



Comparison of the predatory rotifers *Pleurotrocha petromyzon* (Ehrenberg, 1830) and *Pleurotrocha sigmoidea* Skorikov, 1896 (Rotifera: Monogononta: Notommatidae) based on light and electron microscopic observations

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Abstract

In the course of phylogenetic investigations across Rotifera, we reinvestigated *Proales sigmoidea* (Skorikov, 1896) and found significant similarities with respect to its morphology, ecology and behaviour to *Pleurotrocha petromyzon* (Ehrenberg, 1830). Both species feed on stalked ciliates and show a similar habitus as well as similar virgate trophi. We here present new morphological details for both species based on light and electron micrographs. In light of our results, we suggest the reassignment of *Proales sigmoidea* to *Pleurotrocha* Ehrenberg, 1830. To further support our case, we provide additional comparisons with other species of the latter genus, including *Pleurotrocha robusta* (Glasscott, 1893), for which we present additional information.

Key words: Monogononta, Proalidae, SEM, trophi

Introduction

Within Rotifera, the monophyletic status of families Notommatidae Remane, 1933 and Proalidae Bartos, 1959 is known to be highly problematic and that both families are in need of revision by modern, phylogenetic approaches (Sørensen 2005). Both taxa represent taxonomically unsatisfactory assemblages of numerous, diverse and mostly insufficiently described taxa that often have not been found again since their initial description (Nogrady *et al.* 1995; De Smet 1996). The monophyly of each is questionable because some species within each family seem to be more closely related to species of other rotifer families.

Compounding the taxonomic assessment of these families is the fact that type material of proalid and notommatid species is generally no longer available and the preserved material that is available is often in bad condition and unsuitable for comparative identification purposes; instead, living specimens show much more definitive morphological detail and can be determined more accurately. Furthermore, original descriptions of many species are short and lack both good drawings and adequate microscopic pictures (the latter partly because of the age of the studies). Owing to this general lack of information, robust phylogenetic studies based on morphological traits are hardly possible for most species of Notommatidae or Proalidae at present. Hence, a clear need for these two families is the comprehensive examination of more rotifer species to compile large, quality data-sets on their morphology and ecology as a prerequisite to future phylogenetic analyses. To meet this goal, electron-microscope investigations present an important and promising method to confirm or reject previous light-microscope observations (Fontaneto & Melone 2003) and contribute new morphological data as demanded by Wallace (2002). Yet, despite scanning electron microscopy (SEM) accompanied by careful preparation techniques, as used by Ricci *et al.* (2001) or Fontaneto & Melone (2003), being indispensable and of high value for the elucidation of complex morphological structures such as the corona and the trophi, they have not been applied consequently in species descriptions to date.