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BOOK REVIEW

THE BUTTERFLIES OF PAPUA NEW GUINEA: their Systematics and Biology by Michael Parsons

1999. Academic Press, London and San Diego. 22 x 30.5 cm, 736 pp (plus 26 line drawing plates, 136 color plates). Cloth, £185.00 (ca. \$285.00). ISBN: 0-12-545555-0.

The island of New Guinea, in the Papuan Faunal Region and at the edge of the Indo-Australian Faunal Region, has long fascinated naturalists because of the incredible diversity of its fauna and flora. Images of birds of paradise, giant beetles, strange orchids, and of course the spectacular ten species of *Ornithoptera* birdwing butterflies spring to mind, as do the writings of Alfred Russell Wallace and many other famous naturalists. Now Michael Parsons has provided an inestimably valuable service to the whole spectrum of natural history by publishing this incredibly comprehensive book on the butterfly fauna of Papua New Guinea.

The product of over 15 years of intensive field research and museum work by the author, this book is a visual feast accompanied by a world-class, authoritative, and encyclopedic-level text. A total of 3,309 color photographs in 136 oversized color plates detail the over 820 butterfly species recorded from Papua New Guinea, with a checklist for the 959 species on the whole of New Guinea and its satellite archipelagos. Over 800 line drawings in 23 additional plates depict the important diagnostic characters of wing venation, male and female genitalia, and even androconial markings on the forewings of skippers and lycaenids! Some 32 of the color plates illustrate the larvae, pupae, or eggs of many of the butterfly life histories. The narrative itself is illustrated by nearly 60 intricately drawn maps and other valuable text figures, covering everything from a map of rainfall patterns in PNG to an ecological transect showing the main vegetation zones in correlation with altitude in the country. If you want to know anything about biogeography in this region of the world, you may encounter useful information here: detailed figures even show changes in the position of the world's continental areas during the past 230 million years and how the drift of the Australian plate, the mountain building of New Guinea, and accompanying changes in distribution of basic vegetation types, may have affected butterfly evolution in the region.

But this visual feast, magnificently thorough as it is, must pale in comparison to the extraordinarily comprehensive and eminently authoritative text, surely the most impressive that this reviewer has ever seen in a faunal treatment of butterflies, especially a fauna of approximately 960 species. Parsons begins with a thorough explanatory chapter on the past and present factors that have contributed to New Guinea being a center of biological diversity. From plate tectonics and island arc theories to present-day insular structure and topography, he passes on into discussion of the climate and vegetational regions of the island, and human-related alteration of the New Guinea environment. The next chapter is devoted to a discussion of world faunal regions and butterfly diversity, in particular focusing on diversity in the New Guinea butterfly fauna. Having set the scene with these early chapters, Parsons then discusses in great detail the origins and composition of the New Guinea butterfly fauna, including general faunistics, climatic and ecological effects, migration and dispersal, the general effects of insularity and local topographic effects, continental drift, genetics, and other associated factors impacting species diversity.

After setting the biological framework in the initial four chapters, Parsons gives an intimately detailed history of butterfly collecting in New Guinea, starting with the early explorers and moving on to major expeditions and the start of comprehensive collecting across the island and its associated archipelagos. Fascinating details are quoted extensively from the writings and letters of these early explorers. Detailed itineraries,

dates, and discoveries are treated. Over an hour after starting to read this chapter, one realizes that the double-column, small-type format of the entire text has resulted in packing even more information into this book than expected from the total page count!

The same highest standards of thoroughness, comprehensiveness, and accuracy continue through the remaining chapters dealing with butterfly conservation and commerce in Papua New Guinea, many aspects of butterfly ecology, mimicry in New Guinea butterflies, collection and study techniques, and detailed discussions of adult structure, classification, and nomenclature. The bulk of the text (over 500 pages) is then devoted to detailed treatments of every species and subspecies recorded in PNG. Each species account includes a discussion of races, range, adult description, early stages (egg, larvae, pupae), foodplants, habits, and special notes on the butterfly. Every minor and major publication on PNG butterflies is thoroughly discussed and cited in these species accounts. The book concludes with 11 indices, an extraordinary bibliography, an excellent glossary, and a comprehensive index.

Surely this book deserves a place in the library of every lepidopterist and institution with even the slightest interest in Papuan and Indo-Australian butterflies or topics in biogeography, biodiversity, and biological conservation. Both the author and the publishers are to be congratulated on producing probably the finest detailed butterfly book on a regional fauna of this size ever published.

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