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54(3), 2001, 102


In a brief forward Vídalepp explains the checklist represents a personal effort to summarize his own fieldwork (1961–1992) and compile information previously published in regional faunas. A list of included geopolitical regions and their corresponding faunistic literature follows. The short reference list includes 39 systematic and faunistic papers published between 1976 and 1996 and 35 of these are in Russian or German. For literature prior to 1976 the introductions to North America including (see Miller, (Miller), London, England, 284 pp.) Archiearine Ecoleptia Curtis and 69 species of Idaea Treitschke in the Vídalepp list (corresponding figures for North America north of Mexico are 137 and 26 respectively. Although Vídalepp’s checklist provides distributional information for each species, an overview of faunistic affinities and biogeographic distributional patterns within Eurasia is not provided.

It is unfortunate Vídalepp does not discuss or more completely reference recent systematic literature. Approximately 200 species group and over 20 generic names listed in the Checklist of the Geometridae of the Former U.S.S.R were published since 1970 reflecting considerable recent systematic effort especially in Asian countries. Species group and generic synonymies are incomplete and only selectively provided. Many recent new combinations, new synonymies, status changes, and revivals cannot be traced using this checklist alone. In an attempt to be inclusive, a number of unpublished taxa are listed with notations such as “sp. n. (in press)” and “sp. n. (in prep.).” Even more tentative is larentine species number 185: “G. nov. sp. n.” listed in the tribe Cidarini. The tribe “Hierochthoniini (trhl. n.)” appears on page 61 of the list and includes the geometer genera Hierochroania Prout and Hisseracricus Vídalepp but without description of the new higher category.

In summary the Checklist of the Geometridae of the Former U.S.S.R is a distributional list that also serves as an introduction to the geometrid fauna of a large and diverse region. Lepidopterists unfamiliar with the Eurasian fauna and its biogeography can delve further with the aid of the Zoological Record, a good atlas, and the references provided. English speaking geometrid specialists eagerly await additional faunistic and systematic publications treating the Geometridae found within the former U.S.S.R.

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These volumes are the eighth and ninth of an estimated eighteen part series documenting the macrolepidoptera of the second largest non-contiguous island, Borneo. For the family Geometridae alone this is an ambitious effort. Together with part 11 of the series (Encnominae, published in 1994), a fauna of 1079 species is treated, equivalent to approximately one-quarter of the estimated geometrid sequentially numbered entries; doubtful records also included within the list but not numbered) is comparable to the total number of geometrid species in North America north of Mexico (1404). However, in the Eurasian fauna the subfamilies Larentiinae and Sterrhinae are disproportionately represented as exemplified by 253 species of Eupithecia Curtis and 69 species of Idaea Treitschke in the Vídalepp list (corresponding figures for North America north of Mexico are 137 and 26 respectively. Although Vídalepp’s checklist provides distributional information for each species, an overview of faunistic affinities and biogeographic distributional patterns within Eurasia is not provided.
fauna in the Oriental region. The author, Jeremy Holloway, has been working on the faunistics and biogeography of Indo-Australian Lepidoptera for decades and in 1993 was awarded the Karl Jordan Medal of the Lepidopterists’ Society for his many contributions.

Borneo is an important piece of the large Indo-Australian biogeographic puzzle that has fascinated biogeographers since Alfred Wallace. In a broad sense understanding the fauna of Borneo requires consideration of taxa that range from Africa to Oceania, and from Australia to the Himalayan region. Holloway’s contribution to the higher classification of the Geometridae as outlined in this series extends well beyond the region to the global level as evident in more recent systematic treatments of the family (see Minet, J. & M. J. Scoble, 1999. The Drepanoid / Geometroid Assembly. pp. 301–320. In N. P. Kristensen (ed.). Handbook of Zoology, Volume IV Arthropods: Insects, Part 35 Lepidoptera, Moths and Butterflies, Volume I, Evolution, Systematics, and Biogeography, Walter de Gruyter, Berlin and New York, and Scoble, M. J. (ed.). M. S. Parsons, M. R. Honey, L. M. Pitkin, & B. R. Pitkin, 1999, Geometrid Moths of the World: a Catalogue (Lepidoptera, Geometridae), CSIRO Publishing and Apollo Books in association with The Natural History Museum, London, England, Collingwood, Australia and Sterndrup, Denmark, 2 volumes). Of the 1079 species of Geometridae treated in The Moths of Borneo series, 17% are newly described, 11% contribute new synonymy, and 4% are revived from synonymy. The lowland forests of Borneo harbor many endemic species and the upper montane forests are rich in endemic Larentiinae, especially the tribe Trichopteryxini.

Parts 9 and 10 of The Moths of Borneo are similar in format. The introduction of part 9 is a world review of the family group names previously referred to subfamilies Oenochrominae sensu lato and Geometrinae as well as a discussion of the classification of these subfamilies. The introduction of part 10 includes a synopsis of the diversity of Bornean Geometridae with analysis of ecological and biogeographic affinities. A brief section offering a tentative classification of the world Geometridae follows. Family group names and subfamily classification are reviewed in the systematic accounts of the Sterrhinae and Larentiinae.

Within the systematic accounts each genus is cited with its author, type species (including type locality), and synonyms. A generic description follows based primarily on adult external features and genitalia. Brief descriptions of the early stages are provided where known (not illustrated except for a few color photos in the plates), larval hosts enumerated, and the geographic distribution of the genus summarized. Particularly for new or revised genera, extralimital taxa are listed as new combinations. Species accounts include synonymy, citation of original descriptions, diagnosis, taxonomic notes, geographic distribution, habitat notes, and where known, ecology and larval hosts. Recent systematic and biological literature is often cited and considerable biological information is published here for the first time. The total number of new taxa published in parts 9 and 10 attest to Holloway’s effort to document the fauna (22 genera, 109 species, and 5 subspecies). At the conclusion of each part useful appendices include lists of new taxa, new combinations, new synonyms, and status changes and revivals. Finally, a checklist of Bornean taxa is provided and annotated with general distribution and habitat information. The checklists serve as indices to the pages on which species accounts appear, a general index is not provided. The extensive literature cited should appeal to the geometrid bibliophile.

With the exception of the first four figures of part 9 (line drawings of wing venation) and the first two text figures of part 10, all figures are photographs of male and female genitalia. Legends are listed separately in the pages that precede the genitalia figures. The genitalia photographs vary in size and are arranged in a horizontal “cut and paste” format. Figures are not always sequentially numbered. Quality of the preparations and clarity of the photographs varies. Central structures of the male genital capsule and the female sterigma are not always optimally displayed and aedeagi are often photographed without vesica inflation. All to frequently the aedeagus is not illustrated or only the male genitalia are figured even when female material was available for study. I confess a preference for line drawings of genitalia but this would be prohibitive in a series of this magnitude. Nevertheless, selective use of line drawings can serve to differentiate close taxa as well as illustrate important generic and family group characters. The color plates of both parts are of reasonable quality. For smaller moths photographic enlargement would have enhanced details of maculation. It is difficult to judge color fidelity without specimens for comparison. Some plates of the green geometrids in part 9 appear color shifted toward blue or show reflections (perhaps attributable to scale wear) and many plates of part 10 are dominated by yellow tints. Specimens depicted on the color render of part 10 appear crisper and show better color balance than photographs of the same specimens on the corresponding plates.

For the remainder of this review I will overview Holloway’s contribution to geometrid systematics in The Moths of Borneo at the subfamily, generic, and specific levels.

Present higher classification of the Geometridae is far from satisfactory and requires revision on a world basis. While it is accepted that traditional groups such as the Oenochrominae sensu lato are unnatural assemblages (see Minet & Scoble 1999, op. cit.), satisfactory phylogenetic classification is elusive. Holloway’s proposed classification might best be viewed as provisional, and is based largely on similarities of adult structures, especially those of the abdomen. Holloway appreciates that careful comparative study of the early stages is needed to shed further light on geometrid systematics.

In the Bornean fauna, only the robust bodied members of Saricinodes Guenee are included in the Oenochrominae sensu stricto. Holloway reserves the subfamily name Desmobarthini to encompass “delicately built ‘oenochromine’ genera with elongate, slender appendages.” This subfamily includes a number of cosmopolitan mostly tropical genera placed in the tribe Desmobarthini and the monobasic Indo-Australian tribe Eumeleini. Two genera, Heteralex Warren, and Nizur Walker, traditionally referred to Oenochrominae are tentatively transferred to Eumelini with the latter genus (along with Orthostictus Hübner) included in the tribe Hothrosmini. The larvae of Naza are colonial and known to feed on Oleaceae with the larvae and pupae suspended in extensive silken webs. In part 10 Holloway publishes new biological information regarding Naza guttulata Warren observed feeding on a fera (Diplazium sp.), color photographs of the larva and pupa suspended in their silken web are recorded on plate 4. In his review of ‘oenochromine’ family group names Holloway concludes the Holarctic genus Alsophila Hübner should be placed in a separate subfamily, Alsophilinae, a decision accepted by Minet and Scoble (1999, op. cit.).

The Geometrinae of Indo-Australia include genera quite unfamiliar to Lepidopterists of the Northern Hemisphere. Holloway re­
maints the robust bodied aposematic moths of the genus Dysphania Hübner within the subfamily but emphasizes the distance of this unique group from the remainder of the Geometrinae by dividing the subfamily into two tribes, Dysphanini and Geometrini. In turn it is proposed, though with some reservations, that all geometrid family groups other than Dysphania be assigned as subtribes of Geometrini and given names ending in “-ith.” Many genera of Bornean Geometrinae are robust bodied moths with falcate forewings or gray and brown moths with boarmine faces.

A number of Bornean Sterrhinae should be more familiar to northern Lepidopterists with the genera Scopula Schrank, Idaeaea Treitschke, and Cyledophora Hübner well represented. Holloway reviews evidence for viewing the sterhrines as two broad lineages (Timandrinii / Cosynobini and Scopulinii / Sterrhiini / Rhodostrophini) based on characters of both the adult and early stages. He further argues for inclusion of the Neotropical tribe Cylliodopini in the latter lineage. The Old World tribe Rhodostromini in the former, at least in his phylogenetic diagram (Part 10, Fig. 2).

Given the absence of many recognized tribes of Larentiinae in the tropics, Holloway’s discussion of higher classification of this subfamily is less inclusive. It is suggested that the Trichopterygini may represent a sister group for the remainder of the Larentiinae. Four Australian and Oriental larentiinae genera (two newly described by
Holloway cannot be placed in presently recognized tribes indicative of the unsettled state of higher classification for the subfamily.

On the generic level, Holloway’s revisionary work establishes a large number of new combinations and many new genera. As pointed out by Scoble et al. (1999, op. cit.), restricting the definition of previously large and overly inclusive genera such as the larentiine genus Chloroclystis Hübner based on study of a regional fauna may strand unstudied extralimital taxa not corresponding to new generic concepts. Holloway both revived and erected new genera in his treatment of Chloroclystis sensu lato and reassigned many Indo-Australian species. Some reassignments are hasty and seem premature. For example, eight species are formally transferred to the larentiine genus Basara Walker without study of the genitalia even though Holloway admits final placement awaits confirmation by dissection. A number of unplaced species now reside in the provisional genus “Chloroclystis” of the Scoble, et al. (1999, op. cit.) catalog.

At the species level, documenting the macro-fauna of a diverse tropical landmass such as Borneo is daunting but Holloway pulls off a commando performance. Many factors contribute to the difficult task of determining specific limits including allopatry in the insular realm of Indo-Australia, lack of sufficient study material, ambiguous association of sexes, and inadequate old descriptions. Holloway acknowledges that some treatments are provisional. To identify species considerable reliance is placed on brief diagnoses and discussion of similar species. Keys to genera and species are not provided even though this would certainly aid in the sorting and recognition of taxa especially for speciose groups. For many species only the male genitalia or the male genital capsule are illustrated. A number of new species and genera are described in the absence of description and illustration or even mention of the male aedeagus. This frequently occurs in the green geometrids. Even if the aedeagus lacks diagnostic characters, that fact should be demonstrated.

Access to the enviable store of type material in The Natural History Museum, London, and other European museums has enabled Holloway to place many Indo-Australian taxa and recognize undescribed species. Although synonymsies are listed for each species, useful type information such as type locality, repository, condition, sex, and lectotype designation is frequently lacking. Unless otherwise noted, holotypes of species described in The Moths of Borneo are deposited in The Natural History Museum.

Holloway rejects the stipulation of the Code of Zoological Nomenclature that requires species group names to agree in gender with genus group names and gives all specific names the orthography of the original description. This convention is also adopted in the Scoble catalog for the geometrid fauna of the world, a convenience that I sincerely hope will become standard practice.

I cannot overstate the ambitious nature of the project Jeremy Holloway has undertaken. Borneo harbors a geometrid fauna equal to 77% of the number of species known from America north of Mexico, a fauna better understood as a consequence of Holloway’s studies. Lepidopterists interested in the faunistics, biogeography, and biology of Indo-Australian Lepidoptera will want to add The Moths of Borneo to their library. The parts treating the Geometridae are of particular value to geometrid specialists worldwide and will inform and inspire future systematic efforts.

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