



Cephalodella acidophila n. sp. (Monogononta: Notommatidae), a new rotifer species from highly acidic mining lakes

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Abstract

We describe a new species of *Cephalodella*, *C. acidophila* n. sp., from the plankton of two extremely acidic mining lakes (pH <3) in Austria and Germany. The species is morphologically closely related to *Cephalodella delicata* Wulfert. It shares with the latter an almost identical trophi morphology and anatomical organization, but differs clearly by form and length of its toes, larger body size, and ecology. Laboratory experiments revealed that the species is acidophilic, i.e. it thrives at low pH (<4) and does not survive at circumneutral conditions. The species occurs in man-made habitats at low to moderate abundance (usually 5–22 individuals l⁻¹) and in stock cultures thrives on the green alga *Chlamydomonas acidophila*. The easily cultured species has previously been used in various experimental studies, but has only now been recognized as an undescribed species.

Key words: Rotifera, taxonomy, acidophily, new species

Introduction

The genus *Cephalodella* is among the most species-rich genera of phylum Rotifera, with approximately 190 species being currently known (Segers 2007). Nogrady and Pourriot (1995) consider *Cephalodella* to be probably the most taxonomically difficult genus among all rotifers, because of the great phenotypic similarity and large number of species. It is necessary to study live animals in order to ascertain the presence or absence of eyespots (which bleach in formalin) and to properly establish body proportions and anatomical organization, although many species descriptions were based on preserved material. To unequivocally discriminate between *Cephalodella* species, a thorough study of the trophi is also of paramount importance, albeit these structures have not or only inadequately been described for a number of species (Nogrady and Pourriot, 1995). As a consequence, our understanding of the distribution and ecology of many species is blurred by misidentifications and doubtful records, and new species are to be expected even from well explored regions.

In the following, we describe a new *Cephalodella* species, *C. acidophila* n. sp., from two acidic mining lakes, and compare it with its presumed closest relative, *C. delicata* Wulfert.

Material and methods

Morphological investigations. Live specimens were studied from laboratory cultures maintained at the University of Potsdam, Germany, and at the Limnological Institute in Mondsee, Austria. The parent material for these cultures originates from two acidic mining lakes located in Lusatia (Brandenburg province), eastern Germany (“Mining Lake 129” and “Mining Lake 130”, near Gorden-Staupitz), and Langau, Lower Austria. These man-made lakes originated from abandoned open-cast lignite mines operating during the past 50 years. For comparative analyses,