

Book Review

Richard L. Hoffman, 2005: Monograph of the Gomphodesmidae, a family of African polydesmoid millipeds.

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Fifteen years after his monographic treatment of the family Oxydesmidae (HOFFMAN 1990), Richard L. Hoffman now has written a revision of a second medium-sized, purely Afrotropical millipede family, namely the Gomphodesmidae.

During the last half of the 20th century, and still continuing in the new millennium, Richard Hoffman has produced a steady stream of top quality taxonomic papers on millipedes. A major pinnacle on this mountain range of papers is provided by his comprehensive classification of the entire class Diplopoda (HOFFMAN 1980). The oxydesmid monograph is another pinnacle, and now the gomphodesmid book can be added to his *magna opera*, "*magna*" referring not only to the sheer size, but also to the quality of the work.

Millipedes (or millipeds as Americans like Richard Hoffman call them) are notoriously poorly known. Even though some of them are among the largest terrestrial invertebrates in many tropical areas, notably Africa, only a small fraction of the species have been described. The collections of the Natural History Museum of Denmark, Copenhagen for example contains numerous undescribed species, and even several undescribed genera of 10 - 20 cm long African spirostreptid and pachybolid millipedes. Gomphodesmids do not attain such impressive sizes: adults measure from 11 to 68 mm in length, but still they are by no means so small that they can easily escape discovery. The following statistics, extracted from Hoffman's book, clearly illustrate the deplorable state of knowledge: Hoffman includes 146 valid species in the book – 46 of them are described as new, and 90 of them are known only from the type locality. This clearly suggests that there will be numerous further species to discover, as Hoffman himself also suggests. In corroboration of this hypothesis, I can report that when I tried out the identification keys in the book on recently acquired samples in Copenhagen, only three known species could be recognized, whereas about 10 species and at least two genera were undescribed.

But isn't it the ultimate purpose of any monograph to make itself obsolete? With the present monograph at hand, one can establish whether a gomphodesmid sample at hand represents a known species. To do so is not easy: gomphodesmids are difficult to identify, but before Hoffman's book one was at a total loss. Most of the difficulties are inherent in the animals themselves: Non-gonopodal morphology is relatively uniform, although Hoffman has discovered a number of remarkable and in part very useful characters in different parts of the body. As to the gonopods (male copulatory organs), which carry most of the taxonomic information, they are quite complicated and difficult to de-

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scribe in words. Fortunately, Hoffman provides numerous gonopod drawings which are an excellent help to identification, although I would have preferred more labeling on at least some of the drawings, indicating the various spines etc. which are used in the dichotomous keys.

There is, however, one point where the dichotomous keys fail: In addition to describing almost a third of the species as new, Hoffman has greatly improved the classification at the genus level. Out of 55 valid genera of gomphodesmids, no less than 32 are described as new in the book (31 of the 55 genera are monotypic, but this will surely change as more species are collected and described, cf. above). The problem with the key is derived from Hoffman's difficulties with placing many of the genera in tribes. No less than 17 genera of the subfamily Gomphodesminae (including 15 of those described as new) are placed at the end of the book under "genera of uncertain tribal affiliation". These genera do not appear in the keys which means that if one has tried in vain to identify a sample of this subfamily (by far the largest) using the keys, one must compare the sample with the species belonging to the 17 unassigned genera one by one before being able to conclude that the sample at hand represents something new.

As mentioned above, very many of the species are known from only the type locality. Of those that are known to be more widespread, several have been divided into subspecies (2 subspecies are described as new). This provides an opportunity to ventilate a personal point of view: In a group as poorly known as millipedes, and especially in a tropical group which is even less well-known than poorly, I would recommend not using the subspecies concept. Of course infraspecific variation should be documented and described, but this can be done without formal naming of subspecies.

Hoffman is a champion of what he calls "intuitive taxonomy", regarding millipedes as not very amenable to stringent, cladistic analysis of phylogenetic relationships. In many cases, he does point out that he regards this or that character stage as plesiomorphic or apomorphic, but no proper analysis of the characters is carried out. This means that the phylogenetic hypotheses which he does offer, remain purely narrative and not really testable, and the same is true of the hypotheses about biogeographical history of the family that are also presented.

There thus remains much work to be done on gomphodesmids, not only in descriptive taxonomy, but also in phylogenetic and biogeographical analysis, let alone ecology etc. where very little is known at all. With Hoffman's book, there now is a means to pursue gomphodesmid studies of any kind on a taxonomically meaningful basis. Hoffman belongs to the threatened category of classical taxonomists who can do this kind of monographic work. Let us be grateful for his like.

RICHARD L. HOFFMAN, 2005: Monograph of the Gomphodesmidae, a family of African polydesmoid millipeds. – Verlag: Naturhistorisches Museum Wien. – 537 pages, 494 line drawings, 34 maps. – Price: Euro 264,- plus postage. – verlag@nhm-wien.ac.at

References

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 HOFFMAN R.L. 1990: Myriapoda 4, Polydesmida: Oxydesmidae. – Das Tierreich, Berlin & New York, 107: 1-512, figs. 1-612.