



A new species of *Centropages* (Copepoda: Calanoida: Centropagidae) from the central Red Sea based on morphological and molecular evidence

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Abstract

Centropages mohamedi sp. nov. (Copepoda: Calanoida) is described from specimens collected in zooplankton samples off Obhur Creek on the Saudi Arabian coast of the central Red Sea. The new species is most closely related to *C. orsinii* Giesbrecht, 1889, a species described from the Red Sea and widely distributed in the neritic waters of the Indo-West Pacific region. The new species is mainly distinguished by the female genital double somite, male antennules, male leg 4, and leg 5 of both sexes. DNA sequences of the mitochondrial cytochrome C oxidase subunit one (mtCOI) of the two species differ by 20.8%, supporting their morphology-based identification as distinct species.

Key words: morphology, mtCOI, Saudi Arabia, taxonomy, zooplankton

Introduction

The Red Sea is an oligotrophic sea and can be considered an extreme environment for plankton owing to its high salinity, lack of any fresh water supply and a high evaporation rate, as well as isolation from the open ocean (Weikert 1987). During the last decade, more attention has been paid to the plankton community by shore-based laboratories in Red Sea countries, resulting in the discovery of several planktonic copepod species new to science or to the fauna of the Red Sea (e.g. El-Sherbiny & Ueda 2008a, b; El-Sherbiny 2009, 2011; El-Sherbiny & Al-Aidaros 2013, 2014; Ohtsuka *et al.* 2000). The genus *Centropages* (Family: Centropagidae) presently comprises 34 species, including 3 doubtful species (Razouls *et al.* 2014). This genus has a worldwide distribution with species being distributed across a wide range of marine environments, from low to high latitudes (Vervoort 1964; Bradford-Grieve 1999; Bradford-Grieve *et al.* 1999; Boxshall & Hasley 2004). Some coastal species are abundant, comprising a main component of copepod communities and playing important roles as food for fish (Brodsky 1950; Chen & Zhang 1965). In the Red Sea, the following nine species of the genus have hitherto been recorded (Halim, 1969; El-Sherbiny & Ueda 2008a; El-Sherbiny 2011): *Centropages aegypticus* El-Sherbiny & Ueda, 2008, *C. calaninus* Dana, 1849, *C. elongatus* Giesbrecht, 1896, *C. furcatus* (Dana, 1849), *C. gracilis* (Dana, 1849), *C. kroyeri* Giesbrecht, 1892, *C. orsinii* Giesbrecht, 1889, *C. uedai* El-Sherbiny, 2011, and *C. violaceus* (Claus, 1863). During our study of zooplankton diversity in coastal waters around Obhur Creek, near Jeddah coastal water on the Saudi Arabian coast of the Red Sea, an undescribed species of planktonic calanoid copepod of the genus *Centropages*, very closely related to *C. orsinii*, was collected. Here, we describe this new species and compare it morphologically and genetically with *C. orsinii* collected from the central Red Sea, its type locality.

Material and methods

Sample collection. *Centropages* specimens of the new species were collected from the coastal waters off Obhur Creek, the central Red Sea (21°41.37'N, 39°2.13'E) on 31 May 2012, and specimens of *Centropages orsinii* were

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