

## **The Hawk Moths of North America: A Natural History Study of the Sphingidae of the United States and Canada**

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THE HAWK MOTHS OF NORTH AMERICA: A NATURAL HISTORY STUDY OF THE SPHINGIDAE OF THE UNITED STATES AND CANADA by James P. Tuttle. 253 pages + XVIII pages, 23 color plates of larvae and adults. ISBN 978-0-9796633-0-7. Hardbound 29 cm X 22 cm. Published by the Wedge Entomological Research Foundation, Washington D.C. in 2007. Available from distributors for US\$90.00.

The sphinx moths are familiar to entomologists and lay people alike, certainly known even to prehistoric Americans as the horned worms that plagued their tobacco and tomato gardens, or as the great moths hovering silently in the dusk—like crepuscular hummingbirds above deep, sweet-scented flowers of the night. Their powerful flight has always presented us with the exciting prospect of finding rare strays at our collecting lights.

For years, I heard rumors of James Tuttle's endeavor to rear all of the known species of sphingids occurring in the United States (and, de facto, Canada) and photograph them himself. The story was a nearly epic one for sphingid aficionados like me. I asked myself, "How could he do that?" One would be lucky to see some species even once in a lifetime within the United States, but find their larvae, as well? Eventually, I reviewed his sections on *Proserpinus* and related genera. It was then that I discovered the promise of his work and knew that its final result would not suffer that oft' heard refrain: "But they did not consult the western collectors!" Jim acknowledges the help of many in realizing his field objectives, intensely peer reviewing and refining his work. I find none of the sloppy errors of identification common in many books treating regional faunas in Lepidoptera!

This book functions as a current incarnation of *The Moths of America North of Mexico, Spingoidea*

(Hodges 1971), but covers more species (some lately discovered) with much greater depth and detail, especially with respect to aspects of life history. It provides accounts of 127 species for the study area, up from the 115 species treated by Hodges. Overall, and understandably, Jim's book follows the format of *The Wild Silk Moths of North America* (Tuskes, Tuttle, & Collins 1996). We find introductory chapters on biogeography, morphology, biology, ecology, collecting, and rearing.

The bulk of this work is devoted to species accounts, for each giving distribution maps and commentary on distribution, adult diagnosis, variation, habitat, adult biology, immature stages (usually treated extensively), and rearing notes. Throughout the text, Jim meticulously and copiously credits all sources, whether from literature or personal communication, listing some 476 references in the literature cited. For many species, detailed drawings of pupae are presented. Where the taxonomic status of populations is uncertain (the troublesome *Euproserpinus* and *Hemaris* are good examples), Jim lets us see the reasoning behind his opinions and makes clear where further work is needed. The resurrection of *Lintneria* from the ashes of Sphinx came from careful consideration of larval, pupal, and adult morphology. In fact, Jim actually used adult morphological characters of as-yet-unstudied species to make predictions and test his hypothesis with larvae he would only see later.

I enjoyed the color plates of adult specimens, artistically arranged in a Victorian era fashion reminiscent of Holland's *The Moth Book* (1903). The plates of larvae, with locality data, are composed of photographs showing the lateral aspect of ultimate instars for all species obtainable in the reasonable course of years Jim could devote. Missing are the larval images of only a few, mostly rare, stray species. The

larval plates alone would have been an important scientific contribution and worthy of purchase. They are a great accomplishment and a fitting centerpiece of this book. Many of these larvae are depicted for the first time; some were completely unknown previously. Appended are parasitoid associations (with citations), lists of collections referenced, an entomological/animal index, and a botanical index.

Whereas Hodges depicted extensive adult variation with exemplar series, Jim shows only some. For documentation of the larvae, I would like to have seen color depictions of dorsal views for some larvae shown only in lateral view. Though an added expense, the work would also have benefited by additional color images exemplifying geographic and within-population

variation of larval color and pattern (rampant for example in *Euproserpinus*), perhaps utilizing the blank reverse side of Plate 23. These minor comments, and Jim has my name wrong in the acknowledgements(!), cannot eclipse the fact that for all biologists interested in sphingids, whether occurring in North America or not, this book will be indispensable. In quality, it stands unsurpassed among the many faunal treatments that line my bookshelves.

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