

grounded in the wealth of their own primary studies. For each major group of Mesozoic mammals, they offer a concise review of the group's anatomy and paleobiology, followed by a synopsis of all known genera (each of which is diagnosed and illustrated). This makes the book a particularly useful resource for specialist and novice alike because the primary literature on the subject (covered in a 52-page bibliography) is vast, multilingual, and widely scattered.

Like Simpson's classic studies, *Mammals from the Age of Dinosaurs* provides a solid foundation for the continuing quest to shed light on the extensive Mesozoic history of mammals, including the most distant roots of our own species.

#### References

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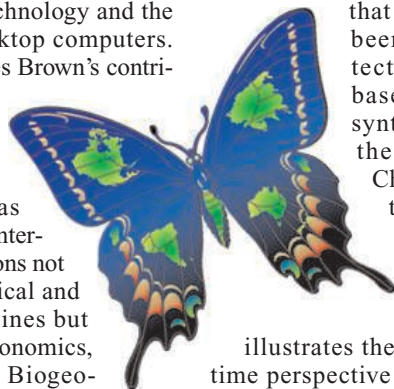
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## ECOLOGY

### Place Matters

Sahotra Sarkar

**B**iogeography has come a long way since the journeys of Humboldt and Wallace in the 19th century. Over the last three decades, the field has been revolutionized by the spread of geographic information systems (GIS) technology and the increasing power of desktop computers. Indeed, according to James Brown's contribution to *Frontiers of Biogeography*, the field only emerged as a recognizable subdiscipline during this period. It has become an international enterprise drawing on interactions not only with various biological and geographical subdisciplines but also with climatology, economics, geology, and sociology. Biogeography has also become central to the new discipline of conservation biology: without accurate relevant knowledge of biota localized to individual places,



The reviewer is in the Section of Integrative Biology and the Department of Philosophy, University of Texas at Austin, Austin, TX 78712-1180, USA. E-mail: sarkar@mail.utexas.edu

any conservation strategy is a shot in the dark. However, biogeographers and their collaborators, especially in academia, tend to be segregated into different departments and institutes. This volume is intended by its editors, Mark Lomolino and Lawrence Heaney, to play an integrative role by both summarizing the present state of the field and encouraging interdisciplinary interaction.

The volume's 18 chapters were developed from plenary papers presented at the inaugural meeting of the International Biogeography Society (January 2003 at Mesquite, Nevada). The authors include most of the major researchers in the field from North America and the United Kingdom, but the only other countries represented by contributors are Mexico and Chile. The new society's quest for international participation obviously has a way to go. The editors have divided the material among five sections that correspond to the field's major divisions: paleobiogeography, phylogeography and diversification, diversity gradients, marine biogeography, and conservation biogeography. Nearly all the papers focus on general principles rather than case studies (the chief exception being Heaney's chapter, which mainly concerns the Philippines). In addition, the contributors generally emphasize conceptual issues rather than technical detail. Both of these factors make the volume useful for introductory students.

The sections on paleogeography and phylogeography (the geographic distributions of genealogical lineages) complement each other well enough that they easily could have been merged. Using plate tectonics reconstructions based on 25 years of data synthesis and modeling in the PALEOMAP project, Christopher Scotese illustrates the changing global geography from the Early Triassic through to the current world.

Bruce Lieberman also illustrates the importance of a deep-time perspective in his consideration of range expansion, extinction, and biogeographic congruence. Brett Riddle and David Hafner explore the relevance of phylogeography to historical biogeography. These two sections also include contributions by Julio Betancourt on arid lands biogeography, Stephen Jackson on quaternary biogeography, and Christopher Humphries and Malte Ebach on cladistic

biogeography as well as Daniel Brooks's comparison of what he distinguishes as cladistic versus phylogenetic biogeography.

Although the remaining sections are not quite as well integrated, they are more cohesive than those in a typical conference product. Several individual papers

stand out: Kaustuv Roy and collaborators attempt to quantify spatial patterns of biogeographic diversity using information on the function and morphology of organisms. This effort is intriguing because, while different measures of diversity are routinely used in biodiversity conservation planning, functional and morphological data are usually ignored in spite of their obvious relevance to the viability of the biota in any

particular area. Robert Whittaker explores the importance of spatial scale in processes that influence species richness from local sites to global patterns. Geerat Vermeij's interesting essay offers a marine perspective on island life. Despite its presence in the marine biogeography section, John Briggs's paper focuses on conservation, particularly of the East Indies Triangle—a major center of evolutionary radiation in the Indo-West Pacific. Julie Lockwood provides a useful summary of the effects of biological invasions on diversity patterns. Víctor Sánchez-Cordero and collaborators demonstrate how GIS-based modeling of niches can be integrated into conservation planning. Michael Rosenzweig's paper underscores the inability of island biogeography theory to guide conservation area network design while exploring the future use of general species-area relationships.

The book ends with a concise overview by Brown of biogeography's current state and future promise. He notes how recent developments have unexpectedly challenged many standard views of the 1980s, including the applicability of the equilibrium theory to islands, the preponderance of allopatric speciation, and high integration within communities. By and large, the papers are well written and endorse his conclusion that biogeography is presently in a state of flux, with few of the traditional certainties holding up under the scrutiny of new data and techniques. It is clear, however, that biogeography's crucial importance in efforts to conserve biodiversity makes it a subject of considerable contemporary significance. *Frontiers of Biogeography* successfully conveys some of the field's excitement.

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#### Frontiers of Biogeography New Directions in the Geography of Nature Mark V. Lomolino and Lawrence R. Heaney, Eds.

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