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New data on *Rhyacophila* (Trichoptera: Rhyacophilidae) from West Malaysia and Indonesia (Lombok and Bali) with descriptions of two new species

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Abstract

A new species, *Rhyacophila langkawia* sp. n., belonging to the *R. curvata* Group *sensu* Schmid (1970) is described. The samples provide also material of the previously undescribed species cited by Schmid (1970) as *R. schmidi*, a *nomen nudum*; this species is described as *R. schmidirossia* sp. n., also in the *R. curvata* Group. Other sampled species were *Rhyacophila curvata* Morton, recorded for the first time from Negeri Sembilan (West Malaysia) and Lombok (Indonesia); *Rhyacophila stheneboia* Malicky & Prommi (Pahang and Negeri Sembilan, West Malaysia), and *Rhyacophila anakbatukau* Malicky, recorded for the first time from Lombok (Indonesia). Updated lists of the *Rhyacophila* species found in West Malaysia and Indonesia are provided.

Key words: *Rhyacophila langkawia*, *Rhyacophila schmidirossia*, *Rhyacophila curvata*, *Rhyacophila anakbatukau*, *Rhyacophila stheneboia*, descriptions, biology, Southeast Asia

Introduction

Rhyacophilidae is an ancient family of caddisflies occurring predominantly in the Northern Hemisphere with maximal biodiversity in the Himalayas (Schmid 1970). Tropical areas of Southeast Asia have lower numbers of rhyacophilid species than the Himalayas, with the number of species decreasing to the southeast and with the current southeastern boundary of this family situated in the Indonesian Lesser Sunda Islands. Malaysia is potentially rich in Trichoptera species: Recent counts indicate the presence of at least 24 species of *Rhyacophila* in West (Peninsular) Malaysia and 13 species of this genus in East Malaysia (Sabah and Sarawak, parts of the island of Borneo) (Mey 2010; Huisman & Armitage 2011). The Lesser Sunda Islands of Indonesia have a limited fauna: Until now, 2 species of this family have been found only on Bali (Malicky 2009; Huisman & Armitage 2011), with the presumed family boundary coinciding with Wallace's Line.

Intensive collecting during our two recent travels to Malaysia has provided additional material for 4 species of *Rhyacophila*, 2 of which appear to be new for science. The new species are described below. One of these new species in our samples was mentioned by Schmid (1970) as *Rhyacophila schmidi* Ross [a *nomen nudum*] and reported only from the highlands of West Malaysia. This species was listed by Schmid (1970) as awaiting description, but a formal description by Ross was never published. Our other collecting trip, to Indonesia, gave us new material from Lombok where the family Rhyacophilidae is represented by 2 previously known species.

The material was collected during two visits to West Malaysia and one to Indonesia. The first of these visits was made to West Malaysia (Pahang, Perak and Negeri Sembilan) in January and February 2006, at elevations ("heights") of 280–1480 m. The second one was to the Lesser Sunda Islands in Asian Indonesia (the neighboring islands of Lombok and Bali) in February and March 2008, at elevations ("heights") of 455–900 m. The third one was in January and February 2011 to the small island Langkawi [Kedah, with sampling elevations ("heights") 50–130 m, in the northwestern part of the West Malay territory in the Andaman sea] and Cameron Highlands (Pahang, 1200–1500 m) on the Malay peninsula. Most species of *Rhyacophila* were collected at light traps with UV tubes situated very close to the streams. These traps collected very variable samples depending mostly on