Annales de Limnologie 2017 vol.53 N3, pages 425-465

# Diversity and distribution of the Macrothrix paulensis species group (Crustacea: Cladocera: Macrothricidae) in the tropics: What can we learn from the morphological data?

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## Abstract

© 2017 EDP Sciences,. Over the last 20 years significant progress was achieved in morphological investigations of the genus Macrothrix Baird (Cladocera: Macrothricidae). The Macrothrix paulensis species group is known from tropical and subtropical regions all around the World. In this paper we redescribe M. capensis (Sars, 1916) based on material from the Republic of South Africa, and describe a new species, M. australiensis sp. nov. from Australia. A cladistic analysis of 19 morphological characters in 12 taxa (including M. triserialis Brady, 1886 as an outgroup) derived from our analysis of original samples and literature data, resulted in 18 equally-parsimonious trees. Within the M. paulensis group, we can recognize a basal section with five taxa (M. atahualpa Brehm, 1936, M. smirnovi Ciros-Pérez and Eliás-Gutiérrez, 1997, M. agsensis Dumont, Silva Briano and Subhash Babu, 2002, M. capensis, M. australiensis sp. nov.) which are both biogeographical and phylogenetic relicts. They occur exactly in well-known zones of cladoceran endemism:: Australia,South Africa, the Andean highlands and Mexican Plateau with surrounded territories. In contrast, the crown group is widely distributed in tropical lowlands. No truly "Pantropical" taxa were found, all taxa could be classified as: (1) exclusively Neotropical; (2) exclusively Australian; (3) Palaeotropical (Afro-Asian); (4) endemics of Mexican Plateau. Probably a combination of scenarios took place during history of the M. paulensis group, but we can conclude that all possible scenarios are old, which confirms antiquity of the M. paulensis group. Australia and Tasmania could be a source of additional species from this group.

http://dx.doi.org/10.1051/limn/2017022

## Keywords

Biogeography, Macrothrix, Morphology, New species, Pantropical distribution, Redescription

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