

The Evolution of Reef Communities; by J. A. FAGERSTROM. P. 600, 65 figs, 60 tables, New York, 1987 (John Wiley and Sons, \$77.95).—In this effective synthesis, Fagerstrom documents the history of reef communities from the Proterozoic stromatolite shelf margin reefs to the current scleractinian Great Barrier Reef complex. The book brings together much of the vast and diverse literature on the chemical, physical, geological, and biological factors affecting reefs. Most of the text deals with the biological factors and rightly so, as reefs are primarily a biological phenomenon.

The book contains fifteen chapters each with a concise summary or conclusion. The text is well augmented by 65 figures and 60 tables. The book is divided into three parts. The first part consumes roughly half the text and introduces the reader to the structure, occurrence, processes, and communities of Cenozoic reefs. Cenozoic reefs are then used to construct a reef model for later comparison with pre-Cenozoic reefs.

In this first part of the book, the theory of guild structure is presented. A guild is a group of species competing for a certain suite of environmental resources. Guild membership is independent of clade membership. Fagerstrom recognizes five reef guilds (constructor, baffler, destroyer, dweller, binder) and identifies their roles in the reef. The use of guild structure in the analysis of reef community evolution is the most unique aspect of this book. This productive approach to the analysis of reef communities prevents this book from being just another synthesis of the literature.

The second part of the book discusses the ecology and evolutionary history of the various taxa found on reefs. Unfortunately, this section is entirely too brief to be of much use. It could have been left out without detracting from the overall goal of the book.

The third and final part of the book analyzes the guild structure of reefs through the Paleozoic and Mesozoic. This section is liberally supported by 31 examples of reefs from the fossil record. For each example, the guilds present and the taxa active in each guild are listed. These examples effectively outline the roles played by the many reef organisms over the course of the Phanerozoic.

In the final chapter, Fagerstrom pulls everything together and summarizes the general trends present in the history of reef communities. The number of guilds active on reefs has increased. The relative importance of each of the five guilds has changed over time. Binders have decreased in importance while constructors have increased in importance. This parallels an increase in skeletonization, rigidity, and size of reefs through the Phanerozoic. The amount of taxonomic overlap between guilds on the reef and between reefs and level-bottom communities have both decreased. All these trends point toward the fact that reefs have become an important biological phenomenon over the course of the Phanerozoic.

As the title states, the book is concerned with the evolution of reef communities. Fagerstrom extracts three major questions from the title.

What is a reef? What is a community? Do reef communities evolve? The definition of a reef is well documented, but the discussion of communities is lacking. If there is one weak spot in the book it is this. Fagerstrom fails to address adequately the serious arguments against the biological reality of communities. He simply acknowledges that this topic is currently being debated in the literature. Accepting the reality of communities, the book goes on to provide strong evidence for the evolution of reef communities.

A useful glossary is included which helps the reader navigate through the text without getting caught-up in the ongoing controversy over reef terminology. The book ends with a comprehensive index and a series of 51 black and white plates. These plates provide excellent examples of reef organisms and reef structures from both the fossil record and the recent. *The Evolution of Reef Communities* is a valuable book for bringing geologists and biologists up-to-date on the current state of research on reefs. I highly recommend this book for anyone with an interest in reefs.

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