Book Review


Futuyma's new textbook, Evolution, is a pared-down version of his classic Evolutionary Biology (Futuyma 1998) and, according to the author's preface and an accompanying letter, is intended exclusively for undergraduates. This does not indicate that it has been entirely dumbed down; a wide variety of topics are intelligently explored, although coverage of many subjects would indeed be too shallow for a graduate text or reference work. Of course, figures are more numerous and more colorful, but almost all are genuinely useful, and the discussion questions following each chapter are still thoughtful and sometimes challenging. As in Futuyma (1998), the text not only distinguishes almost all potentially new vocabulary with boldface or small caps, but in some sections annoyingly italicizes many key words, phrases or sentences, e.g., "Ichthyostegid amphibians, which were the first terrestrial vertebrates and the first tetrapods, evolved from lobe-finned fishes late in the Devonian." The lazy student can therefore simply skim for italics when cramming for the final. (I hope that this is not becoming textbook standard.)

The book begins with a very simple introduction to evolution, phylogenetics, and the fossil record, then proceeds through topics including history of life on Earth, biogeography and biodiversity, genetic and phenotypic variation and evolution, speciation and the nature of species, reproductive success, coevolution, gene and genome evolution, development, and macroevolution. Numerous examples make the subjects concrete, while hinting at the overwhelming volume of evidence that supports evolutionary theory. Botanists may dislike the zoocentrism of the text—examples involving animals greatly outnumber botanical ones, and while the "history of life" chapter is necessarily very terse, plants get short shrift (and one cladogram, while animals get four). Some topics are omitted or mentioned only in passing, such as antibiotic resistance in bacteria. No mention is made of adaptations correlated with island habitat, such as woodiness and dioecy in plants or reduced body size in animals. (As evidence for the status of Homo floresiensis mounts, its absence here may make the book seem prematurely dated.)

The present work is only 603 pages long, including 58 pages of glossary, literature cited, and index, whereas Futuyma (1998) is 763 pages long, excluding the glossary, literature cited, and index. Together with the fact that the outer margins (save for figures and figure captions) are now much broader, a considerable amount of text has been removed, including introductory chapters on genetics, ecology, and evolving (animal) lineages in the fossil record. A chapter on human evolution has been broken up and scattered throughout the book, with some interesting material now excluded; other chapters have been rearranged and trimmed. The chapters on gene and genome evolution (contributed by Scott Edwards) and development (by John True) surpass the original through the inclusion of recent findings, and also have more botanical content. While the chapter on development in Futuyma (1998) dealt only with animals, this new work mentions the ABC model of floral development and the genetic cause of different branching patterns in maize and teosinte. Indexing has also changed; while examples involving pollination by pseudocopulation in orchids and pollen-mediated gene flow in corn are still mentioned in the text, the index no longer includes the terms "pollen" or "pollination."

At a time when the teaching of evolution—the foundation of all modern biology—is increasingly threatened, it will become ever more essential to have textbooks that present the facts simply but rigorously, and in a style appealing enough to hold the attention of students who may be uninterested at best. Futuyma lays out a solid case for evolution, providing evidence from molecular systematics, paleobiology, morphology, genetics, and animal behavior. In a final chapter, he briefly addresses and demolishes the common arguments of creationists, then discusses some of the essential scientific fields that depend upon an understanding of evolution. Altogether, he has done an admirable job, although his older textbook is still in some ways the better.

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Literature Cited


Floras are among the most important resources for botanical research, perhaps only surpassed in value by herbarium collections. However, they require such a monumental effort to produce that new or revised publications are few and far between. With that in mind, I am pleased to report that Ronald Jones' Plant Life of Kentucky will ably serve the next generation of Kentucky botanists.

Jones uses the first hundred pages of his book to establish the regional context. This includes chapters on geology, development and distribution of plant communities, human impacts, and conservation issues. The writing is dense, and the general reader may be put off by the style. However, copious references will allow researchers quick access to the primary literature. This is particularly important, as Jones draws on many historical publications and regional journals that are easily missed when searching academic databases. The highlight of the first section is chapter 11, which presents biographical sketches of the major figures in the history of Kentucky floristics. Jones includes well-known professional botanists like Michaux, Rafinesque, and Lucy Braun, while acknowledging the important recent contributions of local amateurs like Raymond Athey and Charles Lapham.

This brings us to the taxonomic treatment. The keys are well-laid out and clearly written. Beginners will appreciate the alternate key to monocots and dicots, which addresses the many exceptions to the usual key characters. Another concession for novice botanists is the alphabetical arrangement of taxa within divisions. The keys are copiously illustrated, primarily with images from Britton and Brown (1913).

In addition to the usual morphological descriptions and habitat information for the taxa, Jones includes notes on wildlife value and toxic properties. While distribution data is limited to the three