



Redescription of the endemic Australian cladoceran *Alona willisi* (Smirnov, 1989) and its assignment to *Acanthalona* gen. nov. (Cladocera: Anomopoda: Chydoridae)

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Abstract

Alona willisi (Smirnov, 1989) (Anomopoda: Chydoridae) is a poorly known cladoceran endemic to Australia. The present morphological study revealed numerous unique and rare features of the species and justifies its assignment to *Acanthalona* gen. nov. The new genus differs by its postabdomen armed with very long, thick marginal denticles and by exopodite of limb V with only three setae. It also differs from most Aloninae by antennal formula (setae 0-0-3/0-1-2, spines 1-0-1/0-0-1), shared only with *Bryospilus* Frey, 1980. In our opinion, *Acanthalona* gen. nov. is related to *Armatalona* Sinev, 2004 and *Matralona* Van Damme & Dumont, 2009. These three genera form a clade, basal for the subfamily, and not directly related to the majority of Aloninae. The records of *A. willisi* show that the species inhabits both acidic and alkaline freshwaters and seems to be algivorous as well as detritivorous.

Key words: apomorphies, *Acanthalona* gen. nov., *Armatalona*, Australian endemism, Cladocera, *Matralona*, Royal National Park, sister groups, synapomorphies

Introduction

Cladocera of subfamily Aloninae (Anomopoda: Chydoridae) have been intensively investigated during the last two decades. One of the main trends is a revision of the large but polyphyletic genus *Alona* Baird, 1843, historically formed by lumping together about a dozen different species-groups, convergently similar in their general morphology (Van Damme & Dumont 2008ab; Van Damme et al. 2010). Studies of *Alona sensu lato*, based on re-descriptions of species, led to descriptions of several new genera (Dumont & Silva-Briano 2000; Sinev 2004; Sinev & Shiel 2008; Van Damme & Dumont 2008a, 2009; Van Damme et al. 2009, 2011; Van Damme & Sinev 2011).

Australian Aloninae are diverse, with a high degree of endemism (Smirnov & Timms 1983). Several Australian species of *Alona* s.l.: *Alona setulosa* Brehm, 1931, *Alona archeri* Sars, 1888 and *A. pulchella* King, 1853 were recently redescribed (Sinev 1999, 2001, 2002); revision of *Alona diaphana* King, 1853 led to its relocation to the genus *Leberis* (Sinev et al. 2005); revision of *macrocopa*-group led to a description of genus *Armatalona* Sinev 2004, with the two species *Armatalona macrocopa* (Sars, 1984) and *Armatalona imitatoria* (Smirnov, 1989) (Sinev 2004); and *Alona macracantha* Smirnov & Timms, 1983 was assigned to a new monotypic genus, *Maraura* (Sinev & Shiel 2008). Still, many Australian species of *Alona* s.l. (and other Australian Aloninae as well) remain unrevised.

One such species is *Alona willisi* (Smirnov 1989), described from acid water bodies on Cape York in Queensland. The species is easily recognizable by extremely long marginal denticles of postabdomen, unique for Aloninae. However, the initial description is far from complete, as only habitus, head pores and postabdomen were described. The taxonomical position of *A. willisi* is unclear. *A. willisi* fits none of the recently described genera of *Alona*-like animals nor any of the established species-groups of *Alona* s. l., like *affinis*, *costata*, *pulchella* or *quadrangularis* groups. Detailed revision of such ‘marginal’ species usually leads to change of their taxonomic