



A new family of the order Ctenopoda (Crustacea: Cladocera) from the depths of the Black Sea

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Abstract

The recently described *Pseudopenilia bathyalis* Sergeeva, 2004, found in the depths of the Black Sea and initially attributed to family Sididae (Crustacea: Cladocera: Ctenopoda), have after reinvestigation been placed in Pseudopenilidae, a new family of the cladoceran order Ctenopoda. The following set of the main diagnostic features characterize Pseudopenilidae: comparatively large antennules with long sensory seta and five aesthetascs; long and massive second antennae with two-segmented branches armed with long, one-segmented, needle-shaped setae without setules; maxillules without long setae; lack of second maxillae; closed brood pouch; six pairs of similar thoracic limbs without gnathobases and filtering setae; small epipodites present only on thoracic limbs of first pair; large postabdomen, having massive terminal claws and one-segmented, needle-shaped setae *nanatoriae* without setules; resting eggs with hard outer shell. Among Ctenopoda, Pseudopenilidae is closest to the marine *Penilia* (family Sididae, subfamily Penilinae) but is at the same time very different. *P. bathyalis* is a member of the recently discovered community of invertebrates, populating the deep anaerobic zone of the Black Sea, whose taxonomic diversity and mode of existence need further investigations.

Key words: *Pseudopenilia bathyalis*, taxonomic description, Pseudopenilidae, hydrogen sulfide zone

Introduction

In January 2002, a few specimens of unknown microscopic crustaceans were collected during sampling of bottom sediments at depths of about 2000 m in the anaerobic zone of the Black Sea (Sergeeva, 2004a). These crustaceans were in some respects similar to the well-known planktonic ctenopodan cladocerans, *Penilia avirostris* Dana, but differed from them in many ways. For this reason, they were described as a new genus and species, *Pseudopenilia bathyalis* Sergeeva, 2004, of the family Sididae. However, the original description lacked some details, and relevant comparisons to other taxa were also not provided. Additional collecting has yielded only few additional juveniles and resting eggs of the species.

In April 2006, the available material on *Pseudopenilia* was reinvestigated. Unfortunately, by this time, the holotype, the only adult female, had been damaged, and some structures could not be studied again. Nevertheless, re-examination confirmed that the crustaceans under consideration possessed a number of peculiar features that warrant the erection of a new family for the genus *Pseudopenilia*.

Further attempts to obtain additional material for the reinvestigation of *Pseudopenilia* were unsuccessful. Thus, we present an amended description of the species based on the poor available material with the hope to provide a better investigation in the future.