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Generic review of Polycentropodidae with description of 32 new species and 19 new species records from the Oriental, Australian and Afrotropical Biogeographical Regions

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Abstract

The taxonomy of the Polycentropodidae is discussed, and the family is divided into 4 newly defined diagnostic genus clusters based primarily on wing characters and number of spurs on the legs. The diagnostic genus clusters are the *Neureclipsis* diagnostic genus cluster with *Neureclipsis* McLachlan and *Neucentropus* Martynov; the *Polycentropus* diagnostic genus cluster with *Polycentropus* Curtis, *Plectrocnemia* Stephens, *Holocentropus* McLachlan, and *Polyplectropus* Ulmer; the *Cyrnus* diagnostic genus cluster with *Nyctiophylax* Brauer, *Cyrnus* Stephens, *Cyrnopsis* Martynov, *Cyrnellus* Banks, and *Adectophylax* Neboiss; and the *Cyrnodes* diagnostic genus cluster with *Cyrnodes* Ulmer, *Cernotina* Ross, and *Pahamunaya* Schmid. The extinct genus *Archaeoneureclipsis* Ulmer is synonymised with *Neureclipsis* McLachlan; the extant genus *Tasmanoplegas* Neboiss is synonymised with *Plectrocnemia* Stephens; the extant genus *Eodipseudopsis* Marlier is synonymised with *Polyplectropus* Ulmer; and the extinct genus *Nyctiophylacodes* Ulmer is synonymized with *Nyctiophylax* Brauer. The following 8 new species are described in *Plectrocnemia*: *P. martynovi* (Myanmar), *P. ambaita* (Myanmar), *P. kachin* (Myanmar), *P. taungyia* (Myanmar), *P. dalat* (Vietnam), *P. kamba* (Myanmar), *P. malaisei* (Myanmar), and *P. thai* (Vietnam). The following 11 new species are described in *Polyplectropus*: *P. daimong* (Vietnam), *P. dinhdan* (Vietnam), *P. giandi* (Vietnam), *P. jalan* (Malaysia), *P. pairavatika* (Malaysia), *P. vanuatu* (Vanuatu), *P. coronivia* (Fiji), *P. palma* (Fiji), *P. vanda* (Fiji), *P. vanua* (Fiji), and *P. wainimbuk* (Fiji). The following 2 new species are described in the subgenus *Nyctiophylax* (*Nyctiophylax*): *N. (N.) hotay* (Vietnam) and *N. (N.) catunujah* (Myanmar). The following 7 new species are described in the subgenus *Nyctiophylax* (*Paranyctiophylax*): *N. (P.) anosib* (Madagascar), *N. (P.) buoc* (Vietnam), *N. (P.) dhauli* (India), *N. (P.) kilah* (Madagascar), *N. (P.) lancelot* (Malaysia), *N. (P.) mintin* (Vietnam and Laos), *N. (P.) nepenthes* (Malaysia). *Cyrnopsis tangaron* is described from Indonesia (Borneo). And the following 3 new species in *Pahamunaya* are described: *P. espelandae* (Brunei), *P. wamana* (Malaysia) and *P. khoii* (Vietnam). In addition, new records for 20 species are given.

Key words: Trichoptera, Polycentropodidae, new species

Introduction

The superfamily Psychomyioidea includes the families Ecnomidae, Dipseudopsidae, Xiphocentronidae, Psychomyiidae and Polycentropodidae, and forms the sister group to Hydropsychoidea. It was erected by Ivanov (2002) and a phylogenetic analysis by Holzenthal *et al.* (2007) supported the hypothesis that it constitutes a monophyletic group. The monophyly of each family in Psychomyioidea is supported as well, but only when excluding the 2 genera *Pseudoneureclipsis* Ulmer and *Antillopsyche* Banks. The placement of these 2 taxa is disputed and presently not resolved (Li *et al.* 2001, Oláh & Johanson 2009).

According to Morse (2009), the Polycentropodidae comprise nearly 650 species in 18 genera, and is among the larger families in Trichoptera. The majority of the species diversity is restricted to the widespread genera *Nyctiophylax* Brauer, *Plectrocnemia* Stephens, *Polycentropus* Curtis, and *Polyplectropus* Ulmer, which together hold more than 80% of the species diversity in the family.

Polycentropodidae are robust, small to medium-sized, heavy-bodied and usually broad-winged caddisflies, with forewings frequently marbled, mottled or irrorated in golden-yellow. The name Polycentropodidae is derived from Greek: *poly* = many; *kentron* = spine, spur; *podos* = foot; referring to presence of a complete set of tibial spurs on the legs, and therefore different from the Psychomyiidae that have a smaller number of foreleg spurs. The maxillary palps each have short 1st and 2nd segments and with a subapicolateral insertion of the 3rd segment onto the 2nd segment, resulting in a mesoapical lobe or small spiny process on segment 2; in the Psychomyiidae each 3rd maxillary palp segment originates from the apex of its 2nd segment. Compared with the Psychomyiidae, they have wings with more nearly complete venation. Their genitalia are specialized in that they comprise a strongly reduced tergite IX, membranous segment X, and single-segmented gonopods (Schmid 1972). The Dipseudopsidae are separated from the Polycentropodidae in several adult characters. The female sternum VIII is undivided; the 3rd segment of each maxillary palp originates from the apex of the 2nd segment; and the antennal bases are located more distantly, except members of the dipseudopsid Pseudoneureclipsinae have antennal bases in an intermediate position. The Ecnomidae are separated from the Polycentropodidae by their 3rd maxillary palp segments being only slightly longer than the 2nd maxillary palp segments, and the 3rd segment of each maxillary palp originates from the apex of the 2nd segment. The presence of a false apical fork of R1 in the forewings is not a reliable