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## **Description of 33 new species of Calamoceratidae, Molannidae, Odontoceridae and Philorheithridae (Trichoptera), with detailed presentation of their cephalic setal warts and grooves**

JÁNOS OLÁH<sup>1</sup> & KJELL ARNE JOHANSON<sup>2</sup>

<sup>1</sup>*Szent István University, Gödöllő, Centre of Environmental Health, Gyula, Hungary; Residence address: Tarján u. 28, H-4032 Debrecen, Hungary.*

*E-mail: profolah@gmail.com*

<sup>2</sup>*Swedish Museum of Natural History, Entomology Department, Box 50007, S-10405 Stockholm, Sweden.*

*E-mail: kjell.arne.johanson@nrm.se*



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JÁNOS OLÁH & KJELL ARNE JOHANSON

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## Abstract

Additions to the taxonomy of the leptoceroid families Calamoceratidae, Molannidae, Odontoceridae, and Philorheithridae are given, and 33 new species in the superfamily are described based on characters in the male genitalia, head and thoracal setose warts, and groove patterns, wing venation, and forewing colour and pattern.

In the Calamoceratidae Ulmer, the *Anisocentropus latifasciata* diagnostic species-group and *Anisocentropus brevipennis* diagnostic species cluster are described for the first time. The following 17 species are described as new: *Anisocentropus bungus* (Vietnam), *A. csorbai* (Vietnam), *A. dvaupadhah* (Malaysia), *A. fridae* (Fiji Islands), *A. hannahae* (Fiji Islands), *A. hoisat* (Laos PDR), *A. malaisei* (Myanmar), *A. maralus* (Malaysia), *A. mjoeberti* (Borneo), *A. samuh* (Madagascar), *A. tapenan* (Solomon Islands), *A. thinlin* (Laos PDR), *A. thonmihn* (Vietnam), *A. vanuensis* (Fiji Islands), *A. vitiensis* (Fiji Islands), *Ganonema malickyi* (Thailand) and *G. rong* (Vietnam). In addition, *Ganonema fuscipenne* (Albarda) is synonymized with *G. ochraceellum* (McLachlan), and *Ganonema pallidum* Martynov is synonymized with *Anisocentropus kawamurai* (Iwata).

In the Molannidae Wallengren, a single new species, *Molanna gamdaha*, is described from Myanmar.

In the Odontoceridae Wallengren, the genus *Inthanopsyche* Malicky is synonymized with *Psilotreta* Banks. The following 14 species belonging to previously described genera, are described as new: *Lannapsyche birathena* (Myanmar), *L. suksma* (Myanmar), *L. kamba* (Myanmar), *Marilia enikiana* (Laos PDR), *M. jonssoni* (Laos PDR), *M. katakaha* (Malaysia), *M. malickyi* (Laos PDR, Malaysia, Vietnam), *M. mendolonga* (Malaysia), *M. namha* (Laos PDR), *M. tuyetmira* (Laos PDR), *Phraepsyche pectinata* (Vietnam), *P. yitungshana* (China: Hong Kong), *Psilotreta enikoe* (Vietnam), and *P. malickyi* (Myanmar). In addition, the following 3 diagnostic species-groups are described for the first time: *Psilotreta japonica* diagnostic species-group, *Psilotreta trimeresuri* diagnostic species-group, and *Psilotreta frontalis* diagnostic species group. The species *Ganonema odaenum* Kobayshi is synonymized with *Psilotreta locumtenens* Botosaneanu, and *Psilotreta pyonga* Oláh is synonymized with *P. falcula* Botosaneanu.

In the Philorheithridae Mosely, a single new species, *Psilopsyche granda*, is described from Chile.

In addition to describing new taxa, new species records for 34 species in the superfamily are presented.

**Key words:** Taxonomy, Trichoptera, Leptoceroidea, Calamoceratidae, Molannidae, Odontoceridae, Philorheithridae, new species

## Introduction

Ross (1967) grouped the families of the superfamily Leptoceroidea into the leptocerid branch of the superfamily Limnephiloidea. He recognized the members of the leptocerid branch as those having lost their ocelli and supratentorium (dorsal tentorial arms), and in several ‘primitive’ genera the forewing M4 was retained in the males. The other branch in the Limnephiloidea *sensu* Ross (1967) is the limnephilid branch characterized by having intact ocelli and supratentorium, and having no Fork 4 (division of M3+M4) in the male forewings. The leptocerid branch *sensu* Ross (1967) was divided into 2 groups. These groups represented the Sericostomatoidea and Leptoceroidea in Weaver’s (1984) Brevitentoria. The monophyly of the Brevitentoria is considered well supported, but the monophyly of “Leptoceroidea” received less support (Kjer *et al.* 2001, 2002) and has even been questioned (Francia & Wiggins 1996). This work aims at increasing our limited knowledge about the diversity of the “Leptoceroidea” families by describing new species. Four new diagnostic species-groups and a new diagnostic species-cluster also are described. These informal taxa are more appropriately called “pseudotaxa” because their phylogenetic status is not known, so that their predictive value in biology is uncertain. In other words, their scientific value is only diagnostic and is only for the species explicitly included. For this reason, we qualify them with the adjective “diagnostic”.

Some of the taxa in these families have rather uniform genitalic structures. However, the structural persistence in the phallic apparatus is frequently accompanied by diversification of other structural components. Colourful forewing patterns helps to differentiate species having uniform genitalic structures in the genera *Nectopsyche* and *Anisocentropus*. Similarly, and shown below, the cephalic setose wart and groove patterns are important diagnostic features for species in the genera *Marilia* and *Phraepsyche*. Compared to characters