which must be purchased) was required, and should inspire scientists to consider how to more effectively disseminate their work.

Christopher E. Bird, *College of Science & Engineering, Texas A&M University, Corpus Christi, Texas* and Molly S. Dubow, *Epic Health Services, Corpus Christi, Texas*

The Biogeography of the Australian North West Shelf: Environmental Change and Life's Response.

By Barry Wilson. Amsterdam (The Netherlands) and Boston (Massachusetts): Elsevier. $149.95. x + 413 p.; ill.; index. ISBN: 978-0-12-409516-8. 2013.

Australia's north west shelf covers a massive area, bounded by the continent's coastline and its shelf edge, nearly 300 km wide in parts. The length alone is around 2,400 km as the crow flies, but the complex structure of the ancient continent, the island archipelagos that litter the coastline, and the reefs and shoals that scatter the shelf edge together make up a phenomenal diversity of marine habitats. In this context alone, Wilson's *The Biogeography of the Australian North West Shelf: Environmental Change and Life's Response* contains a remarkable amount of information, but the publication is even more significant given so little is known about the region and that much of the existing data are lost in grey literature.

The author has scoured the existing literature to supplement his own decades of research at the Western Australian Museum to summarize what is known about a remarkable part of the world. Extremely remote and relatively pristine, Australia's north west shelf is a global hotspot for biodiversity and contains extensive mangrove, seagrass, and coral reef habitats that are home to a staggering diversity of organisms, from the very small to many megafauna now threatened in other parts of the world. The result of Wilson's efforts is an extremely comprehensive account of the wide range of habitats in the region. Indeed, one of the major strengths of the book is its consideration not only of species' distributions and assemblage structure, but also of the underlying processes, which are often framed in a management context.

The volume begins and ends with chapters that introduce and summarize regional patterns and processes of biodiversity, with the remaining chapters dedicated to key habitats: intertidal rocky shores, coral reefs, mangroves, sandy and muddy shores, benthic shelf, and slopes. The habitats are discussed in the context of the historic processes that formed them, their biological communities, and the contemporary processes that structure them, while the text has many supplementary photographs, maps, and diagrams that are both interesting and useful.

The book is well written and presents concepts and terminology consistently in a way that is digestible to a wide audience. The text may be considered somewhat dense by average readers, but this is almost unavoidable given the phenomenal amount of data contained within some pages, let alone chapters. This level of detail is required to give an accurate representation of the state of knowledge of this vast and globally significant region. Anyone more interested in the region from a naturalist or management perspective may skim some of the details, but those details will be much appreciated by scientists now commencing research in the area or those wishing to place their biogeographical studies in a truly global context.

James Gilmour, *Australian Institute of Marine Science, Crawley, Western Australia, Australia*

Biogeography of Australasia: A Molecular Analysis.

By Michael Heads. Cambridge and New York: Cambridge University Press. $112.00. xii + 493 p.; ill.; index. ISBN: 978-1-107-04102-8. 2014.

The strong point of this book is comprehensiveness: Heads reviews seemingly every molecular phylogenetic study pertinent to Australasia; the resulting clade-by-clade review of the literature could be useful to any biogeographer. However, if the volume is judged as a work of synthetic science, which is what biogeography is supposed to be, enormous problems arise. The author elevates vicariance to an unfalsifiable first principle, and woe be to any data or method that appears to contradict it. Despite the title of the book, Heads basically treats molecular phylogenies only as a source of topologies (as in old-fashioned cladograms), usually dismissing the branch lengths as having virtually no useful information. Thus, any molecular tree can be forced into some vicariance scenario, usually the older the better; extreme rate heterogeneity is invoked to dismiss the branch lengths (p. 59). This should be called what it is: ignoring hard-won data in service of a preconceived dogma. The hypothesis of wild rate heterogeneity is testable by inspecting an undated, rooted molecular phylogeny and observing the variation in the root-to-tip distances. A strict molecular clock model can usually be statistically rejected, but usually the variation is not so extreme that it would be wholly misleading to use a relaxed clock to smooth out rate variation and infer approximate relative dates. Heads also thinks that the soft maxima of paleontological date calibrations are far too young; this is a complex question, but he goes far beyond most actual paleontologists in his distrust of

the fossil record, and furthermore paleontologists' most common complaint about molecular dates is that they are likely too old (e.g., placentals, Neoaves, angiosperms, Cambrian phyla) rather than too young. The author advocates using vicariance events for dating, but this makes his inference circular. Problems also abound in the author's critique of the DIVA and DEC models (F. Ronquist. 1997. *Systematic Biology* 46:195-203; R. H. Ree and S. A. Smith. 2008. *Systematic Biology* 57:4-14). He treats these as "center of origin" models because they will infer area A as the most probable ancestral state in an (A(A(A,B)) phylogeny, but this single data configuration is not a reliable indicator about their generic behavior. DIVA and DEC are actually quite close to Heads' assumptions, as they typically prefer vicariance (DIVA), or vicariance or subset sympatry (DEC), as explanations of allopatry. Like Heads, both methods completely disallow speciation by founder-event jump dispersal (e.g., DEC+J; N. J. Matzke. 2014. *Systematic Biology* 63:951–970) and allow only range-expansion dispersal. These methods have a heavy bias toward inferring widespread ancestors for allopatric species, which is precisely the author's own assumption. To make progress, historical biogeography needs to move beyond plausibility arguments about verbal models and toward statistical quantification of the relative explanatory power of multiple explicit parametric, probabilistic models (Matzke 2014). New models can then be proposed (our current models are still quite crude), tested, and further refined. Heads' work, if converted into a database of ranges, dated phylogenies, and geological hypotheses, would be a valuable step in this direction, but unfortunately he seems to be heading in an antistatistical direction.

NICHOLAS J. MATZKE, *National Institute for Mathematical and Biological Synthesis, University of Tennessee, Knoxville, Tennessee*

INSECT RESISTANCE MANAGEMENT: BIOLOGY, ECONOMICS, AND PREDICTION. *Second Edition.*

Edited by David W. Onstad. Academic Press. Amsterdam (The Netherlands) and Boston (Massachusetts): Elsevier. $99.95. xxi + 538 p.; ill.; index. ISBN: 978-0-12-396955-2. 2014.

FORESTS AND GLOBAL CHANGE. *Ecological Reviews. Edited by David A. Coomes, David F. R. P. Burslem, and William D. Simonson. Cambridge and New York: Cambridge University Press.* $120.00 (hardcover); $60.00 (paper). xv + 462 p. + 12 pl.; ill.; index. ISBN: 978-1-107-04185-1 (hc); 978-1-107-61480-2 (pb). 2014.

This book is part of the Ecological Reviews series of the British Ecological Society. It presents the plenary talks given at the homonymous British Ecological Society Symposium in 2011. The volume consists of 15 contributions from leading forest ecologists who all have made significant contributions to our understanding of forests under global change. The contributions are grouped into three parts focusing on: Forest Dynamics and Global Change; Species Traits and Responses to Changing Resource Availability; and Detecting and Modelling Global Change. However, given the broad and interlinked nature of the subject matter, the borders in between sections are often blurred. All major forest types and varying degrees of human interventions and environmental changes are covered but clearly evidence from tropical and temperate forests dominates. It is a laudable effort of many contributions not to focus on climate change alone but on the many facets of global change that unravel interesting interactions such as changes in logging practices and more fragmented ownership leading to less clear-cuts, but greater harvest intensity in the northeastern U.S. Some chapters are true overview chapters that synthesize a whole field of research, while others are reviews of the recent literature and still others contain elements of original studies. However, the strength of each chapter is the space for discussion, anecdotes, and controversy.

The opening chapter of Part I (by John Grace) links recent advances in studying land-atmosphere interactions with the key underlying biophysical ideas acknowledging the early, original papers. In general, the first part presents efforts to disentangle global change drivers, which face huge challenges but are urgently needed.

Part II presents, among others, a timely discussion of individual, trait-based approaches versus plant functional types in dynamic global vegetation models by Jérôme Chave. This part is the longest and although sometimes the connections between chapters and the overall relation to global change could be clearer, important entry points for further studies (such as on tree nutrition by Kobe et al.) are provided.

Although having been discussed implicitly in many other contributions, the chapter by Harald Bugmann in Part III provides a critical assessment of our ability to use models to look into the future