



Revision of the species of *Hydraena* Kugelann (Coleoptera: Hydraenidae) from Palawan and Busuanga, with descriptions of eleven new species, and redescription of *Hydraena (Hydraenopsis) scabra* d'Orchymont, 1925

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Abstract

The species of *Hydraena* Kugelann from the Philippine Islands of Palawan and Busuanga are revised. Eleven new species are described: *Hydraena (Hydraenopsis) busuanga* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) castanescens* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) claudia* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) hosiwergeri* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) jojoorculloi* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) kodadai* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) manguao* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) nielshaggei* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) palawanensis* Freitag & Jäch, **sp. n.**, *H. (Hydraenopsis) pseudopalawanensis* Freitag & Jäch, **sp. n.**, and *H. (Hydraenopsis) zetteli* Freitag & Jäch, **sp. n.** *Hydraena (Hydraenopsis) scabra* d'Orchymont, 1925 is redescribed and its distribution in the Philippines documented. A key to the *Hydraena* species of Palawan and Busuanga is provided.

Key words: Coleoptera, Hydraenidae, *Hydraena*, Palawan, Busuanga, Philippines, South-East Asia, taxonomy, water beetles

Introduction

This study is part of the “Aquatic Biodiversity Research Project on the Philippine Island of Palawan” (AQUA Palawana) supervised by the senior author in cooperation with scientific institutions and governmental authorities in the Philippines. This project aims to establish conservation programmes, and to increase the knowledge of the freshwater fauna of that region.

In the present paper, the species of *Hydraena* Kugelann, 1794 from Palawan and Busuanga are treated. Geographically, these two islands are somewhat isolated from the remaining Philippine Islands (see Fig. 1). Palawan Island and the Calamian Group with its main island, Busuanga, are forming the political province of Palawan.

Biogeographically, Palawan and Busuanga are a corridor connecting Borneo and the eastern Philippines. According to Heaney (1985) the province of Palawan is part of the Greater Sunda, which would suggest a closer faunal resemblance with Borneo than with the eastern Philippines (Vane-Wright 1990). However, the hydraenid fauna of both adjacent regions, the eastern Philippines and Borneo, is virtually unknown and any conclusions are therefore speculative. With the exception of Taiwan and the Ryukyu Archipelago (see Jäch & Díaz 1998, 1999), South-East Asia is still very poorly studied with regard to its hydraenid fauna.

Only two species of *Hydraena* have been recorded from the Philippines so far: *Hydraena (Hydraenopsis) scabra* d'Orchymont, 1925a and *H. (Hydraenopsis) boettcheri* d'Orchymont, 1932. While the former is widely distributed and very common throughout the Philippines, the latter has never been collected since its discovery.

Among the material from Palawan and Busuanga, we were able to distinguish a total of 15 species: *Hydraena scabra* plus 14 unknown ones. All species belong to the subgenus *Hydraenopsis* Janssens, 1972. *Hydraena scabra* is redescribed herein and its distribution in the Philippines is documented. Eleven new species are described. The remaining three species are represented by females only and we therefore refrain from their formal description.

Material and methods

A large fraction of the specimens described was collected by the first author from first to third order surface streams in the Cabayugan River and the Panaguman River (St. Paul Subterranean River National Park, Puerto Princesa City, Palawan, Philippines). No *Hydraena* was detected in the subterranean section of the Cabayugan Underground River. Detailed information on the collecting sites in the National Park is given in Freitag (2004). The collecting period lasted from May 2000 to August 2001. The codes for these collecting sites are listed below: