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A REVISION OF THE SILKMOTH GENUS *SAMIA*, by Richard S. Peigler and Stephan Naumann. University of the Incarnate Word, 2003. 227 pages, 10 maps, 146 color and 82 B&W illustrations, in English but with summaries also in German, Bahasa Indonesian, Chinese, Japanese, and French. Softcover, \$ 36.00 + \$4.00 s&h. Available from: University of the Incarnate Word, atten. Margaret Preston, 4301 Broadway, San Antonio, Texas 78209-6397 USA. ISBN 0-9728266-0-2

Saturniids suffer from their popularity. As young collectors many of us were obsessed with the saturniids, and perhaps also swallowtails, for their size and beauty and ease of rearing. With time most broadened their interests or concentrated on some group of special interest, and came to view the silkmoths as too well-known and perhaps too gaudy to be taken seriously other than as natural history teaching tools. In recent years this popularity has been turned around to accent the importance of the saturniids in studies of ecology, evolution and systematics, and we should be grateful with the publication of this book that some have not lost their early obsession. (I should know!) The two authors have spent considerable time and effort to travel, collect and rear many of the taxa, and to pore over private and museum collections for additional information. The result is this fine book which offers to Lepidopterists, and natural historians in general, a diversity of topics illustrated by these beautiful creatures.

Among the Saturniidae, the genus *Samia* is notable not just for the striking display of pinks, browns, and olive tones in the adult, but also for the domestication and commercial exploitation of a few species for their silk, and the less successful attempts to introduce these forms in various locales around the world. It is in this context, as an introduced exotic confined to an urban ecosystem, that we know our own *S. cynthia*. But this familiarity is also a distortion, and as the authors point out, the natural history of most of the 19 (yes, there are 18 other species) is relatively unknown. Like *Hyalophora cecropia*, *S. cynthia* probably exists in low-density, dispersed populations in the wild state (not in the U.S.), but can be locally abundant in an urban or suburban setting.

The book is divided into chapters on taxonomy, phylogeny, aberrations, *Samia* in art and culture, biochemistry and physiology, cytogenetics, biology (including parasitoids and diseases), ecology and rearing, sericulture (a special interest of Peigler's and well-presented), and biogeography, in addition to the

species treatment. No taxa are newly described, but *wangi*, *kohli*, *abrerai*, and *naessigi* were described by the authors in 2001, and *peigleri*, *yayukae*, *naumanni*, and *treadawayi* were named in honor of these workers in the 1990s by various authors. While some of the chapters are understandably brief summaries and could perhaps have been combined, the citation list is quite extensive and the list of topics should attract the interest of a wide audience, both amateur and professional. The treatment of known life histories is exhaustive, and I found the implications of host plant use for phylogenetic relationships particularly fascinating. The only criticism of the production I might have would be the small type and wide line width, making reading sections such as "Material Examined" a bit difficult. The color plates are of excellent color and density (although somewhat small but keeping cost down), and the photos of larvae are especially striking. See Peigler and Wang (1996) for additional illustrations in larger format of some of the species.

I would have liked to have seen a more expanded discussion of biogeography (only two pages), including an updated discussion with accompanying maps of general saturniid biogeography in the realm of the Wallace Line, from the Malay Peninsula to Irian Jaya and New Guinea. These authors are in a position to build on the cited earlier works of Barlow, Holloway and Peigler himself to produce such a work, probably more extensive than appropriate for this specialized book. Those interested in phylogeny and saturniid evolution should read the discussion of the possible ancestral relationship within the Attacini of *Samia* to the African genus *Epiphora*. As cited by the authors, I also highly recommend the popular work by van Oosterzee (1997) on the biogeography of the Malay Archipelago.

Judging from the list of synonymies given for each species (113 for *cynthia* over 4 pages), *Samia* taxonomy was a mess until this publication. Curators will appreciate this material, and the general reader will also find sections on types, geographical distribution, diagnosis, descriptions, discussion (largely on life history), and material examined. The *Samia* are characteristically conservative in adult wing characters, and some of the species look very similar until genitalia or immatures are examined. Some of the species are widespread and variable, such as *canningi*, *kohli*, and *wangi*, leading to considerable past confusion and misidentification, which the authors correct. Other species are insular and endemic or otherwise quite distinct.

In this regard, the authors recognize no subspecies, a taxonomic category they adamantly oppose on philosophical grounds, and prefer instead to either raise to

full species status distinct allopatric populations, or to lump geographic variants under a single species with accompanying descriptive discussion. Although this treatment employs the dichotomous splitting of the Phylogenetic Species Concept (PSC), no formal cladistic analysis is given, probably because DNA or protein samples were unavailable (although Peigler (1989) used morphological and life history characters in his work on the genus *Attacus*). The Biological Species Concept (BSC) is explicitly rejected as outdated and its use by Tuskes et al. (1996) criticized in their treatment of North American saturniids. While controversy over species concepts is widespread and useful, the authors' position here illustrates three interesting ironies regarding saturniid taxonomy.

First, the PSC is a species concept, not a speciation concept, that stresses pattern of descent over genetic processes in populations. Yet, the allopatric mode of speciation underlying the PSC is pure Mayr in form, but unlike current application of the BSC tends to downplay the blending and intergradation among geographic forms that so often characterizes Lepidoptera. While the lack of totally effective reproductive isolation often seen among closely related taxa makes application of the traditional BSC difficult and arbitrary, the tendency of the PSC to oversplit into full species (or amplify species count—depending on your philosophy [Avisé 1997, 2000]) is also a valid criticism. So, for all its faults, the subspecific category is still used to represent geographic variation.

Second, Tuskes et al. (1996) briefly described cladistic methods under the PSC and proposed their application to saturniid taxonomy (see Regier et al. 2002 as a recent example), although this discussion wasn't

mentioned by Goldstein (1997) (cited by Peigler and Naumann) in his review of the Tuskes book.

Finally, and most important, a justification for the application of the BSC to the saturniids is that, unlike many other Lepidoptera or animals in general, they can be easily collected, mated, and reared in the lab, making experimental hybridization possible in investigating concepts of genetic cohesion and species boundaries. "Hybrids of *Samia*" is the concluding chapter in this revision, and the statement that hybridization "can yield valuable data on genetics and phylogeny" suggests that the cooperative use of both cladistic analysis and experimental hybridization can lead to a better understanding of the two key aspects of a biological species—a phylogenetic history and genetic processes among populations within a geographic range.

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MICHAEL M. COLLINS, 11901 Miwok Path, Nevada City, California 95959, USA