

Book Reviews

Evolution and Biogeography of Australasian Vertebrates

J. R. Merrick, M. Archer, G. M. Hickey and M. S. Y. Lee (eds). Auscipub, Oatlands, 2006, 942 pp. Price AUD \$185. ISBN 0643066349.

There has never been a greater need for science to elucidate the reasons behind global patterns of biodiversity. If we are to successfully tackle the many contemporary challenges to the conservation of species, such as habitat loss and climate change, we first need a sound understanding of the past, and of the nexus between evolutionary processes and biogeography. This will allow for more informed predictions of how species and habitats may be affected in the future, and therefore where management should be focused. This text, *Evolution and Biogeography of Australasian Vertebrates*, provides a starting point for the region.

The Australasian region is characterized primarily by the distinctiveness, rather than the diversity, of its taxa. The editors of this book should be highly commended for taking on the mammoth task of attempting to place this unique fauna within an evolutionary and biogeographical context. This book also serves to highlight the many technological and methodological advances that have occurred since this volume's 1984 predecessor (Archer & Clayton 1984).

The first thing you notice about this volume is its size: at 942 pages it is hefty! I am sure few readers will read this book from cover to cover, but instead will delve into the chapters that are relevant to their research interests. However, I believe the book may have been better presented as two separate smaller volumes. The 38 chapters follow a logical sequence, written by authorities on each subject area. The book starts broadly, with six 'background' chapters. Mike Lee's opening chapter on the systematics of the Australasian vertebrate fauna provides an excellent summary of the basic concepts and terms that are used throughout the rest of the book. This ensures that even relative newcomers to the areas of taxonomy and phylogenetics should not feel out of their depth in the forthcoming chapters. The second chapter details past environments; the focus then shifts to the evolutionary consequences of aridity in Australia (Chapter 3) and the zoogeography of Papua New Guinea (Chapter 4). In Chapter 5, the discovery of Wallace's Line and the events that contributed to the formation of this significant barrier are discussed. Lastly, Chapter 6 deals with the evolution of the New Zealand vertebrates.

These initial background chapters provided a strong foundation from which to explore the remaining chapters, which narrow their focus to review the evolution

and biogeography of each major vertebrate group from primitive fishes to more recent mammals. The last three chapters address technological progress related to the fields of evolution and biogeography, focusing on advancements in molecular systematics, geographical information systems (GIS) and the remote collection of data on Australasian pinnipeds. All three of these chapters are enlightening, however, I would have liked to have seen a much larger discussion of the role of species distribution modelling in the GIS chapter, as this area is rapidly becoming a major tool in investigating the evolution and biogeography of species worldwide.

The endpapers which summarise major evolutionary events and biogeographical processes are a useful addition. However, I question the value of the identification keys, which are provided for a few select groups (freshwater fish, frogs, skinks, birds, and mammals). There are other texts which perform this function better, particularly in a more user-friendly format for identification in the field. At the very least, these keys could have been provided in a more portable form, such as a compact disk. The indexing is useful, but at times frustrating, as it is difficult to locate references to specific species or themes that occur both in the initial overview chapters and in the subsequent chapters. In general, the figures are well presented and complement the text in explaining complex ideas, and there are some wonderful illustrations throughout. With a text of this size, it is to be expected that the standard of writing varies considerably, but overall the book is presented in a way that is informative, accessible and often entertaining. A glossary dealing with specialist terms would have been a good addition.

At less than \$200, this book is very well priced, and there is no question that it constitutes a very useful reference volume for all ecologists, evolutionary biologists and biogeographers. In providing such a wealth of information in the one text, it will also undoubtedly provide great impetus for the development of exciting new research directions and fostering multidisciplinary studies.

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REFERENCE

Archer M. & Clayton G., eds. (1984) *Vertebrate Zoogeography and Evolution in Australasia: Animals in Space and Time*. Hesperian Press, Carlisle.