



On the Calviriidae Martens and Curini-Galletti, 1993 (Platyhelminthes, Proseriata), with the description of three new species

ERNEST R. SCHOCKAERT^{1,3}, MARCO CURINI-GALLETTI², WOUTER DE RIDDER¹ & TOM ARTOIS¹

¹University of Hasselt, Centre of Environmental Sciences, Research group Zoology: biodiversity and toxicology, Agoralaan, building D, B-3590 Diepenbeek, Belgium

²University of Sassari, Dipartimento di Zoologia e Genetica Evoluzionistica Via F. Muroli, 25, I-07100 Sassari, Italy

³Corresponding author. E-mail: ernest.schockaert@uhasselt.be

Abstract

Three new species of Calviriidae are described, belonging to two new genera: *Diskeria gigantea* **n.g. n.sp.**, *D. tasmanica* **n.sp.** and *Paracalviria islandica* **n.g. n.sp.** The species of *Diskeria* have a copulatory organ with two rings of needles of which the internal ring forms a structure resembling a stylet. The accessory organ has a large glandular reservoir connected by a muscular duct to a “true” stylet surrounded by needles. The two species can be discerned by the number and size of the needles in the copulatory organ and in the accessory organ. In the female system there is a large terminal bursa. *Paracalviria islandica* has a copulatory organ with one circle of ± 60 needles and an unarmed, sucker-like accessory organ in the male atrium. The female system is very simple without a bursa. Contrary to the other members of the Calviriidae, *P. islandica* has an epidermis with insunk nuclei, no septum in front of the pharynx and no sphincter around the gut above the pharynx. The relationships of and within the Calviriidae are discussed and compared with the recent results based on DNA analyses. Morphological arguments are given for the monophyly of the taxon Calviriidae. Amended diagnoses for the family and the four genera within the family are provided.

Key words: taxonomy, phylogeny, Subantarctic, Tasmania, Iceland

Introduction

Martens and Curini-Galletti (1993) divided the Archimonocelididae Meixner, 1938 into two subfamilies, the Archimonocelidinae and the Calviriinae. The latter taxon comprises *Calviria* Martens, Curini-Galletti, 1993 and *Asilomaria* Karling, 1966. However, phylogenetic analyses, based on DNA sequences (Curini-Galletti, 2001; Willems *et al.*, 2006), revealed that *Calviria solaris* Martens and Curini-Galletti, 1993 is not closely related to *Archimonocelis* Meixner, 1938. Therefore, but also for a number of morphological arguments, Schockaert *et al.* (2009) proposed to move the Calviriinae out of the Archimonocelididae as a separate family and also proposed the separate family Meidiamidae for the taxon *Meidiamia* Marcus, 1946, included in the Archimonocelidinae by Martens and Curini-Galletti (1993), and a number of other taxa.

On the data available in 2009, Schockaert *et al.* stated that the Calviriidae, contrary to the Archimonocelididae, have a short plicate pharynx without a glandular oesophagus, the ovaries are not anterior to the vitellaria, there is no genito-intestinal connection and they have no cnidocysts. On the other hand, the Calviriidae have only needles in the copulatory organ or it is unarmed, they have a muscular septum in front of the pharynx and have a sphincter around the gut above the pharynx. Two of the new species described hereafter, *Diskeria gigantea* **n.g. n.sp.** and *D. tasmanica* **n.sp.** have these characters and are thus considered members of the Calviriidae.

A recent phylogenetic analysis by Curini-Galletti *et al.* (2010), based on DNA sequences, confirmed that *Calviria solaris* is not closely related to the species of *Archimonocelis* but belongs to the same clade as *Paracalviria islandica* **n.g. n.sp.**, described hereafter. However, this new species lacks the septum and the sphincter and the epidermis has insunk nuclei, a character only found in Monocelididae and some species of *Archimonocelis* (see Kar-