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A review of the world Cyphocarididae with description of three new species (Crustacea, Amphipoda, Lysianassoidea)

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Abstract

The world Cyphocarididae are reviewed with new distribution records provided for eight taxa including three new species of *Cyphocaris, C. ananke, C. nesoi* and *C. tartaros*. Based on collections from Greenland a neotype is established for the type species *Cyphocaris anonyx* Boeck, 1871. An updated key to the 17 known world species of cyphocarids is provided.

Key words: Crustacea, Amphipoda, Lysianassoidea, Cyphocarididae, *Cyphocaris*, *Procyphocaris,* new species, Australia

Introduction

Cyphocaridids are pelagic amphipods found throughout the world's oceans from 90 m to thousands of meters depth. Several species show an extreme cosmopolitan distribution, for example *Cyphocaris anonyx* Boeck, 1871 is recorded from Greenland to Tristan de Cunha and *C. richardi* Chevreux, 1905a has records which include the north Polar Frontal Zone, South Shetland Islands, the Seychelles and the Japan Trench. Records of cyphocaridids are numerous, with several species cited from more than 20 collection events in pelagic trawl studies. Most species records however, do not include illustrations, and some identifications of this charismatic group need to be confirmed. Closer inspection of finer level characters, including the maxilliped plate setation and dactylus length, maxilla 1 setation counts and pereopod article internal ratios are revealing more species level characters. Re-examination of these characters from historic material would be useful to test for geographically discrete groups within these broadly distributed species.

Forming part of the deep sea fauna, cyphocaridid species are known to bioluminesce (Bowman, 1967). This phenomenon is thought to be related to feeding strategies to capture prey (Hessler *et al*., 1972; Dahl, 1979). Detailed study of *C. faurei* K.H. Barnard, 1916 has shown that the bioluminescence occurs from both a secretion at the posterior end (telson and uropods) and as a glow around the cephalothorax (Bowlby *et al*., 1991). The emission spectrum, flash kinetics, quantum emission and mode of luminescence in *C. faurei* is considered to be distinct among deep sea amphipods (Bowlby *et al*., 1991).

In terms of life history, *Cyphocaris challengeri* Stebbing, 1888 is the most studied species, recorded as a predator of copepods, amphipods, cladocerans, and ostracods, individuals are known to live for 584 days in laboratory conditions (Yamada & Ikeda, 2000; Haro-Garay, 2003).

Material and methods

Material from this study is lodged in the Australian Museum, Sydney (AM), Museum Victoria, Melbourne (NMV), Queensland Museum, Brisbane (QM), Zoological Museum of Copenhagen (ZMC), the Smithsonian National Museum of Natural History, Washington, D.C. (USNM); Museum National d'Histoire Naturelle, Paris (MNHN), South African Museum (SAM), Canadian Museum of Nature, Ottawa (CMNC), National Museum of Nature and Science, Tokyo (NSMT) and the Natural History Museum, London (NHM). Aside from new type designations, type material was not examined as part of this study; the listing has been included to bring together all information

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