



## Two new species of *Acentrella* Bengtsson, 1912 (Ephemeroptera, Baetidae) from Kazakhstan with notes on the Palaeartic fauna

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### Abstract

A detailed morphological description of the larval stage of *Acentrella glareosa* **sp. nov.** and *Acentrella charadra* **sp. nov.** from the genus *Acentrella* Bengtsson, 1912 is given. Their differential diagnoses are provided with regard to other Palaeartic representatives of the genus. *A. glareosa* **sp. nov.** can be distinguished from the related species by the unique shape of maxillary palp, the arrangement of the bristles on it's legs (the presence of bilateral ciliation and the second ventral row of tibial bristles) and vestigial paracercus. *A. charadra* **sp. nov.** is characterized mainly by the presence of apparent subapical bristles on the tarsal claws, the shape of it's leg bristles (bilaterally ciliate on femora and tibiae, a row of tarsal bristles missing), the unique shape of the labial palp and vestigial paracercus. The generic concept of *Acentrella* and its historical development is summarized. Possible relationships of *Acentrella* to the Baetidae genera *Liebebiella* Waltz & McCafferty, 1987, *Platybaetis* Müller-Liebenau, 1982, *Jubabaetis* Müller-Liebenau, 1982 and *Gratia* Thomas, 1992 from the Oriental Region are discussed. A species list and synonymies of all 13 Palaeartic representatives of the genus *Acentrella* is presented, including the respective type localities and metamorphic stages described so far.

**Key words:** differential diagnosis, taxonomy, Kazakhstan, Central Asia, biogeography

### Introduction

Genus *Acentrella* was established on the basis of the type species *Acentrella lapponica* Bengtsson, 1912, described from Sweden, type locality: Lappl. [Lapland], Abisko, Jukkasjärvi Sn. [Parish]. The current concept of the genus *Acentrella* Bengtsson, 1912 follows the delimitation of the *Baetis lapponicus* species-group as defined by Müller-Liebenau (1969).

In the past the genus was often considered synonymous or subgenus to the genus *Baetis* Leach, 1815 (e.g. Edmunds & Traver 1954; Novikova & Kluge 1987).

According to Waltz & McCafferty (1987), the genus *Acentrella* forms a lineage derived from a *Baetis*-like ancestor, demonstrating several apomorphies in its most ancestral species (compaction of mouthparts, reduction of hind wing pads, loss of abdominal tergal scales, reduction of posterior abdominal spines, loss of marginal spines on gills, and reduction of paracercus). Hind wing pads in larvae can be fully developed (adult stage with functional hind wings), reduced to vestiges or completely absent.

Representatives of the genus are highly rheophilous in the larval stage and often show adaptations to their environment, such as a ventrally flattened body (semicircular in cross section) and the presence of sternal friction pads (Waltz & McCafferty 1987).

The genus *Acentrella* exhibits a Holarctic and Oriental area of distribution (Lugo-Ortiz & McCafferty 1999). From the Nearctic Region, eight species is currently known, with *A. lapponica* exhibiting Holarctic occurrence (Randolph & McCafferty 2005; Jacobus & McCafferty 2006; McCafferty *et al.* 2009). From the Palaeartic region, the genus currently comprises 13 species; 5 proved to occur in Central Asia and adjacent territories.