

INSECTS OF PANAMA AND MESOAMERICA: SELECTED STUDIES

Edited by Diomedes Quintero and Annette Aiello

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The Isthmus of Panama has been an extremely significant land corridor for the mixing of the plants and animals of North and South America during the last two million years. Additionally, the rich rain forests of the Panamanian lowlands have themselves provided centers for local speciation and increase of biodiversity. As a result, the countries of Panama, Costa Rica to the north, and Colombia to the south have among the highest biodiversities on earth. To the world's great misfortune, the rainforests in Panama, especially the Pacific lowland forests, are disappearing at a shocking rate and with them will disappear forever this incredible wealth of Neotropical insects and other life.

In their magnificent series, *Biologia Centrali-Americana* (1879-1915), F. D. Godman and O. Salvin described and illustrated many of the insects in Panama for the first time. The editors of this new volume, the first since Godman and Salvin to tackle a treatment of the total insect fauna, have brought together 52 biologists from 11 countries to write 42 chapters on the insects of this area. Some 21 orders of insects are covered, the smaller ones more thoroughly than the larger orders such as Lepidoptera and Coleoptera. The readers of this journal will no doubt be happy to hear that their interests are centered in a major order as defined by Quintero and Aiello, but disappointed that only five chapters in this important book feature a variety of studies on some of the major and minor groups of that order.

In the first such chapter, Annette Aiello provides a brief overview of the "nocturnal butterflies" in Panama, the Hedyliidae. To those readers who have not heretofore heard of this newest family of "butterflies", Scoble (1986) moved species of this lepidopteran group from their placement as a tribe of the Geometridae (inch-worm moths) to being a family in the butterfly suborder Rhopalocera, because of their many butterfly-like characteristics in the immature stages (the egg, larvae, and pupae have many characters in common with butterflies of the family Pieridae). Aiello looks at the nine species that have been reported from Panama (35 species are known, all in the genus *Macrosoma*), and she reviews the taxonomic history of the group, examines the features of the immature stages, and presents a detailed life history of one of the Panamanian species.

Gerardo Lamas and Gordon B. Small, Jr., follow the Aiello chapter with an annotated list of the 134 species of Nymphalinae known from Panama. Included in the notes are distributional range, type localities, depositories of type locality, and references where further information can be found. Cross references are made to illustrations published in DeVries' 1987 book, *The Butterflies of Costa Rica* (Princeton University Press). The paper also includes a less-annotated list of additional nymphaline species that may possibly be found in Panama in the future.

Julian Monge Najero presents a really excellent guide to the clicking butterflies in the genus *Hamadryas* of Panama, including

extensive discussion of their biology and behavior, with a fascinating section on sound production and the possible mechanisms involved. He includes an illustrated key to the identification of the eleven species of *Hamadryas* occurring in Panama, and photographs of the mature larvae of four of these species.

Annette Aiello includes a rather different but equally fascinating paper contrasting the dry season strategies of two Panamanian butterfly species, *Anartia fatima* and *Pierella luna luna*. The first is an inhabitant of disturbed areas, while the second is a rainforest floor inhabitant. Both occur on Barro Colorado Island, and were studied during the 21-week-long dry season of 1982-83. She presents important data which may help us to understand observed distributions for a variety of species in tropical seasonal forest.

Neal G. Smith presents an exceptionally good summary of natural history information on the well-known diurnal moth, *Urania fulgens* (Uraniidae) of Central America and Panama, including extensive discussion of its ecology, reproductive and developmental biology, and famous migratory habits. He compares this information with that known for the Cuban *Urania boisduvali*, with photographs, drawings, charts, and graphs.

Overall, this is a very important book for anyone interested in Neotropical insects. The first two chapters, for instance, cover the geology and biogeography of Mesoamerica, especially Panama, and include invaluable information for understanding the past and present-day distributions of Lepidoptera and other insects. Additionally, reading the chapters on earwigs, katydids, beetles, and dragonflies may give one considerable insight into understanding more about the factors that have molded Neotropical butterfly and moth biodiversity as well as present-day ecology of the regional insect fauna. The high price of this book will prevent it from finding its way into many private libraries, but if you have any influence over your local university, college, or museum library acquisitions, be sure to have them order this book so it will be available for your study and reference. It is a fascinating compilation of data on a rapidly disappearing New World fauna. After reading this book, you will concur that the Panamanian insect fauna not only deserves preservation, but also needs further studies such as the ones reported here from the remarkable base provided by the Smithsonian Institution at its Barro Colorado Island Research Station.

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