



A revision of the *Thyropygus allevatus* group. Part 1: the *T. opinatus* subgroup (Diplopoda: Spirostreptida: Harpagophoridae)

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Abstract

The *Thyropygus opinatus* subgroup of the *T. allevatus* group is revised. The *T. opinatus* subgroup corresponds to the genus *Cornugonus* Demange, 1961, which is formally synonymized under *Thyropygus*. Eight new species are described from Thailand: *T. bearti* n. sp., *T. brachyacanthus* n. sp., *T. loxia* n. sp., from Suratthani province, *T. bispinus* n. sp., from Uthaithani and Phrae provinces, *T. bispinispatula* n. sp., from Chumphon province, *T. chelatus* n. sp., from Nakhonsrithammarat province, *T. cristagalli* n. sp., from Phang Nga province and *T. erectus* n. sp., from Satun province. The other species of the *T. opinatus* subgroup, viz., *T. opinatus* (Karsch, 1881), n. comb., *T. floweri* (Demange, 1961), n. comb., *T. implicatus* (Demange, 1961), n. comb., and *T. inflexus* (Demange, 1989), n. comb., are redescribed. New records are given for *T. opinatus*, *T. implicatus* and *T. floweri*. The type locality of *T. floweri* is shown to be in Thailand rather than Malaysia.

Key words: millipede, taxonomy, new species, Thailand

Introduction

The family Harpagophoridae is “probably the most characteristic and conspicuous element in the milliped fauna of the Oriental Region” (Hoffman, 1975). Although species of the polydesmidan family Paradoxosomatidae are far more diverse and numerous, harpagophorids are certainly very prominent members of the Oriental fauna, reaching up to 25 cm in length. However, the taxonomic treatment of this family by previous authors has been problematic.

The genus *Thyropygus* Pocock, 1894, is the largest genus of Harpagophoridae in Southeast Asia. It has had a complicated history but, mainly due to the work of Hoffman (1975), the genus is now quite well circumscribed. Hoffman (1975) explained why *Thyropisthus* Attems, 1942, is a synonym of *Thyropygus* and provided a very useful account of the genus. We adhere to Hoffman’s concept of *Thyropygus* and even widen it slightly by formalizing the synonymy of *Cornugonus* Demange, 1961, tentatively suggested by Hoffman (1975, 1982) and Demange (1989).

Thyropygus (incl. *Cornugonus*) currently includes 35 named species and a number of named subspecies (Jeekel, 2006). The genus is broadly distributed in SE Asia: Thailand, Myanmar, Vietnam, Laos, Cambodia, continental Malaysia, Sumatra, Java, and Borneo (Jeekel, 2006; Enghoff, 2005).

Materials and methods

Newly collected specimens were hand-collected and preserved partly in 70% ethanol, partly in a freezer at -20 °C for subsequent molecular studies. Specimens were examined from the following collections:

- Museum of Zoology, Chulalongkorn University, Bangkok, Thailand (CUMZ)
- Muséum national d’Histoire Naturelle, Paris, France (MNHN)
- The Natural History Museum Basel, Switzerland (NHMB)
- Senckenberg-Museum, Frankfurt a.M., Germany (SMF)
- Natural History Museum of Denmark (Zoological Museum), University of Copenhagen, Denmark (ZMUC)
- Zoologische Staatssammlung, Munich, Germany (ZSM)

Drawings were made using a stereo microscope. Photographic illustrations were made with a Leica DC300 digital camera mounted on a Leica MZ16A stereomicroscope. Auto-Montage Pro software from Syncroscopy was used for image-stacking and 3D focus expansion. Scanning electron micrographs (SEM) were obtained with a JEOL JSM-6335F.

We have focused very much on adult males although adult females and a few juveniles were also available