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Revision of *Campsurus violaceus* species group (Ephemeroptera: Polymitarcyidae) with new synonymies and *nomina dubia* in *Campsurus* Eaton, 1868

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Abstract

The *violaceus* species group (formerly *notatus* species group) of *Campsurus* Eaton is revised. All the species in the *violaceus* group are diagnosed. A new species, *C. molinai* sp. nov. is described based on male imagos from Bolivia, characterized by their large and sclerotized penes. The *violaceus* group is proposed to include the following species: *C. assimilis* Traver, *C. truncatus* Ulmer (= *C. mahunkai* Puthz = *C. melanocephalus* Pereira & da Silva, new synonyms), *C. violaceus* Needham & Murphy (= *C. meyeri* Navás = *C. notatus* Needham & Murphy = *C. paranensis* Navás, new synonyms), *C. emersoni* Traver, *C. decoloratus* (Hagen), and *C. molinai* sp. nov. Additionally we consider the following species as *nomina dubia*: *C. longicauda* Navás, *C. pfeifferi* Navás, *C. zikani* Navás, *C. albicans* (orig. *Ephemerella albicans* Percheron in Guerin & Percheron), *C. burmeisteri* Ulmer, *C. dallasi* Navás, *C. quadridentatus* Eaton, *C. claudus* Needham & Murphy, *C. corumbanus* Needham & Murphy, *C. dorsalis* (Burmeister), *C. mutilus* Needham & Murphy, and *C. striatus* Needham & Murphy. Given the results presented herein (five species synonymized and 12 proposed as *nomina dubia*), only 28 valid species remain in the genus *Campsurus*. Additionally, the nymphal stages of *C. violaceus* and *C. truncatus* are described and illustrated. Female adult genitalia (sockets) and eggs of *C. decoloratus* are described for the first time. Diagnoses, new country records, and redescriptions of selected characters of the imagos for the species of the *violaceus* group are given.

Key words: Campsurinae, Ephemeroidea, burrowing mayfly, taxonomy

Introduction

Campsurus Eaton, 1868 is a speciose genus of mayflies (Ephemeroptera: Polymitarcyidae) characterized by burrowing nymphs that live in soft substrates of lentic habitats (Domínguez *et al.* 2006). The relative large size and frequent presence of specimens at lights occasioned a lot of early descriptions of species, descriptions that most of the time are inadequate and made only from one or few adults (e.g., Guerin & Percheron 1838, Weyenbergh 1883, Eaton 1871, 1883, Navás 1927, 1931a, 1931b).

After recent taxonomic works (Domínguez *et al.* 2006, Molineri & Emmerich 2010, Emmerich & Molineri 2011, and Molineri & Salles 2013) the total number of valid species in *Campsurus* raised to 41, divided in four species groups. From this list, 13 species lack reliable diagnosis, description or drawings. Because of that, Domínguez *et al.* (2006) could not assign them to a particular species-group based on characters of male genitalia: *C. albicans* Percheron, *C. dallasi* Navás, *C. holmbergi* (Weyenbergh) (sic: it is known only from female), *C. nappii* (Weyenbergh), *C. paranensis* Navás, *C. pfeifferi* Navás, *C. quadridentatus* Eaton, *C. wappaei* (Weyenbergh), and *C. zikani* Navás, or because they were only known from females: *C. claudus* Needham & Murphy, *C. corumbanus* Needham & Murphy, *C. dorsalis* (Burmeister), *C. mutilus* Needham & Murphy, and *C. striatus* Needham & Murphy. *Campsurus paraquarius* Navás (1920) is now considered a *nomen nudum* in Asthenopodinae by Molineri *et al.* (2015). Domínguez *et al.* (2006) considered *Campsurus holmbergi*, *C. nappii* and *C. wappaei* as *nomina dubia*.

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