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Morphology and phylogenetic position of three species of genus *Camptocercus* Baird, 1843 (Cladocera: Anomopoda: Chydoridae)

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Abstract

Morphology of three species of the cladoceran genus *Camptocercus* Baird, 1843 (Anomopoda: Chydoridae), North Asian *C. streletsakayae* Smirnov, 1998, Australian *C. australis* Sars, 1896 and Neotropical *C. dadayi* Stingelin, 1913, is investigated. Revealed data confirm a high level of morphological diversity within the genus. *C. australis* and *C. dadayi* belong to the *uncinatus*-clade of the genus, while *C. streletsakayae* is an advanced species with unclear phylogenetic position within the genus.

Key words: Cladocera, Chydoridae, *Camptocercus*, taxonomy, morphology, thoracic limbs

Introduction

Recent studies of morphology of the cladoceran genus *Camptocercus* Baird, 1843 (Sinev 2011, 2014) revealed a high level of morphological differences among its species. At the moment, detailed descriptions exist for six species of *Camptocercus*: *C. rectirostris* (Alonso 1996; Hudec 2010); *C. vietnamensis* Thanh, 1980 (Sinev 2011; Kotov *et al.* 2012); *C. oklahomensis* Mackin, 1930, *C. uncinatus* Smirnov, 1971, *C. lillejborgi* Schoedler, 1862 and *C. fennicus* Stenroos, 1898 (Sinev 2014). Still, a number of species of the genus remain poorly studied, and taxonomic status is unclear for several forms.

Camptocercus streletsakayae Smirnov, 1998 is a rare species from North-East Asia. It was described from Magadan area, North of Eastern Siberia (Smirnov 1998). This taxon was also found in the basin of the Anadyr' River, Chukotka (Streletsakaya 2010). *C. streletsakayae* differs from other species of the genus by a peculiar armament of postabdomen and postabdominal claw, similar to that of *C. fennicus*, and by a morphology of the claw-like seta 1 of inner distal lobe of limb I. Limbs of *C. streletsakayae* were described by Smirnov (1998), but his drawings are not detailed enough for understanding the taxonomic position of this taxon.

Camptocercus australis Sars, 1896 was described from Australia, afterward the species was recorded from Australia, South America, India, South-East Asia, Africa (Smirnov 1971). Such Pantropical distribution of species usually points to the existence of a species-complex, but most records of *C. australis* outside Australia lack adequate descriptions. The former taxon also can be confused with other valid species. So-called *Camptocercus australis* from Malaysia (Idris 1983) belongs in reality to *C. vietnamensis* Thanh, 1980 (Sinev 2011). Distinctive features of *C. australis*, according to Smirnov (1998), include: (1) lack of denticles on the posteroventral corner of the valves, (2) rather pointed rostrum, (3) elongated marginal denticles of postabdomen, and (4) unspecialized setae of inner distal lobe of limb I. Morphology of most appendages is unknown for this species.

In South America, *C. australis* was recorded for Argentina and Paraguay by Daday (1902, 1905). Later, populations from Colombia were described as a separate variety, *C. australis* var. *dadayi* Stingelin, 1913. This taxon differs from *C. australis* s. str. by a truncated rostrum, similar to that of *C. lillejborgi*, and was treated by Smirnov (1971) as a variety of the latter. Type material of *C. australis* var. *dadayi* was re-studied by Frenzel (1987), and lectotypes were established. Rey & Vasquez (1986) investigated populations of *C. australis* var. *dadayi*