 2006. Hill and Wang (ISBN 9780809037018). 255+ pages. Paperback. $16.00.

Biology teachers and students are generally comfortable in understanding the small, gradual evolutionary changes that distinguish closely related species, but many of us feel rather like fish out of water when it comes to explaining the evolution of complexity, such as how some of our aquatic ancestors became land-dwellers. Is it simply that the smaller "micro-evolutionary" changes (e.g., alterations in an enzyme) are easier to understand and explain than the bigger "mega-evolutionary" changes (e.g., having limbs instead of fins)?

Arthur, a zoology professor at the National University of Ireland, emphasizes that some of the general resistance to teaching about the evolution of complexity arises from its threat to creationist or intelligent-design beliefs. He urges readers to leave behind their philosophical baggage about the supernatural in order to travel unhindered and unprejudiced along the pathway of life, as revealed by the facts, while recognizing the historically significant thinkers who have led the journey so far. His book is full of examples of scientists who challenged doctrine, including Johann Meckel, Karl von Baer, Charles Darwin, A. R. Wallace, Ernst Haeckel, Robert Hooke, Matthias Schleiden, Theodor Schwann, William Bateson, Stephen Jay Gould, and Richard Dawkins. Since teachers are usually asking students to see evolution in a new light, it can be helpful for students to review some of the breakthroughs that visionaries and paradigm-shifters went through as they upset comfortable dogma.

Arthur's book is an engaging 20-chapter adventure into animal evolution. Much as a teenager who has just learned about the birds and the bees comes to the shocking realization that he or she would not exist but for an almost unimaginable sequence of ancestral couplings, Arthur finds questions about the mega-evolution of animal complexity awe-inspiring and vast. He manages to bring the discussion back to earth, though, in the same way that our now-enlightened teenager might later look at a family pedigree.

Arthur begins the journey by noting that the complexity of life increases over the vast stretches of evolutionary time. Finding our own species to be a very complex life form, and being naturally interested in ourselves as if we were the center of the universe, we cannot help but accept his challenge. He appropriately emphasizes the central role of variation in differential reproductive success as the grist of evolutionary change.

Many of the milestones of the evolutionary journey to complexity are discussed: unicellular to multicellular, irregular body form to symmetrical form, radial development to bilateral development, headless to protohead, the onset of gas-exchange specializations, the development of the nervous system. All of these changes are based on the shifting dance of the genes: mutations, networks of developmental reprogramming, and diverging functions of redundant parts.

There are several emerging topics, such as the evolution of evolvability, facilitated variation, epigenetics, and multilevel inheritance, which, although not necessarily named as such in the book, will further expand knowledge about the evolution of complexity. As noted by Arthur, some species appear to change phenotype more rapidly than others. He also notes that there are certain critical sets of developmentally regulated genes, which, if any is mutated, can radically alter phenotype.

The book concludes with some observations on human evolution. Arthur writes persuasively, encouraging students to evaluate the evidence for evolution and to more clearly recognize their place in the world. Can your students do this? I urge you to give them a try, using this book. The writing style is engaging while still being straightforward. The tone is encouraging and optimistic, showing what we have learned and why it is interesting to pursue this field.

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CHILDREN'S BOOK

Stormy's Return. By Bob Palmatier. 2008. Mittentails Press (ISBN 9780615233871). 94 pages. Softcover. $19.99.

"*We called him tortoise because he taught us.*"
—Lewis Carroll, 1865

The American Biology Teacher, Vol. 72, No. 4, pages 261–262. ISSN 0002-7685, electronic ISSN 1938–4211.
DOI: 10.1525/abt.2010.72.4.12

The storyline is simple. A spotted turtle finds his way home after being relocated to another wetland by a well-intentioned naturalist. Stormy meets some interesting creatures in his travels and is reunited with his former pond mates. The end. OK, I gave away the plot. There is no romance, violence, celebrity news, unexpected twist, or even a villain. Why would anyone read this? Well, this is one reason we write and read book reviews.

You will be taken by the illustrations. The 33 paintings in this children's book are simple and straightforward, eye-catching and compelling. I purchased several as prints to decorate my cluttered office. Far from precise, two-dimensional, and not particularly detailed, they are nevertheless rich and filled with life. Colorful, happy sketches, landscapes populated with familiar wetland plants and animals, species portraits that are surreal and stylized, yet easily recognizable; pink-bellied amphiumas and yellow-bellied bluegills, living in their natural settings with cattails, chickadees, mud turtles, red-admiral butterflies, tumble bugs, and sweetgums. Do you want to know more about these plants and animals? In the back of the book, a 12-page illustrated glossary provides a brief paragraph about each.

And here is the best part: this is a true story based on an experience of the author. Oh, all right, real spotted turtles probably don't sit about in their wetland habitats yelling out to each other "Who's got spots?" "We do, we do!" But the tale is based on an actual event. A North Carolina naturalist, a friend of the author, moved a spotted turtle to another wetland because it looked like the turtle's home would soon be destroyed by development. The turtle was missing a right front leg. Before it was relocated to another wetland over a mile and a half away, it was measured and photographed. The two wetlands were not interconnected, and in between were all sorts of obstacles. Fallen logs from a massive clearcutting operation, thick undergrowth, a deep river, railroad tracks, and fenced warehouses separated the sites so that it was not a straight-line journey for Stormy. But 13 months later, the book's author discovered the turtle back at its original site. The photographs confirmed, spot for spot, that it was clearly the same individual. As it turned out, while golf-course development proceeded adjacent to the small, railroad-bordered wetland, the site itself was spared. The real-life Stormy is again living at home. I should mention that spotted turtles like Stormy commonly live 50 years or more, and individuals exceeding 100 years in age are not unheard of. A friend did a study in which she found adult spotted turtles within yards of the same place where they had been captured and marked 35 years previously; several of those she recaptured were first recorded as having missing limbs in the early 1970s.

Palmatier is a former Durham, North Carolina, elementary school teacher, and for the past 10 years was a science specialist for the school system. He is also a good naturalist, conducting his own field studies and teaching environmental education workshops at the North Carolina Botanical Gardens in Chapel Hill. Now retired, he has turned his attention to writing and art. His sense of design and his knowledge of the natural world combine to create a contemporary fable. As a former public school teacher myself, I see this book as a good way to introduce young students to the basics of ecology and animal behavior. This is Palmatier's first book, and he is currently working on a second: *Neddy Mittens: The Polydactyl Cat*. The central three-legged character of the present book was originally named "Stumpy," both in real life, by the person who first found him, and in earlier drafts of the book. It is interesting to see that political correctness can also apply to handicapped turtles.

All right, so this is a one-dimensional story with two-dimensional illustrations, so what's the big deal? It's not the story, it's the lessons. I envision children venturing into the woods and discovering and remembering the newts and goldfinches they are first introduced to in this book. And they will giggle with joy when they see that real mud turtles actually do look like baked potatoes. This book offers the core value of persistence, the simple beauty of nature, the importance of small isolated wetlands and other natural habitats, and living well even with handicaps. It's juvenile fiction, but it presents important information about turtles, including something that most adults have yet to get: you can't indiscriminately move turtles about. Many turtles will spend every waking moment of what remains of their lives trying to find their way back home. For turtles and other wildlife, there is no yellow brick road. They follow built-in, instinctive navigational systems, routing that takes them across roads, parking lots, ridge tops, and interstate highways. In our asphalt-dissected landscapes, there are lots of dangers and few ever make it back home.

Now think of the annual 4th of July turtle races and the release of all the poor displaced creatures after the event is over. What happens to them and to the released pets, and turtles saved from roads and from development and moved to "better" locations? There are the turtles released into the wild after being confiscated from commercial collectors, with no thought as to where they came from. And what happens to all of the desert tortoises that the military continues to relocate to get them away from their training grounds? It's all very well intended. Now people won't need to wade through peer-reviewed literature looking for studies that demonstrate the difficulty of successfully relocating turtles. Skip all the big 14-cent science words, metric calculations, acronyms, statistical treatments, tables of data, literature reviews, and endless acknowledgments. Stormy drives home the message far better than scientific presentations at academic meetings or the methods, research, and discussions published in stuffy journals. For biologists, it's all about long-term preservation of genetically viable populations; for children, it's more to the point – the importance of saving poor, hapless creatures one individual at a time. Perhaps this book is the perfect teaching tool for bridging this gap; I personally know a number of research biologists who would benefit from reading it.

Animals don't get up and move when their homes are destroyed for our developments. Many people assume that the displaced creatures just simply go elsewhere. This book teaches us that even small, isolated wood lots, wetlands, and meadows each have their value. True, they are not vast enough to provide homes to bison and bears, but for many of the lesser creatures they can be quite important. This is not about preserving nature for our great grandchildren to one day enjoy, it is more straightforward than that. It's the right thing to do.

Maybe as more kids read this book, it will be the children teaching their parents the simple truth that our native wildlife needs homes too. Perhaps we can start redeveloping lands we have already destroyed instead of expanding our sprawling empires into the homes of small, shy turtles. Because of books like this one, perhaps there are actually some children out there who can see past their Game Boys and iPods. When asked who cares about the natural world, they laughingly cry out to us "We do, we do!"


for adults


for children

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