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**BOOK REVIEW****BUTTERFLIES OF THE BULOLO-WAU VALLEY,**

by Michael Parsons.

1991. Bishop Museum, Honolulu. 280 pp., illustr., 23 figs., 22 col. pls., 3 halftone pls. Softcover, 12.7 x 22.9 cm. ISBN 0-930897-61-7. Price: \$34.95.

This gem of a field guide will tell you just about everything you would want to know about the butterflies of this locality in central Papua New Guinea. With the keen interest that lepidopterists have long had in the butterfly fauna of New Guinea, this book (covering 373 species, or about two-thirds of the number of butterflies known to occur within mainland Papua New Guinea) will surely and deservedly attract a worldwide readership.

Parsons begins his outstanding book with a detailed introductory section covering the origin and composition of the butterfly fauna of New Guinea and disclosing valuable insights into the ecology of the butterflies. Many new observations are recorded here for the first time, information which will be of interest to all biologists working with butterflies. Specific parasites, predators, mimicry complexes, unusual food sources, diapause factors, effect of droughts, and many other interesting topics are discussed by Parsons. He then covers the economic importance of Papua New Guinea butterflies (including a discussion of the Insect Farming and Trading Agency at Bulolo and butterfly farming as well as butterfly ranching), and follows this discussion with a fascinating section on butterfly conservation in Papua New Guinea, treating both good and bad aspects. Next, Parsons presents a refreshingly new series of comments (compared to the usual butterfly book) on "hints on collecting and study" of butterflies. The introductory section ends with an extensive section on classification and on distinguishing moths from butterflies. This classification section is unique in its thorough coverage, giving a detailed but easily read synopsis of the characters, both typical and unique to each family, for all groups.

The main section of the book, its species-by-species treatment of the fauna, begins on page 45 and continues to page 206, dealing with the families Hesperidae, Papilionidae, Pieridae, Lycaenidae, and Nymphalidae. Each family section is divided into subfamilies. Under each subfamily, the genera are given in accepted phylogenetic sequence. Each species account includes the scientific name, author, and date of description, together with reference to the plate figures showing dorsal and ventral surfaces of males and females. Six or seven subsections then follow, including status (whether rare, occasional, common, etc.), the altitudinal range (in meters), the size range for males and females, diagnostic features or discussion of similar species, habitat, habits, and comments on special information about that species. In some cases, the foodplant is also given. When he has particularly detailed information on a genus, such as *Delias* in the Pieridae or *Hypochrysops* in the Lycaenidae, Parsons gives an extended discussion of the genus in the whole of Papua New Guinea prior to listing to the particular species found in the Bulolo-Wau Valley. These discussions alone are worth the price of the book. There is also a wealth of material in the individual species accounts, ranging from detailed information on perching positions ("they occupy low perches in sunlit glades in secondary forests") to tables of major altitudinal zones for the various *Delias* species in the Wau

area. A number of these species accounts are accompanied by line drawings of the genitalia, wing patterns, or other diagnostic features. The format is extremely handy to use, and it presents a great deal of information in a small space.

Following the species accounts sections are a detailed glossary, a comprehensive list of larval foodplants (by family and then alphabetically by genus and then species) for the butterflies of the Bulolo-Wau area, and a comprehensive bibliography. Parsons then provides a checklist of the butterflies of the Bulolo-Wau Valley. This checklist is usefully organized by family, and then genus, species, author, and date of publication, together with indices to the plate figures. The text ends with a list of the figure captions for the 22 color plates and three monochrome plates. The plates section contains a total of 750 figured specimens (660 on the color plates, 91 on the monochrome plates).

The color plates are of superb quality, illustrating the right halves of the body and wings (dorsal and ventral surfaces in most cases). All species are reproduced, however, at the same size, so unless one has familiarity with the species involved, one may become somewhat confused by the lack of size differentiation in the plates. The monochrome plates are almost as good, but it is a shame that the plates could not all be produced in color because there is no particular taxonomic distinction or other distinction made between the two sets of plates (the monochrome plates contain everything from skippers to swallowtails, pierids, lycaenids, and nymphalids).

The book ends with an index which is composed primarily of the species and generic names, but with some general subjects included as well (disease and butterfly mortality, distribution zones, etc.). On the back cover is an interesting text describing the Wau Ecology Institute, which is an independent ecological research station situated in the mountains of central Papua New Guinea, and is within the area covered by this field guide. An address and telephone number is included for that Institute so that interested researchers can write directly to it and make inquiries about reservations and travel there.

This field guide is a marvelous introduction to the butterflies of Papua New Guinea. It will serve not only as a field guide. It will be a home and laboratory resource to identify your material, to study and ponder the ecological and biological observations and intriguing suggestions made by the author in the course of describing butterfly ecology and behavior, and it ought to be a model for authors of other prospective regional works to follow. I strongly recommend its purchase, for it deserves to be in the library of any lepidopterist interested in tropical butterflies and their biology. It may be ordered directly from the Bishop Museum in Honolulu, Hawaii, or from any of several book dealers who are currently carrying the title.

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