

phalidae, by Julian Monge-Najera, is a guide to the clicking butterflies (*Hamadryas*) of Panama, and includes a checklist and descriptions of species, an illustrated key to their identification, and a discussion of their biology and behavior, with emphasis on sound production.

In a chapter profusely illustrated by photographs, drawings, charts, and graphs, Neal G. Smith has assembled a wealth of natural history information on *Urania fulgens* (Uraniidae) (the moth that acts like a butterfly). Smith's comprehensive chapter discusses this diurnal moth's ecology, reproductive behavior, developmental biology, and migration in great detail, contrasting its Central American and Panamanian populations with what is known of the Cuban species, *U. boisduvali*.

Finally, we get to the butterfly that acts like a moth. Veterans of the tropics are familiar with the crepuscular habits of species in the genera *Brassolis*, *Dynastor*, *Opisphanes*, and *Caligo* (all Nymphalidae: Morphinae), which rest during the day and night and become active only for a short period at dawn and dusk. Other than these creatures of the twilight and a few Satyrinae with similar behaviors, all other butterflies are active only during the day, right? Wrong, says Annette Aiello, who describes the nocturnal habits of little-known family Hedyliidae, previously thought to be moths in the family Geometridae and only recently recognized as butterflies, a conclusion based primarily on morphological and behavioral characters of the immature stages (see M. J. Scoble, 1986, *Entomol. Scand.* 21:121-158). Aiello lists nine species of Hedyliidae reported from Panama, providing brief descriptions of wing color and pattern and references to published photographs of adults. Most importantly, she presents previously unpublished details of the life history and larval behavior of *Macrosoma semiermis* (Hedyliidae), a common Panamanian "nocturnal butterfly."

Lepidopterists will be hard put to justify spending almost \$200 to purchase a book that devotes less than 7% of its 700 pages to butterflies and moths, but entomologists in general and tropical ecologists in particular will find this valuable compendium a bargain in spite of the price. Certainly, this volume should be on the shelves of all research libraries so that it is readily available to those with an interest in the ecology and conservation of that fragile and priceless treasure—the tropical rainforest.

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BUTTERFLIES OF THE FLORIDA KEYS, by Marc C. Minno and Thomas C. Emmel. 1993. A Mariposa Press Edition by Scientific Publishers, P.O. Box 15718, Gainesville, Florida 32604. 168 pp., 29 color plates, 52 color figures and line drawings. Hardcover (ISBN 0-945417-88-8; \$31.50) or Softcover (ISBN 0-945417-87-X; \$18.95), 22 × 28.5 cm. Order from publisher (add \$2 postage per copy; \$3.50 outside USA.)

Butterflies of the Florida Keys is more than just another "Butterflies of . . ." It is a well written and beautifully illustrated natural history guide, bursting with butterfly trivia. The main body of the text, a 103-page section/chapter appropriately entitled *Butterflies of the Florida Keys*, is preceded by a 32-page introductory chapter. The Introduction includes numerous maps, graphs, and beautiful color photographs accompanying sections on Climate, Historical Perspective, Vegetation and Plant Communities, The Keys Butterfly Community, Conservation, Precautions, and Note on Species Accounts. All of the graphs are crisp and clear and most of the photographs have been reproduced beautifully. This portion of the text is in an easy reading style and nicely subdivided into the major sections listed above. A detailed table on butterfly monthly occurrence, descriptions (and photographs) of plant communities, a brief review of Caribbean bioge-

ography, and a summary of conservation efforts in the Florida Keys all contribute to the completeness of the introductory material.

The main body of the text details the 106 species of butterflies and skippers recorded from the Keys. At the beginning of each family, there is a brief summary of the morphological, biological, and behavioral features that characterize that family. Each species account consists of five subheadings: Description, Distribution, Natural History, Flowers Visited, and Status. Both common and Latin names are provided, and all taxa are considered at the subspecific level. In addition to the full color plates illustrating spread specimens of all of the species (including upper and under surface, males and females where necessary), there are photographs of larvae and pupae of select exemplars of each family in their natural habitats. Most of the color plates are crisp and clear, and all are shadow-free. However, some are a bit too dark and two of the plates of the Pieridae are a little fuzzy. [What kind of a review would this be if I didn't find *something* to criticize?]

In addition to the standard data provided in the species accounts, for some of the more "interesting" species there is considerably more information. For example, the species account for the monarch (*Danaus plexippus*) is augmented by a map of North America illustrating the major migration routes of this species. The species account for the barred sulphur (*Eurema daira*) includes two half-page black and white photographs illustrating the seasonal forms and sexual dimorphism exhibited by this highly variable species.

Butterflies of the Florida Keys may find a spot on your coffee table, in your research library, or in your suitcase if you have the opportunity to visit the Keys. It is an outstanding and thorough faunal (butterfly) survey of a unique place in North America.

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BUTTERFLIES OF BAJA CALIFORNIA: FAUNAL SURVEY, NATURAL HISTORY, CONSERVATION BIOLOGY, by John W. Brown, Herman G. Real, and David K. Faulkner. 1992. The Lepidoptera Research Foundation, Inc., 9620 Heather Road, Beverly Hills, California 90210. v + 129 pp., 9 text figs., 8 color plates, 155 species distribution maps. Softcover, 21.3 × 27.5 cm, ISBN 9611464-4-3. \$25.00.

Baja California is a land of fascinating mystery and intriguing natural history. It is hard to believe that the first butterfly from Baja California was reported as early as 1875, by no less authority than Samuel Scudder (mentioning *Vanessa carye* from Isla Guadalupe off the western coast of Baja California). Just eight years later, Henry Edwards described the first endemic subspecies (now called *Phoebis agarithe fisheri*) from near La Paz. And in that same year, William Greenwood Wright published a brief description of a field trip listing 23 species taken along the northwestern coast of the peninsula. Since those early studies, many authorities have visited Baja California and collected there, involving at times some very adventurous expeditions.

Now, three noted modern lepidopterists have combined forces to publish this exciting new treatment of the whole butterfly fauna of the Mexican states of Baja California Norte and Baja California Sur. John Brown and David Faulkner of the Entomology Department of the San Diego Natural History Museum worked on a preliminary manuscript assembled by Herman Real, who had earlier done a Master's thesis on the Pieridae of Baja California. Together, these three authors gathered thousands of records from museums and private collections across the United States and abroad. Many unpublished notes were provided by those who had the most experience with collecting various butterfly groups in Baja California. The product is this truly impressive and biologically important book.