

The twenty committee members who labored to generate this highly valuable reference work have my sincere gratitude. Authors seeking appropriate common names can now find them. Anyone with information or interest in a butterfly that he or she knows only by a common name can now look it up and see what the Latinized name might be. The public and responding government agencies often raise biological concerns during land-use permitting procedures by common name only. Today I was asked about the "checkered moth" (suggesting a need for more work). The book offers a list of common names collected from all major sources, with a recommended name in boldface for each species. Subspecies and their common names are also listed but none is designated as recommended. Publication of this work will have the instant effect of producing new sources of previously published common names and advice on which of several possibilities to adopt into the standard list. I would mention a real need for separate names for the species and for the nominate subspecies. A second edition should appear, in my opinion, in well under ten years.

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MOTHS OF AUSTRALIA, by Ian F. B. Common, with photographs by Ederic Slater. 1990. Melbourne University Press, Carlton, Victoria 3053, Australia. Distributed by E. J. Brill (USA), 24 Hudson Street, Kinderhook, New York 12106. 535 pp., 32 color plates, 44 black & white plates. Hard cover, 18 × 25 cm, ISBN-0-522-84326-3, \$150 Australian (about \$200 U.S.).

REVIEW BY J. A. POWELL

This book, the fruit of four decades of labour by an incredibly dedicated lepidopterist, is marvelous. In addition to its usefulness to students of the Australian fauna, this text is the best general reference to biology and taxonomy of world Lepidoptera. The information is comprehensive, with comparable coverage of all taxa from primitive moths to macros; the text is clearly written; and the illustrations, particularly the color plates, are superb.

Moths of Australia is presented in two sections: 1, Moths and Their Environment, and 2, The Australian Moth Fauna. There are appendices on collection and study of Lepidoptera and a larval foods list arranged taxonomically by plants with the moths names but not page references. The index lists moth taxa and general topics but not plant names, and there is a glossary as well as extensive bibliography.

In Part 1 there are discussions of morphology and life history, biology, population control, economic significance, evolution and geographical distribution, and a tabular family classification, that are worldwide in application—an 80-page must reference for every lepidopterist. As an example of the comprehensiveness of coverage, probably more has been published on the systematics, phylogeny, and biology of extinct and extant primitive Lepidoptera during the past 15 years than in all preceding time. Recently, for a review of evolution of larval foods, I compiled more than 80 references since 1978 on primitive taxa and higher classification; virtually all the important ones from all biogeographical regions are included by Common. The literature coverage is thorough to about 1988, with a few 1989 citations.

The classification was prepared in collaboration with E. S. Nielsen and is the system to be used in a forthcoming checklist of Australian Lepidoptera, edited by Nielsen and others. The higher taxa comprise a collapsed Linnaean hierarchical arrangement, with four suborders, and six infraorders within the Glossata, as contrasted with five infraorders treated by Minet (1986, *Alexanor* 14:291) and four by Nielsen (1989, *The Hierarchy of Life*, Elsevier Sci. Publ.). Thus *Dacnonypha*, *Neopseustina*, *Exoporia*, and *Lophocoronina* are recognized at the same taxonomic level as *Heteroneura* and *Ditrysia*. The *Ditrysia* is divided into 26 superfamilies (in addition to the skippers and butterflies), without inter-

mediate categories. There is a list of world families of moths, about 40 of which are not known in Australia.

Part 2 treats the Australian fauna and contains summaries of adult, immature stages, and biology of each family, including diagnoses of exemplar species. These accounts are accompanied by more than 400 excellent line drawings done by Common, depicting wing venation, male and female genitalia, and the pupa of one or two representative species in each family. The discussions are clearly and concisely written, mostly 3–7 pages, although more diverse families are given more elaborate treatment, for example 14 pages for Oecophoridae and 26 pages for Noctuidae.

The description of Australian species is dependent in large part upon the photographs, about 750 in color and 700 black and white; the latter are not on high gloss paper but are nonetheless very good. Presumably costs would have been prohibitive to publish all photos in color. About 150 of the color and 75 of the halftone photos are of mines, galls, or living insects, either adult or larva.

The Australian lepidopterous fauna, as is true of other animals, consists mostly of endemic species and is markedly disharmonious in comparison to other parts of the world. It has about 10,500 described Lepidoptera and is estimated to contain an equal number of undescribed species. If so, the Australian continent, which is about the size of the United States, has several thousand more species than does the fauna of America north of Mexico, which we would like to think is 70–75% described. The Oecophoridae dominate the Australian fauna, with more than 2600 described species, a further 1500 known species awaiting description, and a total fauna greater than 5000 species, Common projects, or nearly a quarter of all the Lepidoptera. The primitive moths are well represented, both in higher taxa and their included numbers of species, particularly the many large and spectacular Hepialidae, more so than in most other parts of the world. By contrast, other large moths such as Saturniidae (12 species) and Sphingidae (59 species) are depauperate. Butterflies are negligible in terms of biodiversity, even more so than on other continents, with fewer than 400 species, 2% of the estimated fauna.

Common (1980, J. Lepid. Soc. 34:286) has discussed factors responsible for some of these imbalances. Large sections of the Ditrysia, notably Oecophoridae and Tortricidae, have evolved with the typically Australian dry sclerophyll communities dominated by Myrtaceae (especially *Eucalyptus*), Fabaceae (especially *Acacia*), and Proteaceae. In particular, larval feeding in leaf litter of the eucalypt forests seems to have set the stage for speciation. Largely through Common's efforts during the past 40 years, the larval foods of nearly 1000 species of microlepidoptera are known; among these, 35% of Tortricinae and 83% of Oecophoridae feed on *Eucalyptus*, the vast majority in fallen leaves. Means of 100–440 lepidopterous larvae per m² of leaf litter have been reported!

The text and illustrations emphasize families with larger individuals: nearly half of the 100+ hepialid and 50+ sphingid species and about 10% of 1600+ noctuids are shown. In contrast, it is curious that the groups to which Common has directed most of his taxonomic research are underemphasized: only about 70 Oecophoridae and 25 Tortricidae are illustrated, less than 3% of the described species in these taxa.

After a cursory comparison of unidentified specimens, it appears to me that this manual will be useful in indentifying the majority of larger moths, at least to the generic level, although this might be a naive assumption based on lack of familiarity with the macro families or because incidental collections by foreign visitors are liable to emphasize the more distinctive, showy species. For the larger families of microlepidoptera, however, too few are illustrated to allow much identification use. For example, in Tortricidae just one species of each of seven Tribes of Tortricinae (about 80 genera) and no Olethreutinae are illustrated in color, and only about a dozen olethreutines, including several introduced pest species, appear as halftones. Among Gelechioidea, representatives of 23 of 105 described genera of Cosmopterigidae and Gelechiidae are pictured, and only about 35 of 200+ named genera of Oecophoridae (including Xyloryctidae) and Depressariidae are included in the color plates. Moreover, superficial resemblances among the multicolored oecophorids are apt to be misleading, rendering limited usefulness to the photographs.

Ian F. B. Common, who was president of The Lepidopterists' Society in 1979, was educated in Queensland, and joined the Division of Entomology, CSIRO, in Canberra,