

morphological specializations associated with adaptation to high- and low-predation environments (F. Bashey, PhD thesis, University of California, Riverside, 2002; [4]) and little has been done to evaluate whether such adaptations influence the fitness of hybrids in a natural setting. We thus lack a sufficient understanding of the system to judge whether conditions leading to ecological speciation exist in guppies. The alternative of allopatric speciation predicts that reproductive isolation evolves as a byproduct of prolonged separation. Magurran presents new evidence suggesting that allopatry is leading to reproductive isolation among guppies derived from two drainages in which the guppies are genetically distant from one another. These results suggests that studying reduced interpopulation fertility as a function of genetic distance in guppies could provide a meaningful test of ideas developed from interspecific comparisons in *Drosophila* [5].

We do not yet have the genetic resources for guppies that exist for the classic models of developmental genetics, such as zebrafish. However, *Evolutionary Ecology: the Trinidadian Guppy* shows that we have something that is harder to come by: a rich natural history and well

described adaptive variation in traits from behavior and male coloration to every component of the life history. This book serves well as a benchmark in the ascent of guppies as a model organism by providing a concise well written summary of this variation among populations, plus other key research on this species. I hope that it will serve equally well as an appeal to develop these genetic resources.

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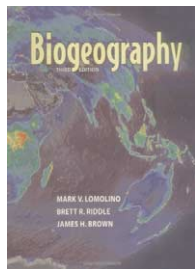
Book Review

The geography of life

Biogeography (3rd edn) by Mark V. Lomolino, Brett R. Riddle and James H. Brown. Sinauer Associates, 2006. US\$89.95/£62.99 hbk (845 pages) ISBN 0 87893 062 0

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Biogeography is an incredibly diverse field, influencing most aspects of biology. Indeed, as Lomolino, Riddle and Brown emphasize, 'few patterns in ecology, evolution, conservation biology – and for that matter, most studies of biological diversity – make sense unless viewed in an explicit geographic context.' As such, it should be of little surprise that

biogeographical studies have led to many of the most important conceptual advances in biology, including Darwin's [1] and Wallace's [2,3] theory of evolution via natural selection in the 19th century, and MacArthur and Wilson's [4] equilibrium theory of island biogeography in the 20th. Neither should it be a surprise that biogeography is still a vigorous and dynamic field of study, playing a leading role in moving the disciplines of ecology, evolution and conservation biology forward into the 21st century.

The pervasive nature of biogeography, along with its historical importance and contemporary popularity, provides a large potential audience for an up-to-date,

comprehensive biogeography text. The challenge in producing such a book is to integrate under a single conceptual umbrella the myriad patterns, processes and spatiotemporal scales governing the geography of life, as well as the methods used to study it. This is the same basic challenge faced by the authors of previous editions of the book [5,6]. However, in many ways this challenge has increased substantially since 1998. Recent and rapid advances on a variety of fronts, including geographic information systems (GIS), molecular phylogenetics and computational biology, have led to an exponential increase in publications in biogeography over the past decade. Treatment of these areas, now at the forefront of many aspects of biogeography, were largely absent in the previous edition of *Biogeography*, leaving the authors with the added challenge of integrating them effectively into the third edition to meet their goal of 'balanced coverage of the entire breadth of the discipline.'

The result is an expanded, slightly reorganized, and much improved edition of *Biogeography*. It also includes a new co-author, Brett Riddle, known for his phylogeographic research on rodent assemblages of North American deserts. Similar to its predecessors, the book is well written and exceptionally well illustrated (with

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more than 400 illustrations, including double-page endpaper color maps of Wallace's scheme of biogeographical regions and the major topographic features of the Earth). As before, an impressive range of topics are covered, including descriptive accounts of the history of biogeography, biomes of world, the geological and climatic history of the earth, as well as more process-oriented phenomena such as dispersal, disjunction, speciation, extinction and island biogeography, to name a few.

Although many of the chapters will be familiar to readers of the second edition, most have been updated, and a few have received major revisions. In particular, 'The History of Lineages' and 'Reconstructing Biogeographic Histories' jump out as true gems. Whereas the omission of phylogeography was one of the biggest weaknesses of the second edition, it shines as one of the greatest strengths of the third. Included in these chapters are reviews of the more historically important and popular approaches and methods in historical biogeography, as well as coalescent-based approaches (and corresponding computer programs) used in the emerging field of statistical phylogeography. The examples and illustrations, especially those related to reconstructing the biogeographical history of the Hawaiian archipelago, are especially useful.

There are a few obvious shortcomings of the book, most notably the continued lack of a chapter on GIS. Given the interest in application of this technology to biogeography in general, and conservation biogeography in particular, it seems worthy of its own chapter. In addition, the treatment of human biogeography received little revision from the second edition and is dated as a

result. For example, the authors primarily rely on references from the early and mid-1990s for the peopling of the Americas, ignoring many exciting recent developments relevant to this issue. Also missing are references to important recent hominid discoveries, such as the fossil remains of the diminutive *Homo floresiensis* of Indonesia. However, these shortcomings generally pale in comparison to the many things that this book does well.

Overall, *Biogeography* is a big, beautiful, comprehensive book. The authors have gone farther than anyone to date in tackling such a huge and diverse field and, in most cases, it is of high quality. Yes, it still has a few holes, but the third edition is a marked improvement over the second, and sets the standard for the field. It will serve as a valued reference for practicing biogeographers and an excellent main text for undergraduate and graduate courses in biogeography.

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