Tropical Lepidoptera, 3(2): 130

BOOK REVIEW

BUTTERFLIES OF BAJA CALIFORNIA: FAUNAL SURVEY, NATURAL HISTORY, CONSERVATION BIOLOGY,

by John W. Brown, Herman G. Real, and David K. Faulkner.

1992. Lepidoptera Research Foundation, Inc., 9620 Heather Road, Beverly Hills, California 90210. 129 pp., illustr. 8 col. pls. Softcover, 21.3 x 27.5 cm. ISBN 9611464-4-3. Price: $25.00.

The geographic proximity of the country of Mexico to the United States has prompted great interest in the butterfly fauna of that part of Mesoamerica. Not the least of the areas of special interest is the peninsula of Baja California, located off the coast of mainland northwestern Mexico. While this narrow 1,300 km peninsula actually occupies a huge area (approximately 143,600 square km, not including about 50 offshore islands), it seems at first to be mostly desert. However, a wide diversity of habitats, including chaparral, pinyon-juniper woodland, southern oak woodland, and scattered yellow pine forests along the mountain summits of the Sierra de Juarez and the Sierra San Pedro Matir, provide a diverse flora for lepidopteran species from the north (California and southwestern Arizona) and from the east (mainland Mexico, including tropical areas). Thus it is not at all surprising that a relatively rich fauna of 178 species is now recorded from the Mexican states of Northern and Southern Baja California.

This outstanding new book is the first to concentrate on the butterflies of Baja California. Information collected personally by the three authors is combined with the abundant material taken from numerous expeditions and surveys over the last century in this curious and desolate peninsula. The organization of the book utilizes these data in combination with excellent illustrations and fascinating biogeographic discussions to offer a package of wide value even to naturalists and scientists working with groups other than butterflies.

The authors begin by tracing the butterfly-collecting history of this part of Mexico. They then describe in detail the phytogeographic regions of the peninsula, together with climatic data and average monthly temperatures and monthly precipitation for six sites in Baja Califomia. An excellent discussion of peninsular biogeography follows, showing that these have been two generalized tracks (replicated patterns of distribution) of nearctic species and neotropical species coming into the peninsula. Using these tracks, the authors generate a scenario for the origin of the butterfly fauna. This introductory section on biogeography concludes with a brief discussion of endemism, including two island endemics in Baja California *(Euphilotes bernardino garthi* and *Mitoura cedrosensis,* which are endemic to Isla de Cedros). There are a number of other subspecies (and some species, as in the Megathymidae) endemic to the mainland areas of Baja California.

The preceding sections are followed by a brief discussion of butterfly phenology, and a somewhat longer section on the concems of conservation biology on the peninsula. Baja California is suffering many of the same kinds of habitat destruction and human alteration that adjacent southern Califomia has been experiencing. Urbanization, agricultural development, and beachfront property developments are destroying many butterfly habitats. Even the offshore islands are not secure. Isla Guadalupe suffers from introduced goats which have nearly completely destroyed the native flora. On the southeastern portion of the island of Isla de Cedros, urbanization has altered the local habitat severely.

The bulk of this book is devoted to a systematic account of the 178 species for which the authors have personally examined specimens from Baja California. Over 10,000 specimens were examined in this faunal survey. A separate section includes the unverified records of other "reported" species. Within each species account, the scientific name and original author is given, followed by a common name and a reference to the plate illustrations. A complete synonymy follows. Then the peninsular distribution is given, including habitats, geographical locations, and elevational range. An excellent line-drawing map of Baja California is placed in the margin next to each species account. The flight period gives both the inclusive months of adult occurrence and the number of broods a year. Larval hosts are listed where known. A Remarks section compares the Baja butterfly with other geographic subspecies or similar species. Finally, detailed localities and dates are given under a Specimens Examined section. Thus one can get a considerable amount of information on each species in a relatively small textual synopsis. The 178 species accounts are followed by a simple checklist, presented in numerical order of the text and with scientific names and authors. This list is followed by an Unverified Records section, where the literature source or anecdotal source for each unverified record is given. A comprehensive Literature Cited section includes every reference mentioned in the text that deals with the Baja Califomia butterfly fauna.

The color plate section consists of eight large-format color plates, each measuring approximately 8.5 x 11 inches in size. Specimens are reproduced a little smaller than lifesize in the case of nymphalids, or approximately life-size for the skippers, blues, pierids, and even swallowtails. Both dorsal and ventral surfaces are shown where necessary to illustrate diagnostic characters. All the specimens are carefully arranged and numbered. Strong shadows cast by the lighting of the color plates provide some distraction but overall the plates are of excellent quality for identification of material. Facing each plate is a detailed figure caption page with locality and date for each figured specimen.

The Lepidoptera Research Foundation is to be congratulated for publishing this outstanding book. It will be a great help to all those interested in the butterflies of Mexico, as well of the southwestern United States, and will be an invaluable resource for biogeographers, ecologists, and others interested in the evolution and adaptations of desert insect faunas. The low price insures that the book may be added to the library of any North American lepidopterist and those elsewhere in the world who have an interest in the natural history and conservation biology of tropical butterflies.

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