Zootaxa 4044 (4): 451–492
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.4044.4.1
http://zoobank.org/urn:lsid:zoobank.org:pub:58357227-54BB-4B37-9B03-5E8BBA9C5AC2

Revision of the *pulchella*-group of *Alona* s. lato leads to its translocation to *Ovalona* Van Damme et Dumont, 2008 (Branchiopoda: Anomopoda: Chydoridae)

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Table of contents

Abstract

The *pulchella*-group of *Alona* s.l. (Cladocera: Anomopoda: Chydoridae) is transferred to *Ovalona* Van Damme et Dumont, 2008, and an emended diagnosis is provided. *Ovalona meridionalis* (Sinev, 2006) is removed from *Ovalona* due to differences in thoracic limb morphology. At the moment, *Ovalona* consists of 17 species, and is the largest natural genus of Aloninae. A key for the world fauna and diagnosis for all species is provided. The morphology of *O. nuragica* (Mar-

Accepted by M. Alonso: 20 Oct. 2015; published: 20 Nov. 2015

garitora, 1971) is studied for the first time. The position of *Ovalona* within subfamily Aloninae and the distribution of the genus are discussed.

Key words: Cladocera, Aloninae, *pulchella*-group, revision, systematics, morphology, biogeography

Introduction

One of the main trends of recent Aloninae systematics is a revision of the artificial, polyphyletic genus *Alona* Baird, 1843, which was historically formed by lumping together about a dozen of different species groups, convergently similar in outer morphology (Van Damme & Dumont 2008ab; Van Damme *et al*. 2010). Recent revisions of such groups led to the description 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, Van Damme & Maiphae, 2013). A series of species of *Alona* s. l. were transferred to others, previously described genera after revision (Sinev *et al.* 2005, Sinev & Kotov 2012). According to Van Damme & Dumont (2008b) true genus *Alona* is limited to the *quadrangularis*-group, now consisting of five species (Sinev 2012). Several other species-groups were partially revised, but not formally recognized as genera, although generic status for them was claimed earlier (Sinev 2008, 2009a; Sinev *et al.* 2009). One of them is the *pulchella*-group.

Initially, this group was outlined in Sinev (2001ab, 2002ab), on the taxonomy of tropical *Alona* species with long, narrow postabdomen namely *A. pulchella* King, 1853*, A. cambouei* Guerne & Richard 1893*, A. archeri* Sars, 1888, *A. glabra* Sars, 1901 and *A. bromelicola* Smirnov, 1988. These studies revealed an uniformity in the appendage morphology within these animals. Following studies revealed that a number of species with a different postabdomen namely North American *A. setulosa* Megard, 1967, the Andean endemic *A. nigra* Smirnov, 1996, European *A. karelica* Stenroos, 1897 and South African endemic *A. capensis* Rühe, 1914, share the same limb features (Sinev, 2009b; Kotov *et al*. 2010; Van Damme *et al*. 2011a, 2013). The generic status of this group was suggested several times (Van Damme & Dumont, 2008; Van Damme *et al.* 2011a; Sinev *et al*., 2012).

Important results were obtained in the previous study of the group. Taxonomic problems with the central clade (core group) (*A. pulchella*, *A. cambouei* and *A. glabra*) were resolved. Before starting the revision (Sinev 2001ab), these three species had been reported from the whole tropical area, and were considered a single taxon. Morphological study confirmed the status of each species and clarified their ranges: *A. pulchella* is an Australian endemic, *A. cambouei* is distributed in Africa and Tropical Asia (Sinev 2001a), and *A. glabra* is Neotropical, including the Andes (Sinev, 2001b; Coronel *et al*., 2007; Kotov *et al*, 2010, Sinev & Silva-Briano 2012). Revision of West Mediterranean *A. azorica* Frenzel & Alonso, 1988 revealed it is a complex of sibling-species, with *Alona azorica* s. str. confined to the Azores and West Iberia and *Alona anastasia* Sinev, Alonso, Miracle & Sahuquillo, 2012 to the arid regions of the West Mediterranean (Sinev *et al*., 2012). Three new species of the group were described from mountainous regions of America namely *A. altiplana* Kotov, Sinev & Berrios, 2010 from the Andes, *A. aguascalientensis* Sinev & Silva-Briano, 2012 and *A. anamariae* Sinev & Silva-Briano, 2012 from the Central Mexican Plateau. One more new species of the group, *A. kaingang* Sousa, Elmoor-Loureiro & Santos, 2015 was described from subtropical regions of Brazil. The morphology of *A. bromelicola*, *A. karelica*, *A. nigra, A. capensis* and *A. setulosa* was reinvestigated (Sinev 2002ab, 2009b; Kotov *et al* 2010; Van Damme *et al*., 2011, 2013; Hudec, 2010).

Features of the group, according to Kotov *et al*. (2010) and Sinev *et al.* (2012) include: (1) posteroventral corner of valves armed with numerous short thin setulae of similar size, not organized into groups; (2) three main head pores with narrow connection; in some species (*A. cambouei, A. nigra, A. setulosa, A. capensis, A. azorica, A. anastasia*) this connection interrupted or absent; in all other species-groups of *Alona* s. l. a connection between these pores is present; (3) postabdomen of rectangular shape, armed with moderately developed marginal denticles and well-developed lateral fascicles of setae; (4) IDL of limb I with three setae, seta 1 well developed, setae 2 and 3 armed with thin setulae; (5) endite 1 of limb I lacks flat posterior seta (i) pointed to the limb base, and endites 1 and 2 lack inner setae; (6) exopodite III with seven setae, seta 4 well developed; (7) exopodite IV with plumose setae 5–6; (8) absence of filter plate on limb V; (9) absence of limb VI; (10) male antennula with a pair of lateral aesthetascs.

All these characters are shared by the type species of *Ovalona* Van Damme & Dumont, 2008, *O. weinecki* (Studer, 1878) (see Van Damme et Dumont, 2008a; for male morphology see Frey, 1988). A second species of