

## BOOK REVIEWS

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BERTNESS, MARK D., STEVEN D. GAINES, AND MARK E. HAY [EDS.].  
2001. **Marine community ecology**. Sinauer Associates. 550 p.  
US\$62.95. ISBN 0-87893-057-4.

This book is a testament to the critical role that experimental marine ecology played in the development of and maturation of ecology as a science. Seminal studies in the early 1960s and 1970s elegantly demonstrated how predation, competition, and disturbance interact to maintain diversity in intertidal systems. These classic studies firmly established many current ecological paradigms and inspired decades of similar investigation of both terrestrial and aquatic habitats. *Marine Community Ecology* presents a comprehensive review of the field and is thus important reading for all students of ecology, regardless of the habitats in which they work.

A tension between venerable conclusions derived from classic techniques and new approaches defines a field that is at an exciting crossroad. Macroscopic, sedentary organisms in benthic marine habitats are amenable to powerful experimental approaches, and such work drove the development of the entire field of community ecology throughout much of the 1970s. But studies in the 1980s and 1990s on the entire life cycle of these organisms, including the highly mobile pelagic larval phases of many invertebrates, made it clear that focusing on a meter-squared quadrat excluded important parts of the picture. These efforts underscored the significance of recruitment variability, near-shore oceanography, population genetics, nutrient limitation, biogenic habitat modification, and other processes that influence the distribution and abundance of species over broader spatial and temporal scales. We now also understand that phenotypic and genetic variation among individuals within species is of tremendous importance; the causes of this type of variation are often unknown, but they likely hold the key to developing a more predictive approach to ecology. The bottom line is that, although traditional small-scale approaches continue to offer considerable power, the greatest advances in our understanding of marine communities will be made by incorporating small-scale approaches into broader spatial and temporal perspectives.

One of the things that makes this book valuable is that it gives a broad overview of the entire spectrum of approaches to the study of benthic communities. The first section of the book is process-oriented, covering areas such as predation, disturbance, genetics, and larval recruitment, and the second section takes a habitat-centered approach, detailing what is known about pattern and process in different benthic community types such as coral reefs or the rocky intertidal. There is a third, shorter, but quite stimulating section that focuses on conservation and management issues, including overfishing, the spread of nonindigenous species, and the design of marine protected areas, although discussion of these topics is also present in the two main sections. Some readers may find what they perceive to be glaring omissions after a quick scan of the table of contents, but we found that most areas were thoroughly covered, even if there was no chapter expressly dedicated to the topic. For example, even without chapters focused on large-scale physical processes or competition, the relevant literature is adequately discussed in the habitat-centered chapters, many of which contain extensive sections on these topics. One area that would benefit from further treatment is the ecology of pelagic communities, although the link-

ages between benthic and pelagic communities are thoughtfully addressed in several chapters.

Many chapters in this book discuss contemporary and future directions that will define marine community ecology in the 21st century. Many of these new directions involve broadening the spatial and temporal scales of inquiry by including near-shore oceanography, paleontology, population genetics, biogeochemical cycling, remotely sensed imagery, and other methods that complement present approaches. Marine community ecologists appear to be adopting a broader and more collaborative outlook that is essential if we are to attack critical environmental problems that threaten our seas.

All this is to say that there is welcome evidence in this book that historical distinctions of scale and approach between marine ecology and biological oceanography are beginning to blur. Marine ecologists have traditionally been concerned with biotic interactions and smaller scale processes elucidated by controlled experimentation, whereas oceanographers, like terrestrial ecosystem ecologists, have been more concerned with measuring fluxes of energy and materials at larger scales. This book provides reassuring evidence that these two groups are inching toward common ground for the study of marine communities and ecosystems.

The primary target audience for this book is graduate students, and, with few exceptions (you'll know when you read them), the level of detail and clarity of writing hit this mark. Students in our graduate seminar enjoyed reading most chapters, and we found that they made for lively discussions about both broad conceptual issues and the minutiae of individual systems, stimulating students' critical thinking about their own research. Professional ocean scientists will also find the book both useful and readable, and even seasoned marine community ecologists will find stimulating new ideas. It is a credit to the editors and authors that the book contains largely new contributions—i.e., not reprocessed versions of previously published work—although some chapters could have benefited from additional editing. The cast of authors includes an excellent mix of senior scientists, who were in many cases responsible for the development of this field, and younger scientists with new ideas. Additionally, we felt that the pairing of authors who work independently on similar systems or problems in different geographic regions made for a more comprehensive and balanced treatment.

Given the volume of research generated by the field of marine community ecology and its importance to the conceptual development of ecology in general, a book like this is long overdue. Although specialized symposium volumes and excellent general textbooks are available, this book nicely fills the gap between these genres, offering a broad but critical overview of the field while raising interesting new ideas and suggesting directions for the future. This attractive, relatively affordable, and generally readable volume is an important contribution that deserves to be widely read; it will certainly be cited for many years to come.

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