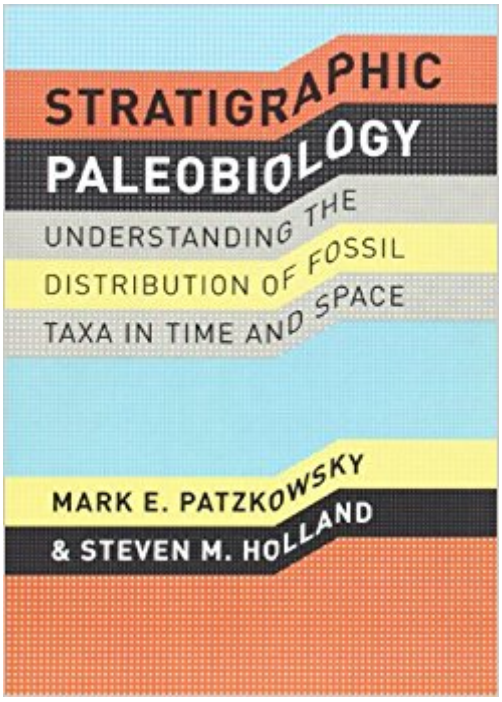
Stratigraphic Paleobiology: Understanding The Distribution Of Fossil Taxa In Time And Space



Synopsis

Whether the fossil record should be read at face value or whether it presents a distorted view of the history of life is an argument seemingly as old as many fossils themselves. In the late 1700s, Georges Cuvier argued for a literal interpretation, but in the early 1800s, Charles LyellÃ¢â ¬â„¢s gradualist view of the earthÃ¢â ¬â„¢s history required a more nuanced interpretation of that same record. To this day, the tension between literal and interpretive readings lies at the heart of paleontological research, influencing the way scientists view extinction patterns and their causes, ecosystem persistence and turnover, and the pattern of morphologic change and mode of speciation.Ã Â With Stratigraphic Paleobiology, Mark E. Patzkowsky and Steven M. Holland present a critical framework for assessing the fossil record, one based on a modern understanding of the principles of sediment accumulation. Patzkowsky and Holland argue that the distribution of fossil taxa in time and space is controlled not only by processes of ecology, evolution, and environmental change, but also by the stratigraphic processes that govern where and when sediment that might contain fossils is deposited and preserved. The authors explore the exciting possibilities of stratigraphic paleobiology, and along the way demonstrate its great potential to answer some of the most critical questions about the history of life: How and why do environmental niches change over time? What is the tempo and mode of evolutionary change and what processes drive this change? How has the diversity of life changed through time, and what processes control this change? And, finally, what is the tempo and mode of change in ecosystems over time?Ã Â

Book Information

Paperback: 256 pages

Publisher: University Of Chicago Press (April 16, 2012)

Language: English

ISBN-10: 0226649385

ISBN-13: 978-0226649382

Product Dimensions: 6 x 0.8 x 9 inches

Shipping Weight: 12.8 ounces (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 3 customer reviews

Best Sellers Rank: #1,461,289 in Books (See Top 100 in Books) #57 inÃ Â Books > Science & Math > Earth Sciences > Geology > Sedimentary #656 inÃ Â Books > Science & Math > Biological Sciences > Paleontology #6967 inÃ Â Books > Science & Math > Evolution

Customer Reviews

"The novelty of this work is that it weaves important strands of the paleontological literature - with many of the most essential parts by the authors themselves - into a coherent worldview that emphasizes the importance of understanding the geological record. This book is a significant accomplishment, and it promises to nudge and shape the future development of the field." (Gene Hunt, National Museum of Natural History, Smithsonian Institution)"

Mark E. Patzkowsky is associate professor in the Department of Geosciences at Pennsylvania State University. Steven M. Holland is professor in the Department of Geology at the University of Georgia.

I’m not going to drop a long review here, but let me put it simply: this is a book anyone who does anything with the fossil book should read. Sometimes I feel like I should just buy a dozen copies and hand them out willy-nilly to my molecular biology friends who want to better integrate paleontological data into their work. Patzkowsky and Holland do an incredible job of explaining how the (mainly marine) fossil record comes together, and how that can influence (or even entirely produce) the patterns we see in diversity, morphology and community composition through time. Why aren’t you reading this review still? Go read Stratigraphic Paleobiology!

A marvellous and thought-provoking book tying palaeontology to sequence stratigraphy. I found the concepts invigorating.

Had to buy a couple other books to understand this, but I’ll be back at it again soon!

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