



Taxonomic revision of the ciliate genus *Zosterodasys* Deroux, 1978 (Protista: Ciliophora: Synhymeniida)

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Abstract

The ciliate genus *Zosterodasys* was established with *Z. agamalievi* as the type species by Deroux (1978). *Zosterodasys* is characterized by (i) an obovoidal to ellipsoidal body which is not differentiated into a rostrum anteriorly; (ii) a conspicuous cyrtos, i.e., an obconical cytopharyngeal apparatus; and (iii) a special thickly ciliated structure, the so-called synhymenium, extending obliquely from the left to the right dorsal cell surface across the ventral side and thus interrupting all ventral ciliary rows and some dorsal ones. Altogether 31 nominal species were originally described or subsequently combined with *Zosterodasys*. However, we recognize only nine of them as reliable *Zosterodasys* species, eleven represent nomenclatural synonyms, one is a junior primary homonym, five are classified as *species inquirendae*, and five belong to other genera. We provide the following data for each reliable *Zosterodasys* species: author, date, and journal page of the original description; list of synonyms; diagnosis; type locality; type material; etymology; and remarks. Based on the morphologic and morphometric characters, we prepared an illustrated taxonomic key, containing all *Zosterodasys* species considered identifiable in this revision. Further, we discuss characters that have been used in the morphological taxonomy of the genus *Zosterodasys*.

Key words: freshwater and marine ciliates, identification key, morphology, synonymy

Introduction

The order Synhymeniida de Puytorac *et al.* in Deroux, 1978 unites cyrtos-bearing hypostome ciliates characterized by the so-called synhymenium or hypostomial frange, a special ciliary row obliquely or perpendicularly interrupting some or most of the somatic ciliary rows. Typical genera of the order are *Zosterodasys*, *Nassulopsis*, *Chilodontopsis* and *Orthodonella* (Jankowski 2007; Lynn 2008; Lynn & Small 2002). Since their descriptions, the synhymeniids have played an important role in evolutionary hypotheses. In earlier studies, they were speculated to be the pivotal group that links the lower prostomes with the higher hypostomes (e.g., Corliss 1979; Deroux 1978; Fauré-Fremiet 1959, 1967; Jankowski 1968, 1973). Later, Sola *et al.* (1990) suggested the synhymeniids could be primitive nassophoreans that may have given rise to the more evolved groups of the class Nassophorea on one hand and to the entire sister class Phyllopharyngea on the other hand. However, comparative ultrastructural studies did not show any clear synapomorphies that would permit definitive placement of the synhymeniids in the Nassophorea or the Phyllopharyngea (Kivimaki *et al.* 1997). This problem was solved using a phylogenetic approach (Gong *et al.* 2009; Kivimaki *et al.* 2009), which showed that the Nassophorea are paraphyletic nesting both the Synhymeniida and the Phyllopharyngea as adelphotaxa. Therefore, Gong *et al.* (2009) expanded the class Phyllopharyngea to include the synhymeniids as the subclass Synhymeniida, and designated a new subclass, Subkinetalia, for the “traditional” phyllopharyngeans, i.e., cyrtophorians, chonotrichians, rhynchodians, and suctorians.

Zosterodasys was established with *Z. agamalievi* as the type species by the French ciliatologist, Gilbert Deroux, in 1978. He defined the genus by (i) an obovoidal to ellipsoidal body which is anteriorly not differentiated into a rostrum; (ii) a conspicuous cyrtos, i.e., an obconical cytopharyngeal apparatus whose walls are strengthened by nematodesmata; and (iii) a special ciliary structure, the so-called synhymenium, which extends obliquely from the left to the right dorsal cell surface across the ventral side. Deroux (1978) recorded the type species in brackish