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BOOK REVIEW

BUTTERFLIES OF AUSTRALIA: their Identification, Biology and Distribution
by Michael F. Braby.

2000. Australian Biological Resources Study/CSIRO Entomology, CSIRO Publishing, P. O. Box 1139, Collingwood, Victoria 3066, Australia. 2 vol., 1008pp. (22 x 30.5cm). ISBN: 0 643 06591 (set). \$195.00 cloth.

As our knowledge of the world's butterflies grows in inverse proportion to the disappearance of the natural habitats on which they depend, lepidopterists have diligently and expertly prepared ever more beautiful and comprehensive books on regional butterfly faunas. The lepidopterists of Australia have collectively produced under the authorship of Michael F. Braby a two-volume compendium of knowledge on the 397 species of butterflies found within the Australian faunal subregion and another 17 species recorded from Australian islands in the Indian Ocean and the Southern Ocean south of New Zealand. In over 1,000 pages and 70 color plates of photographs of 1,872 pinned specimens as well as living immature and adult stages, this book easily achieves its two major aims: to provide a reliable manual for identification of the butterflies of Australia, and to provide a comprehensive, authoritative, and up-to-date summary of what is known of these fascinating insects. There is no question that this work will immediately become the leading manual for butterfly collectors, scientists, commercial breeders, and conservation biologists who require the most authoritative basic knowledge of the Australian butterfly fauna.

This outstanding book is a considerable improvement in many ways over its many excellent predecessors such as I. F. B. Common and D. F. Waterhouse's *Butterflies of Australia* (1972, 1981) and earlier authoritative books. Its large format, with double-columned text, maps, tables, half-tone figures of adults and genitalia, and color illustrations, together with extensive citation of the literature and extraordinarily comprehensive biological and distributional information from a vast network of amateur lepidopterists across Australia, lends a most impressive solidity and authority to Braby's work. As such, it will be a required starting point for anyone wishing to carry out new research on butterflies of Australia and also for those in academia, government, and the general public who wish to understand and to manage more wisely the fascinating butterfly diversity in Australia's fauna.

Volume One starts with a very detailed and thorough introduction to the history, classification, and morphology of butterflies, along with their geographic distribution, variation, species concepts, and conservation issues. A second chapter provides full details for anyone needing information on the techniques for collection, preservation, and study of the adults and immature stages of the Lepidoptera, and also includes sections on photography and entomological contacts such as societies, journals, and suppliers of materials. Chapter 3 contains a complete checklist of the butterflies of Australia, including all species and subspecies names (but not authors or dates of description). Chapters 4, 5, and 6 cover the families Hesperidae, Papilionidae, and Pieridae, respectively. The book closes with 70 color plates, illustrating set specimens of the above families plus Nymphalidae and Lycaenidae, set adults of species outside the Australian faunal subregion (Plate 64), and living eggs, larvae, pupae, and adults in nature. At the end is a listing of complete label data for the specimens depicted in the adult color plates 1-64.

Volume Two proceeds to cover the largest families, Nymphalidae (158 pages) and Lycaenidae (240 pages). A series of six outstanding appendices follow, including lists of the butterfly species and subspecies recorded from Australian islands, Australian butterflies of conservation concern, Australian butterflies protected by legislation, and a complete list of larval foodplants, followed with the names of butterflies using each hostplant, and also pertinent literature references (by author and date). This invaluable organization will allow anyone to follow up on discoveries of unknown immature stages on identified host plants, to locate the species of butterflies that are known to utilize those hosts. The last appendix is a list of attendant ants which are known to be associated with the larvae of Lycaenidae (whose species names follow each ant name). A very detailed Glossary, with cross-references to the text page where the word is introduced, is included. Hundreds of references follow in the Literature Cited section, including virtually every major paper on Australian butterflies. The book closes with a complete index to the scientific and

common names for all species and subspecies in the book. The end papers of each volume include an excellent map of Australia and its adjacent islands, with mountain ranges indicated by shading and principal cities or other landmarks identified.

Some idea of the thoroughness of each species account may be indicated by the following notes. A genus is introduced with a description of its worldwide characteristics in terms of number of species, habitats, and taxonomic history. Each species in the Australian fauna then starts with its scientific name, author, and date of description, followed by the most usually used common name. The text account includes other common names, a description of the adults, detailed account of the variation (including all subspecies and their differences), an account comparing that species with similar species, a detailed description of immature stages often equal in length to that of the description section on the adult, and an exhaustive list of all larval foodplants accurately recorded for the species, together with notes on special rearing techniques appropriate for that species. The life cycle and behavior is then discussed in an often lengthy section including notes on where the eggs are laid on the host plant, the flight behavior of the adults, the seasonality of the various stages, and any geographic differences in life cycle. An extensive section on distribution and habitat follows and the species account ends with major references to that species being cited.

Each species account is headed by a half-tone illustration of the upper and underside of the male, accompanied by a similar pair of illustrations of the female if it differs from the male. A text figure containing a map of Australia with shadings for the distribution of the species is included in the text, plus a graphic at the top of the map for seasonal appearance of the adults. The color plates, grouped at the end of the text in Volume One, have been arranged to facilitate rapid identification. The upper and underside of both sexes is shown in a block of four specimens. If there are substantial differences in subspecies and seasonal forms, these are also shown. Full data are available on each illustrated specimen (presented as label data at the end of Volume One). Six of the plates depict examples of the immature stages from representative genera from the various major groups in each of the five families designated by the author as part of the Australian fauna. Thus the work does not present a comprehensive guide to the immature stages of all Australian butterflies; although much of that information is conveyed in the text, it is simply not illustrated. The color illustrations themselves are of exceptional quality and were taken with special backing boards and lighting to allow a very soft shadow effect under the specimen, rendering them as virtually three-dimensional images. While most of the illustrations are reduced somewhat slightly from life size, almost all the Lycaenidae are reproduced at life-size. A mm scale is provided with each plate.

If you buy no other book on the Australian butterfly fauna, this is the set to have. Even if you have all the other previously published books on the Australian fauna, this is the book for your library. It will be the most important source of information on the Australian butterfly fauna for many years to come, to be exceeded by a future author only when substantial new life history material and distributional anomalies are found for the small part of the fauna that is still not too well known. The publishers, the author, and the many Australian lepidopterists who contributed their information and knowledge to the accuracy and comprehensiveness of this volume, all deserve our heartiest congratulations on a job well done.

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