

based on speculation or personal observations. The book includes the raw data for 180 butterfly subspecies collected over a period of almost 20 years and leaves the interpretation of the data to the reader. Although the book is written in Spanish, readers without any knowledge of the language will be able to easily extract almost all of the information in the book, due to its lack of an extensive text, its clear, logical organization, and its excellent distribution maps and color plates. The only shortcoming of the color plates is the failure to illustrate the ventral surfaces of many of the species illustrated. For collection-based research, however, the plates are more than adequate.

This book is a must for all lepidopterists interested in Neotropical or southern Nearctic butterfly fauna (including southwestern United States), as well as entomologists and naturalists with a general interest in Lepidoptera. Specific locality and literature information on extremely rare endemic species, including *Pterourus esperanza* (Beutelspacher, 1975), and *Protographium thyastes occidentalis* (R. G. Maza, 1982), among others, will be of great value to conservationists. We can only hope that this team of researchers will produce similar field guides on other families of Mexican butterflies!

ANDREW D. WARREN, *Department of Entomology, Cordley Hall, Oregon State University, Corvallis, Oregon 97331-2907*

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HISTÒRIA NATURAL DEL LEPIDÒPTER *GRAELLSIA ISABELAE* (GRAELLS, 1849), by Josep Ylla i Ullastre. 1997. Published by Institut d'Estudis Catalans, Carrer del Carme 47, E-08001 Barcelona, Spain (mpascual@iec.es). 232 pages, 27 color photographs, 68 tables, 60 figures (mostly graphs). Soft cover, dust jacket, 18 × 24.5 cm, ISBN 84-7283-375-5. Available from the publisher for 2000 Spanish pesetas plus 500 pesetas postage (about U.S. \$16.25). Printing limited to 600 copies.

This book stands alone as the single most detailed and intensive piece of work on the biology of any species of Saturniidae. The subject of the study, which was Dr. Ylla's dissertation (1992, Autonomous University of Barcelona), is the beautiful Spanish moon moth (*Graellsia isabelae* (Graells)), a close relative of our luna moth (*Actias luna* (L.)). Virtually every aspect of the biology, distribution, species-level taxonomy, and summary of the existing literature about the moth has been covered. The text is written in Catalan, the regional language of Catalonia, but if one can read other Romance languages, much valuable information can be extracted from the book. The tables and graphs are quite clear in their presentation, so that language is a minimal barrier. Incidentally, the magnificent dust jacket has a large color photograph of a male moth in profile, enlarged to the point that individual scales can be seen. The moth is revered by the Spaniards, with the species named for their beloved Queen Isabel II, and the genus named for their famed entomologist Dr. Mariano de la Paz Graells.

The author meticulously made observations and recorded data for a decade (1981–1991) on this insect. This was possible because he lives in the pine forests where the moth is common. (I had the good fortune in 1995 to visit the author at his home to see for myself the habitat of this famous moth and to experience Catalanian hospitality.) The moth is strictly univoltine, overwintering in the pupal stage. The primary hostplant is Scots pine (*Pinus sylvestris* L.). Although “protected” from collecting by Spanish law, the moth is not at all endangered. In recent years one threat to its populations in Catalonia has been the aerial spraying of diflubenzuron to kill caterpillars of the pine processionary moth (*Thaumetopoea pityocampa* (D. & S.)). This situation is parallel to the flawed policy in the United States where *Bacillus thuringiensis* is used to kill caterpillars of the gypsy moth (*Lymantria dispar* (L.)), but which also kills many other non-target Lepidoptera in our forests.

There is a section showing range maps as depicted by several earlier authors, as well as sections on parasitoids, diseases, and hostplant trials. Data were recorded on flight times, diapause, emergences (circadian and seasonal), larval development, phototaxis, muscular

tremors, pheromone response, mating behavior, adult longevity, embryonic development (incubation periods), wingspan, oviposition, sex ratio, and biometrics of pupae. In many cases, temperature and relative humidity were faithfully recorded and correlated with moth responses, and males and females were graphed separately in those studies where such data can vary according to sex. The author offers hypotheses for the patchy and limited distribution of the moth in the mountains of Spain and France based on its ecological profile. The bibliography is, of course, exhaustive for what has been published on *G. isabelae*, but also cites many other works because Ylla has compared his observations on *G. isabelae* to those in published works concerning other insects.

For those wishing to have an ideal model of how to carry out and to present detailed observations and conclusions on the ecology of a moth, this work will serve them well. Where similar studies (although of much lesser scope) have been or will be published by workers on Saturniidae in other regions, it will be both interesting and useful to compare and contrast those results with what is found in this book. Studies on our own large and common saturniids like *Antheraea polyphemus* (Cram.), *Callosamia promethea* (Dru.), or *Hyalophora euryalus* (Bdv.) should be made and compared to this one. With the exception of the important studies on *Hyalophora* Duncan by Michael Collins, current work on Saturniidae largely remains on a non-quantitative level. This book by Ylla thus grabs our attention as being a highly impressive and excellent study that stands alone in the field of literature on Saturniidae and is perhaps even rare for any species in the entire order Lepidoptera. The published study is much to the credit of the author, his university, and his advising professor Dr. Víctor Sarto i Monteys. I highly recommend the book to insect ecologists and saturniid enthusiasts alike, and I urge those who obtain it to make use of it in their own studies.

RICHARD S. PEIGLER, *Department of Biology, University of the Incarnate Word, 4301 Broadway, San Antonio, Texas 78209-6397, USA*