



## Discrimination between two sibling species of *Acroperus* (Baird, 1843) from the Palearctic (Cladocera: Anomopoda: Chydoridae)

ARTEM Y. SINEV

Department of Invertebrate Zoology, Biological Faculty, Lomonosov Moscow State University, Leninskie Gory, Moscow 119991, Russia. E-mail: artem\_sinev@mail.ru

### Abstract

Morphology and differential diagnosis of two common Eurasian but frequently confused Eurasian cladocerans, *Acroperus harpae* (Baird, 1834) and *A. angustatus* Sars, 1863, was investigated. Validity of both species is confirmed. A significant intraspecific variation in body shapes, unusual for species of the family Chydoridae, is present in females of both species. This “traditional” character is unreliable as diagnostic feature. Prominent differences between two species are revealed in antennal morphology, used for identification of all instars of males and females. Detailed morphology of males, postembryonal development of both males and females was studied in details for the first time. Our data suggest that two other European *Acroperus* taxa, *A. neglectus* Lilljeborg, 1900 and *A. alonoides* Hudendorff, 1876, are junior synonyms.

**Key words:** Cladocera, *Acroperus harpae*, *Acroperus angustatus*, morphology, systematics, males, Palearctic

### Introduction

Cladocera of the genus *Acroperus* Baird, 1843 are among the most common Chydoridae species in Europe and North Asia. Identification of *Acroperus* species is not easy. Usually one species, *A. harpae* (Baird, 1834), is mentioned in the majority of ecological publications whereas its sibling, *A. angustatus* Sars, 1863, is rarely mentioned from Eurasia. The number of records *A. angustatus* compared to those of *A. harpae* presently is about 1/20 (Google Scholar™ internet search results). This results from an unclear taxonomic status of *A. angustatus* and the absence of reliable characters to discriminate females of the two taxa. Authors of regional guides, including Šrámek-Hušek et al. (1962), Manuilova (1964) and Flössner (1972) have treated *A. angustatus* as a subspecies or variety of *A. harpae*, which adds to the confusion.

Baird (1834) described *A. harpae* (as a member of genus *Lynceus*) from Berwickshire, UK. Records of this distinctive animal, also referred to as *A. leucocephaloides* Koch, 1941, increased rapidly. In 1863, Sars described a second *Acroperus*, *A. angustatus* Sars, 1863, which differs from *A. harpae* by the body shape. Specimens described by Sars showed an elongated, almost rectangular body, and a large, prominent keel on the head (see Sars, 1993, Pl. 102–103, as *A. leucocephaloides*). In *A. harpae* the body is rounder, the dorsal margin highly arched and the keel on the head shield is lower. Sars' opinion on the species status of *A. angustatus* was confirmed by Lilljeborg (1900), who studied rich material of both *A. harpae* and *A. angustatus* from Sweden and revealed differences between the males. The level of details in his study remained unsurpassed for a long time, serving as a standard for half a century at least. Also, Lilljeborg (1900) confirmed the synonym status of *A. leucocephaloides* Koch, 1941 and described a third species of the genus, *A. neglectus* Lilljeborg, 1900, with antennules protruding beyond the tip of the rostrum, but the description was less detailed. The fourth European taxon of the genus, *A. alonoides* Hudendorff, 1876 was described from European Russia, which differs from other species by a low keel on the head.