Symsagittifera smaragdina sp. nov.: A new acoel (Acoela: Acoelomorpha) from the Mediterranean Sea

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Abstract

From a survey of the interstitial fauna at Giglio, Italy, the new species *Symsagittifera smaragdina* **sp. nov.**, (Sagittiferidae) is described. We herein transfer the genus *Praesagittifera* and its three species *P. gracilis* (Yamasu, 1982), *P. naikaiensis* (Yamasu, 1982), and *P. shikoki* Kostenko & Mamkaev, 1990 to the family Convolutidae. In addition the diagnosis for the family Sagittiferidae is revised to include only those species possessing sagittocysts in adult specimens.

Key words: Acoela, Sagittiferidae

Introduction

The Acoela is a group of predominately free-living marine flatworms. In general, acoels can be distinguished from other flatworms by their possession of a statocyst with only a single statolith. Recently published molecular phylogenies indicate that the Acoela is the most basal bilaterian group (Ruiz-Trillo *et al.* 1999, 2002, 2004, Jondelius 2001, Baguñà *et al.* 2001, Telford 2003). A phylogeny of the Acoela, based upon 18S rDNA sequences from 32 acoel species and morphological data, identified four distinct clades within the Acoela (Hooge *et al.* 2002). The most derived clade contains the family Sagittiferidae along with the Anaperidae and Convolutidae, all of which have spermatozoa with axonemes lacking central microtubules.

The name Sagittiferidae refers to the possession of sagittocysts—needle-shaped extrusomes that consist of a central filament, an intermediate lucent layer and a round fibrous outer cortex and are formed in gland cells called sagittocytes (Mamkaev & Kostenko 1991, Yamasu 1991, Gschwentner *et al.* 1999). The distal part of the sagittocyte is surrounded by a special muscle cell that is connected with a sensory cell and is