



**Living Fossil: The Story of the Coelacanth.**

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ization about salt marshes (such as that which might be found in a textbook that actually is written for undergraduate courses), then citing information from the primary literature to demonstrate that the supporting evidence is weak or inconsistent. To me, the most valuable and stimulating aspect of the book was the frequent suggestion of new research areas—unanswered questions, untested hypotheses, unproven dogma. I was left wondering not what to study, but what to study first!

I do have some criticisms of *Saltmarsh Ecology*. Aside from a very brief section (12 pp.) on salt-marsh fauna and a slightly longer chapter (20 pp.) on salt marshes as ecosystems, the great majority of the book deals with plants—particularly vascular plants. Those interested in detailed information concerning saltmarsh fauna are referred to other sources. I would have appreciated a glossary, descriptions, or drawings of the most commonly discussed species, and perhaps even some common names, since I have a limited background in vascular plant biology and limited exposure to the salt-marsh flora of other continents. A brief summary at the end of each chapter also would have been helpful; the discussion sections that follow several chapters enhance rather than reduce the information already presented. More careful editing would have prevented the book's minor problems, such as a number of figures or figure captions that are difficult to comprehend, and some section headings that blend into the text. Abbreviated generic names, many starting with *S*, were often confusing, despite a partial table of abbreviations at the beginning of the book.

Overall, *Saltmarsh Ecology* is well worth the money. It will be a useful reference for decades, especially if it is periodically revised to include recently published results. And, although I disagree with the book jacket about its suitability as an undergraduate textbook, it would certainly be useful for a graduate course—if the price were not beyond the means of most graduate students.

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LIVING FOSSIL: THE STORY OF THE COELACANTH.  
By Keith Stuart Thomson. *W. W. Norton & Company, New York*. \$19.95. 252 p.; ill.; index.  
ISBN: 0-393-02956-5. 1991.

The coelacanth, *Latimeria chalumnae*, is really just another fish. Nevertheless, it certainly is an important species, since in the opinion of some researchers (who used to include Thomson), it occupies a phylogenetic position as the “missing link”

between fishes and tetrapods. Ever since the sensational discovery of the first specimen of this “living fossil” (it belongs to a group of fishes that was believed to have gone extinct about 70 million years ago) in 1938, this fish has captured the imagination of scientists and adventurers alike. Since 1938, less than 200 individuals of the coelacanth have been caught; many more articles have been written about it in scientific journals. Yet new discoveries about various aspects of the biology of this species are still made and seem important enough to warrant publication in journals such as *Nature* and *Science*. There are probably more articles published in these journals about the coelacanth than any other species that cannot be kept in a laboratory.

Thomson has written several articles that have appeared in the popular press, in which he unveils some of the insights that this fish might hold for our understanding of the origin of tetrapods. He is one of a handful of scientists who has made a career by principally studying this fish. His firsthand narrative account of the excitement that surrounds work on the coelacanth in the field and the laboratory makes for stimulating reading. This book on the fascinating history of the discovery, capture, and study of the coelacanth is written for the layperson. The personalities of researchers, a factor always involved in scientific endeavors, are portrayed. All of this makes for enlightening reading and is highly recommended for anyone who is not closely allied to the field of coelacanth biology (all who are doing research on *Latimeria* should read the book anyhow).

The symposium volume, *The Biology of Latimeria chalumnae and the Evolution of Coelacanths* (ed. by J. A. Musick, M. N. Bruton, and E. K. Balon, Kluwer Academic Publ., Hingham) summarizes for the expert what is current in research on the coelacanth; it was also published this year. Inevitably, Thomson's book is about one to two years out of date, and does not include the most recent findings on the phylogeny of *Latimeria* based on DNA and protein sequences and analyses of fossils using cladistic phylogenetic methodologies.

For apprentices of science and outsiders to the field of coelacanth biology, Thomson's book will make interesting reading because it is, to me, an illustration of how science should not proceed. The study of the coelacanth (unfortunately) documents excellently how, by the force of personality and in the absence of ugly facts, theories can originate and remain untested. This is one of the reasons that after more than 50 years of research on the coelacanth, many fundamental questions about it are still unanswered. For example, one would think that the question of whether lungfishes or the coelacanths are the closest living relatives of

tetrapods should have a generally agreed upon answer. This is not so.

It might be hoped that this way of doing "science" will have a different fate than the endangered species, *Latimeria chalumnae*.

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## ENVIRONMENTAL SCIENCES

### GLOBAL FOREST RESOURCES.

By Alexander S. Mather. *Timber Press, Portland (Oregon)*. \$45.00. x + 341 p.; ill.; index. ISBN: 0-88192-178-5. [First published in Great Britain in 1990 by Belhaven Press.] 1990.

Mather has provided a thorough and detailed review of the global forest resource situation. He includes (1) an assessment of the forest resource base, its extent, distribution and condition, with a focus on tropical forest resources; (2) details on current deforestation and forest-use trends, including both industrial and nonindustrial uses; (3) a review of the role of forests in environmental stability and improvement, including brief discussion of such topics as forests and global warming and trees in watershed management; and (4) an assessment of some of the major forest policy issues, including tropical deforestation and the global fuelwood issue.

In a situation where change is rapid, such as is the case for the world's forest resources and their use and misuse, it is inevitable that some information and data become outdated even before a book on the subject is through the publication process. *Global Forest Resources* suffers from this problem in a few places. Some of the data used and some of the references provided are outdated. Further, from my perspective, certain topics are not adequately considered (e.g., forests in relation to global change, recent thinking with regard to the fuelwood situation in developing countries, and international policy and development initiatives). These are minor shortcomings, however, in a book that otherwise provides excellent coverage and analysis. As such, this is essential reading for someone wanting a thorough, objective introduction to the world's forest resource situation and the major issues surrounding it.

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CLIMATE AND MOISTURE VARIABILITY IN A TROPICAL FOREST: LONG-TERM RECORDS FROM BARRO COLORADO ISLAND, PANAMÁ. *Smithsonian Contributions to the Earth Sciences, Number 29.*

By Donald M. Windsor. *Smithsonian Institution Press, Washington, D. C.* Price not available (paper). iii + 145 p.; ill.; no index. No ISBN. 1990. In addition to the extensive data tables and graphs implied by the title, Windsor also supplies a highly readable summary of the patterns of rainfall, temperature, humidity, air movement, solar radiation, soil moisture, runoff and evapotranspiration at this long-established Smithsonian field station. The data are important for studies of global climate as well as tropical ecology, and should lay to rest any remaining misimpressions about the "aseasonality" of tropical rain forests.

### NATURE RESERVES: ISLAND THEORY AND CONSERVATION PRACTICE.

By Craig L. Shafer. *Smithsonian Institution Press, Washington, D. C.* \$39.95 (hardcover); \$15.95 (paper). xii + 189 p.; ill.; index. ISBN: 0-87474-805-4. 1990.

Islands provide the natural, replicated experiments in ecology and evolution on spatial and temporal scales that we could never undertake through direct manipulation. We owe so much to studies done on islands. There is a bonus too for conservation biology. As we destroy habitats worldwide, we leave behind isolated fragments of habitat surrounded by damaged habitats that are inhospitable for the areas' original inhabitants. Island theory and data say much about how we should manage species in habitat fragments.

Shafer (Craig not Mark, who has comparable interests) confronts the theory and data on islands with the practice of managing biodiversity. His is a large-format, attractive book that allows space for the figures and maps that we need for visualization of the issues. Sadly, this is where my enthusiasm ends. For page after page, each paragraph begins: Smith (19xx) found (described, documented, etc.) this fact or that relationship or errors in some previous paper. Not only does much of the book read like the collected abstracts of a national ecology meeting, but the ideas seem strung together with no deep understanding. For instance, Preston's ideas on species abundances are central. Take an empirical distribution of abundances: lognormal as it happens. Notice that it is just not any lognormal, but one with a restriction on its parameters, so give it a special adjective: canonical. The sum of all the abundances across all the ( $S$ ) species is the number of individuals in the community,  $I$ . Propose that there is a limit ( $m$ ) to how