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On the diagnostic characters of the genus *Stygonitocrella* (Copepoda, Harpacticoida), with descriptions of seven new species from Australian subterranean waters

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Abstract

Seven new freshwater ameirids were discovered in the Australian subterranean habitats, six of which would fit into the present unsatisfactory diagnosis of the genus *Stygonitocrella* Reid, Hunt & Stanley, 2003. Two of them were discovered in Pioneer Valley, Queensland, representing the first record of this genus in eastern Australia. Four other species were collected from the Pilbara region in Western Australia, the same region in Australia where the first three representatives of this genus were reported. An additional new species was collected in the Kimberley region in Western Australia and could not be assigned to the revised genus *Stygonitocrella*, but has some remarkable similarities with species that were in the past considered to be members of this genus. In order to assess the most natural allocation of these ameirid taxa, a revision of the genus *Stygonitocrella* was made, based on a cladistic approach by using 57 phylogenetically informative morphological characters. The phylogenetic analysis revealed the presence of six monophyletic groups, giving ground for the establishment of six new genera, three of them created to accommodate a single new Australian species: *Kimberleynitocrella billhumphreysi* **gen. et sp. nov.** from several bores in the Argyle Diamond Mine and Ord River in the Kimberley region in Western Australia, *Gordanitocrella trajani* **gen. et sp. nov.** from three different localities in the Pilbara region in Western Australia, and *Lucionitocrella yalleenensis* **gen. et sp. nov.** from a single bore on the Yalleen Station, also in the Pilbara region in Western Australia. All three new Australian genera have a basal position on the phylogenetic tree, because they share several plesiomorphic characters; nevertheless they are well defined by the combination of apomorphic and plesiomorphic features. The generic diagnosis of *Stygonitocrella* is emended and the genus redefined to include only four species: *S. montana* (Noodt, 1965) from Argentina (the type species), *S. dubia* (Chappuis, 1937) and *S. guadalfensis* Rouch, 1985 from Spain and *S. sequoyahi* Reid, Hunt & Stanley, 2003 from the United States. The Cuban *S. orghidani* (Petkovski, 1973) was left as *incertae sedis* in this genus. The subgenus *Fiersiella* Huys, 2009 is established as a junior subjective synonym of *Stygonitocrella*. Generic diagnoses are emended for the monospecific Australian genus *Inermipes* Lee & Huys, 2002, the monospecific Japanese genus *Neonitocrella* Lee & Huys, 2002 and the North American genus *Psammonitocrella* Huys, 2009, that contains two species. The genus *Reidnitocrella* **gen. nov.** is erected to accommodate three closely related central Asian species: *R. tianschanica* (Borutzky, 1972) **comb. nov.**, *R. pseudotianschanica* (Sterba, 1973) **comb. nov.**, and *R. djirgalanica* (Borutzky, 1978) **comb. nov.** Also, after carefully examining the available published information on *R. tianschanica* another new species is recognized in this genus: *R. borutzkyi* **sp. nov.** The genus *Eduardonitocrella* **gen. nov.** is erected for the Mexican *E. mexicana* (Suárez-Morales & Iliffe, 2005) **comb. nov.** The newly established genus *Megastygonitocrella* **gen. nov.** is the largest one in this group of freshwater ameirids, containing the following 11 species: *M. trispinosa* (Karanovic, 2006) **comb. nov.** (type species), *M. bispinosa* (Karanovic, 2006) **comb. nov.**, *M. unispinosa* (Karanovic, 2006) **comb. nov.**, *M. ecowisei* **sp. nov.**, *M. dec* **sp. nov.**, *M. pagusregalis* **sp. nov.**, *M. kryptos* **sp. nov.**, *M. karamani* (Petkovski, 1959) **comb. nov.**, *M. petkovskii* (Pesce, 1985) **comb. nov.**, *M. ljovuschkini* (Borutzky, 1967) **comb. nov.** and *M. colchica* (Borutzky & Michailova-Neikova, 1970) **comb. nov.** The first five species are endemic to the Pilbara region in Western Australia, the next two are described from Queensland, *M. karamani* is known from Slovenia, *M. petkovskii* from Greece, while the last two species are endemic to the Caucasus. A Tethyan origin for this genus is here hypothesized. New locality data is presented for the first three species, which revealed that *M. trispinosa* is the most common and widely distributed member of this group (although restricted to a single Australian region), while *M. bispinosa* and *M. unispinosa* are short range endemics. A key to species is provided for each polytypic genus, as well as a key to genera of *Stygonitocrella* s. l.

Key words: Stygofauna, taxonomy, systematics, cladistics, revision, freshwater, Ameiridae