

*Journal of the Lepidopterists' Society*  
60(2), 2006, 118–119

THE MOTHS OF NORTH AMERICA INCLUDING GREENLAND. FASCICLE 27.1: NOCTUOIDEA, NOCTUIDAE (PART): NOCTUINAE, AGROTINI, by J. Donald Lafontaine. 2004. (Ed. R.W. Hodges) 385 pages, 12 colour and 63 B&W plates, 136 text figures (1 phylogenetic tree and 135 maps), 21.5 x 27.8cm, ISBN 0-933003-12-9. Published by The Wedge Entomological Research Foundation, Washington, D.C. Distributed in the USA by Entomological Reprint Specialists, Los Angeles CA. Softcover, price: \$115.00 plus \$4.00 shipping/handling [USA, Canada, Mexico], \$5.00 shipping/handling [elsewhere].

This is the third in a series of four MONA fascicles that together will revise all 540 species (currently) of Noctuinae found in Greenland, Canada, the continental United States and Mexico. The first to be published, fascicle 27(2) (Lafontaine, 1987), treated 171 species of the genus *Euxoa* (tribe Agrotini) found north of Mexico (three Mexican and one Costa Rican species were excluded). Next came fascicle 27(3) (Lafontaine, 1998), which dealt with the 169 species (31 genera) of tribe Noctuini, and extended the geographical area to include three species from northern Mexico. The present fascicle includes 181 species in the remaining 14 genera of Agrotini, of which 44 species are found only in Mexico, together with *Crassivesica*, here placed as a subgenus of *Euxoa*. This gradual expansion in geographical inclusiveness is also reflected in a subtle change to the title of the series, from The moths of America north of Mexico to The moths of North America. The fourth and final fascicle will complete the revision by treating an additional 19 species of *Euxoa* and presenting distribution dot maps of all *Euxoa* species, these having not been included in 27(2).

Fascicle 27(1) follows what has become the standard format for MONA. It opens with a general description of the structural features and biology of the tribe Agrotini. They are characterized as inhabiting primarily in open, xeric habitats and are usually the dominant group of Lepidoptera in deserts and grasslands, in contrast to Noctuini, which are mostly inhabitants of temperate forests. There follows an historical review of the taxa Noctuinae and Agrotini, tracing the groups from their origins in the mid-1800s through to the present day. In so doing, the author argues (rightly in my opinion) for retaining the traditional usage of subfamily Noctuinae, rather than the broader and more ill-defined concept that would incorporate such groups as Hadeninae, Cuculliinae (part) and Amphipyriinae

(part).

The section on classification and distribution of Agrotini is co-authored with the eminent Danish noctuidologist, Michael Fibiger. They begin by describing the characteristics of the two tribes, Noctuini and Agrotini, emphasizing the apomorphic (derived) features that demonstrate the reciprocally monophyletic nature of each group. The third tribe of Franclemont & Todd (1983), "Aniclini", is rejected as a non-natural assemblage of lineages that simply lack many (but not all) of the derived characters typical of the other two tribes; the genera included in "Aniclini" have been reassigned to either Noctuini or Agrotini. Agrotini is divided into two subtribes. Australandesina is a primarily South American group that is represented in North America by *Peridroma*, *Neodroma* (a new genus proposed for *Agrotis semidolens* Walker, a neotropical species that reaches central Veracruz in Mexico), *Anicla* (including subgenus *Euagrotis*), *Praina* and *Hemieuxoa*. The remaining ten genera (including *Euxoa*) comprise the subtribe Agrotina. A phylogeny of Agrotina genera is presented, including a cladogram, but synapomorphies are not shown mapped onto it. Instead, a narrative style is adopted, and unlike the discussion of the two tribes, synapomorphies are not emboldened. This makes it quite difficult to determine which are the symplesiomorphies and which are the synapomorphies, and what are their distributions among the various groups. It also leads to a certain laxness in argumentation in places, so that in the discussion of the interrelationships of *Richia*, we are told they "do not have character states to further group two of them into a monophyletic unit". Instead they are "arranged in a sequence based on 1) loss of the digitus on the valve, 2) reduction and change in orientation of the clasper, and 3) and [sic] increasing granular texture of the larval integument". However, just what aspects of these trends serve to group *Copablepharon* + *Protogygia*, and *Euxoa* + *Feltia* + *Agrotis* together to the exclusion of *Richia* are not stated.

Next follows a detailed description and discussion of the author's personal style of genital dissection. This will be very useful to many lepidopterists, especially those who are not already familiar with the procedures. The author also explains his preferred terminology for various genital structures, and pays particular attention to the vexed concepts of clasper, harpe and ampulla. While I appreciate the author's position, and accept that it differs from my own terminology, the grounds for confusion remain fertile. Maybe the time has come to determine a standard terminology for the main

lepidopteran genital structures, one that is more in line with those employed in other insect groups. Then, if valve has to give way to gonopod, aedeagus to phallus, and vesica to endotheca (Kristensen, 2003), so be it. Or is the historical contingency simply too great?

The remainder of the fascicle follows the now familiar style of the MONA series and is produced to the very high standards of this author. There is a key to genera based on adult features and one to mature larvae (co-authored with Suzanne Allyson). The latter, which includes only 34 of the 181 species treated in the fascicle, shows just how little is yet known of the immature stages of these moths. Under each genus are provided details of the original description, type species, synonymy, diagnostic features, a detailed head-to-tail description and a key to species (if two or more species are included). Under each species are a full synonymy (with explanatory notes), diagnostic features of adults and larvae (if known), distribution and a dot map. The label data used to generate these maps are stated to be available on-line at the web site for The Wedge Entomological Foundation. However, no URL is given and while a "Google search" on "The Wedge Entomological Research Foundation" on 23 June 2005 produced 135 hits, the data label site was not among them. In common with many other lepidopterists (myself included), the author has eschewed the requirement to make specific names agree in gender with that of the genus in which they are included. This really is an irrelevant diversion in 21st Century systematics that should have been eliminated from the nomenclatural code long ago (and apparently almost was last time round).

There are over 100 pages of monochrome and colour illustrations. There are explanatory guides to terminology of venation, wing pattern, adult and larval features, which perhaps could have been better cross-referenced in the main text. There are 52 monochrome

plates illustrating male and female genitalia. These are generally well reproduced but a few are slightly out-of-focus and the contrast could have been higher on some. An interesting alternative format would also have been to have the males and females on facing pages, so that the morphological match between the two could be appreciated. However, I accept that this may not be to everyone's taste and would probably increase the size of the work, with associated financial implications for both the author and purchaser. The color plates are excellent and the use of a pale blue background is especially effective with the pale *Copablepharon* species.

The fascicle concludes with a list of institutional abbreviations, a checklist and indexes to moth and plant names.

Overall, this is yet another excellent contribution to both the MONA series and to noctuid systematics.

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