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Revision of *Phaenocora* Ehrenberg, 1836 (Rhabditophora, Typhloplanidae, Phaenocorinae) with the description of two new species

ALBRECHT M. HOUBEN[1], NIELS VAN STEENKISTE[2] & TOM J. ARTOIS[1,3]

[1]*Hasselt University, Centre for Environmental Sciences, Research Group Zoology: Biodiversity & Toxicology, Agoralaan Gebouw D, B-3590 Diepenbeek, Belgium*
[2]*Fisheries and Oceans Canada, Pacific Biological Station, 3190 Hammond Bay Rd., V9T 6N7 Nanaimo, BC, Canada*
[3]*Corresponding author. E-mail: tom.artois@uhasselt.be*

ABSTRACT

A morphological and taxonomical account of the taxon *Phaenocora* is provided. An effort was made to locate and study all available material and, where possible, species are briefly re-described. We also describe two new species: ***Phaenocora gilberti* sp. nov.** from Cootes Paradise, Ontario, Canada and ***Phaenocora aglobulata* sp. nov.** from Prairie Grove, Alabama, USA. Species recognition is based on a combination of both male and female morphology. A comparison of and discussion on all species is given, resulting in a total of 28 valid species, three *species inquirendae*, five *species dubiae*, and one *nomen nudum*. An identification key is provided.

Key words: Platyhelminthes, flatworms, microturbellaria, biodiversity, taxonomy

INTRODUCTION

Worldwide, about 1500 species of non-neodermatan flatworms are known from freshwater habitats, 625 of which are dalytyphloplanid rhabdocoels (own data). Within Rhabdocoela, Dalytyphloplanida Willems et al., 2006 forms the sister group of Kalyptorhynchia Graff, 1905, which is characterized by the presence of a rostral muscular organ, the proboscis, lacking in dalytyphloplanids (Meixner 1924). Within Dalytyphloplanida, Van Steenkiste et al. (2013) have shown that a large monophyletic taxon, called Limnotyphloplanida Van Steenkiste et al., 2013, comprises almost all freshwater representatives. A little less than half of the species within Limnotyphloplanida, 277 species, belong to the taxon Typhloplanidae Graff, 1905.

During several sampling campaigns specifically aimed at collecting freshwater rhabdocoels, we have collected a large number of limnotyphloplanids worldwide (North and South America, South Africa, India, Europe and Australia). Although much of that material has already been used to perform the phylogenetic analysis of Van Steenkiste et al. (2013), many specimens still await taxonomical treatment, either proper identification or formal description. Among this material, several specimens of *Phaenocora* Ehrenberg, 1836 are present.

Phaenocora is a taxon of Typhloplanidae comprising 30 (Artois et al. 2013 Feb. 2) to 32 valid species (Tyler et al. 2006–2012), the difference being that the former database considers two species [*P. salinarum* (Graff, 1882) Wahl, 1910 and *P. subsalina* Luther, 1921] as invalid, whereas the latter does not. Moreover, both databases at this moment do not include *Pseudophaenocora sulfophila* Gilbert, 1938 (in Gilbert 1938a), although Karling (1956) transferred it to *Phaenocora*. *Phaenocora* was first introduced by Ehrenberg (1836) to accommodate a single species, *P. megalops* (Duges, 1830), which until then was placed in the genus *Derostoma* Duges, 1830. In the beginning of the 20th century, several new species were described or species were transferred to this genus, and the literature becomes extensive, the most important contributions being those by Beklemischev (1921, 1929), Bendl (1909), Böhmig (1914), Cognetti de Martiis (1916), Graff (1909, 1911, 1913), Hofsten (1907, 1911), Luther (1921), Meixner (1915), Nasonov (1919) and Wahl (1910).

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	and oviduct is situated down the female genital canal (see Fig; 16E)	*P. highlandense*
-	The common yolk- and oviduct opens at the junction female genital canal-intestinal bursa	23
23	Glandular papilla is present at the inferior genital atrium	*P. clavigera*
-	Glandular papilla is absent	24
24	Three huge spines on the dorsal side of the penis papilla, together with several spines of different size and shape	*P. variodentata*
-	Different sized spines are present at the median and the distal part of the invaginated penis papilla, however never huge dorsally situated spines	*P. typhlops*

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