



Report of an amphipod, *Caprella danilevskii* (Czerniavskii, 1868), from the south Saurashtra coast, Gujarat, India

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Short Communication

Abstract

The amphipod, *Caprella danilevskii*, was first described by Czerniavskii in 1868. The material of the present study was collected from the south Saurashtra coast, Gujarat, India. It was collected from shallow rock pools of the intertidal area at Veraval, west coast of India. Caprellids are rare and not frequently reported from the Indian waters. In the present report, the species is described in detail.

Keywords: Caprellid amphipod, intertidal area, India

Introduction

Caprellids are epifaunal amphipods, inhabiting in association with algae, hydroids, bryozoans, sponges and seagrasses (McCain, 1968; Guerra-Garcia, 2001). These animals feed on suspended materials, prey on other organisms or graze on epibiotic fauna and flora (Caine, 1974; Guerra-Garcia *et al.*, 2002; Thiel *et al.*, 2003). While working on the community ecology of certain intertidal pools of the south Saurashtra coastline, samples of algae and seagrasses were examined under a field microscope, which revealed the presence of a few individuals of the small amphipod, *Caprella danilevskii*, camouflaged with *Sargassum* algae.

Based on the surveys in North Carolina, USA, amphipods comprise 97% of all macroscopic animals inhabiting the brown seaweed *Sargassum filipendula*, which was very abundantly found during late winter and early summer. Caprellids species are mostly found as a grazer and significantly reduced the growth of epiphytes on *Sargassum* algae (Duffy, 1990). Previous studies reported that *C. danilevskii* has been observed in *Cystoseira*, *Sargassum*, amongst *Bugula* (Krapp-Schickel, 1993). During the field surveys, many individuals of the *C. danilevskii* were observed in association with *Sargassum*

from small rock pools along the intertidal area, which plays an important role in rocky reef ecosystems (Edgar and Moore, 1986). The *C. danilevskii* was observed attaching to seaweed using the gnathopod in a parallel posture whereas other species were mostly found with upright posture in stagnant water. A literature survey showed that the caprellid amphipods of the Indian coastline were studied by Giles (1888), Mayer (1890), Sundara Raj (1927), Sivaprakasam (1977), Swarupa and Radhakrishna (1983) and Bhave and Deshmukh (2009) and the available reports suggested a total of 11 species from the Indian waters (Guerra-Garcia *et al.*, 2010). The present communication reports a rare species of caprellid amphipod from the Indian waters. The study reports the features of males, females and juveniles of *C. danilevskii*.

Material and methods

Sampling area

Observations were carried out along the Gujarat coastline. Individuals of *C. danilevskii* were observed along the three rocky coasts of Gujarat, *viz.*, Okha, Dwarka and Veraval. However, the animals described in this report were obtained from the shallow pools of the rocky intertidal zones at Veraval, Gujarat (20° 53' N, 70° 26' E) (Fig. 1). The complete stretch of the rocky shoreline of Veraval was about 4.5 km long.

Sample collection

While conducting field surveys from November 2019 to February 2020, we had come across these invertebrates from Okha and Dwarka. Only two samples were collected for identification from these sites. Thereafter, in early March 2020, several individuals were observed along the Veraval coast. Samples were collected directly by handpicking or by soft brush from *Sargassum*.



Fig. 1. Map of the studied coastal stretch of Gujarat. Okha (22° 28'N, 69° 05'E), Dwarka (20° 14'N, 68° 57'E) and Veraval (20° 53' N, 70° 26' E) on the south Saurashtra coastline, Gujarat

Identification

Materials were washed with seawater and preserved in 4% buffered formalin as well as in 70% ethanol. Though more than 300 specimens were observed in a single shallow rock pool of the sampling site, very few individuals of *C. danilevskii* were collected. A total of 13 specimens were examined, of which four were males (5.0 to 10 mm), three were females (5.0 to 6.0 mm) and six young juveniles (0.8 to 1.1 mm) under a stereo zoom microscope and illustrated with various taxonomical features (Guerra-Garcia, 2006). Specimen of *C. danilevskii* were submitted to the museum of the Department of Biosciences, Saurashtra University, Rajkot, Gujarat. The animal was detectable only when it moved. This species of *Carpella* was identified based on the keys provided by Guerra-Garcia (2006) and after examination of all characteristics; the final confirmation was made with the author Dr Guerra-Garcia, a specialist in this group of animals.

Results and discussion

Few individuals were observed along the rocky coast of Gujarat but this report gives a detailed description of caprellid along the Veraval coastal stretch. Shallow rock pools were inhabited by various



Fig. 2. a: Rocky intertidal pools; b: Seaweed in rock pool; c: *Sargassum* sp.; d: Camouflage behavior; e: Oviporous female; f: Juvenile of *C. danilevskii*

seagrasses and algae which provides substratum to these tiny Caprellid animals. Details of the collected samples are given below.

Systematic account

Phylum: Arthropoda
 Class: Malacostraca
 Order: Amphipoda
 Superfamily: Caprelloidea
 Family: Caprellidae
 Genus: *Caprella*
 Species: *Caprella danilevskii*

Material examined

1. ♂, SUBIO-ZAMACC5.1 mature; 2. ♂, ZAMACC5.2 mature;
 3. ♂, ZAMACC5.3 premature; 4. ♀, ZAMACC5.4 ovigerous;
 5. ♀, ZAMACC5.5 mature; 6. Six young juveniles ZAMACC5.6
 to ZAMACC5.11

Description

Body smooth, propodus of pereopods 5-7 inhibit numerous setae. The abdomen of male specimen is very distinctive which lacks hooked papillae at tip of appendages, pereopods lacking the grasping spines and propodus of gnathopod 1 with 2 grasping spines. The male gnathopod 2 with short dactylus is

a distinguishing character of this species from other species of *Caprella*. Male was observed with elongated antenna 1 and pereonites 1 and 2. Gills in pereonite 3 and 4 in males and 3 in females observed ovate. Female were with small palp like appendages. In males, propodus of gnathopod 2 consist of poison tooth, whereas in females' propodus was with a proximal poison tooth (Fig. 2, 3 and 4).

Distribution

This species was mainly reported from the Black Sea (McCain and Steinberg, 1970), Mediterranean Sea, South Africa, South Arabian coast, Bermuda, Venezuela, Brazil, Hawaii, North Eastern Pacific, Australia, Japan, Tasmania (McCain and Steinberg, 1970; Krapp-Schickel, 1993; Arimoto, 1976; Guerra-Garcia, 2004; Diaz *et al.*, 2005). It is mostly considered a cosmopolitan species, however, not been reported from Indian coasts earlier.

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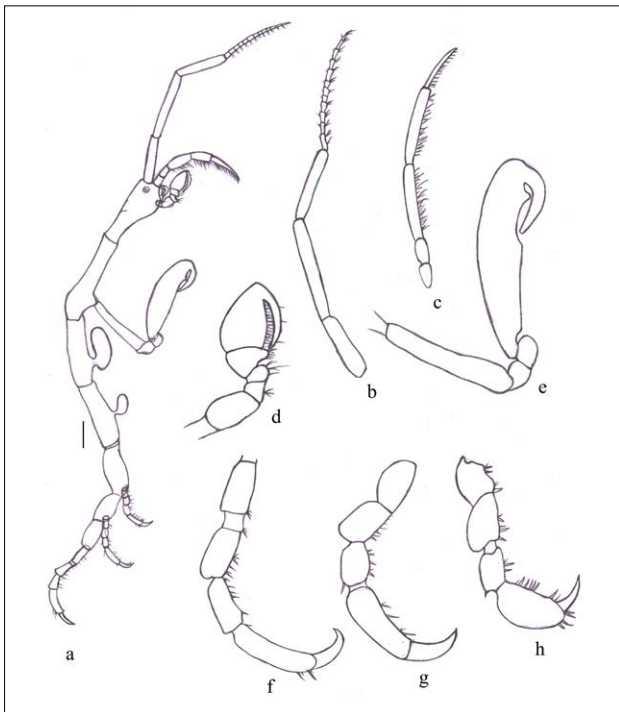


Fig. 3. *C. danilevskii*, male. (a) lateral view, (b) Antenna 1, (c) Antenna 2, (d) Gnathopod 1, (e) Gnathopod 2, (f) Pereopod 3, (g) Pereopod 2, (h) Pereopod 1. Scale bar: 1 mm

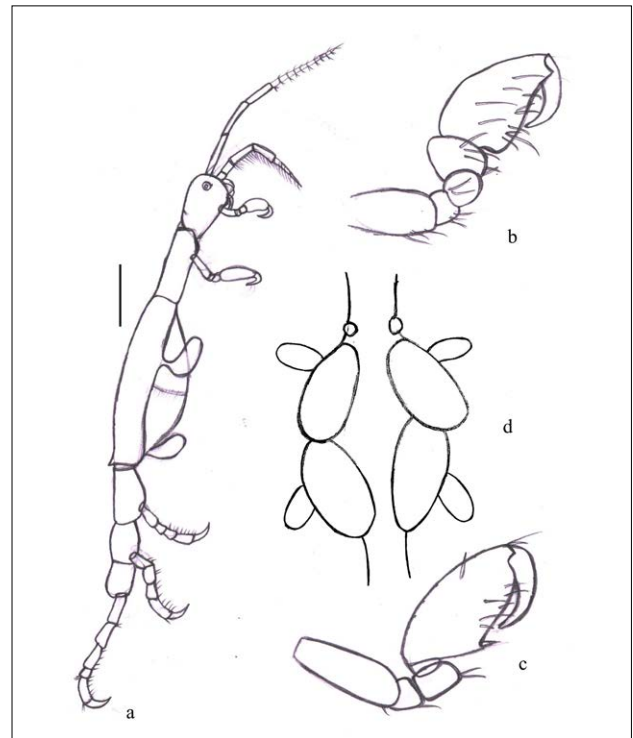


Fig. 4. *C. danilevskii*, female. (a) lateral view, (b) Gnathopod 1, (c) Gnathopod 2, (d) dorsal view of Oostegites. Scale bar: 1 mm

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