

A first report of *Canuellina insignis* Gurney, 1927 (Canuellidae: Copepoda) from The Persian Gulf and Gulf of Oman

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In the study on biodiversity and systematics of meiobenthic copepods from northern coastline of the Persian Gulf and Gulf of Oman, a canuelloid species, *Canuellina insignis* Gurney, 1927 was found. This is the first report of the species in Iranian waters and also in the area.

Key words: *Canuellidae, Copepods, meiobenthic, littoral zone, Iran.*

INTRODUCTION

The following report deals with littoral copepods collected from the northern part of the Persian Gulf and Gulf of Oman. Copepods taken from sediments and weed-washing, belonged to the Canuellidae Lang, 1944. Currently, the family accommodated 19 genera and 59 species (Song *et al.*, 2018; Nazari *et al.*, 2018). In the prior study on meiobenthic copepods, three new species belonging to the family Canuellidae were described from the region for the first time (Nazari *et al.*, 2018). The genus *Canuellina* Gurney, 1927, totally, distributed mostly in northwestern Indo-Pacific Ocean (Gurney, 1927; Por, 1967, 1969, 1983). Only one species, *C. nicobaris* (Wells & Rao, 1987), was reported from Andaman and Nicobar Islands. Previously, *Canuellina insignis* was reported from the Suez Canal (Gurney, 1927) and Inhaca Island of Mozambique (Wells, 1967). Recently, *C. insignis*, was found and reported here. Therefore, the number of Canuellid species in the area increase to four species.

MATERIAL AND METHODS

Copepod samples were collected from tide pools sediments and seaweeds during low tide. Specimens were examined and identified at German Center for Marine Biodiversity Research (DZMB) of senckenberg institute, using a Leica microscope equipped with Differential Interference Contrast (DIC) at 1000×magnification and identification keys (Lang, 1948; Huys *et al.*, 1996; Boxshall & Halsey, 2004; Wells, 2007). Photographs were taken from one male and one female by Confocal Laser Scanning Microscope Leica TCS SP5 equipped with a Leica DM500 B. Abbreviations used in the text: exp, exopod; enp, endopod; P1-P4, first to fourth swimming legs.

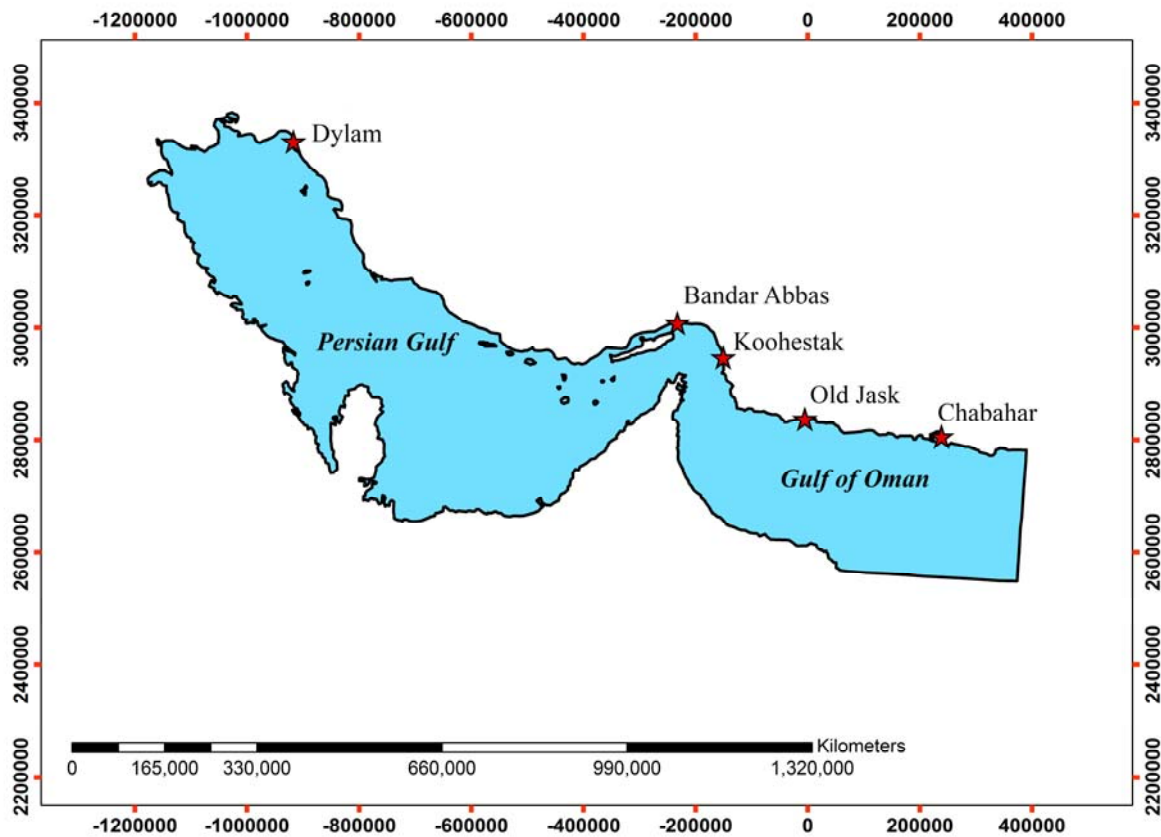


FIGURE 1. Map of sampling sites of the species records in the Persian Gulf and Gulf of Oman.

RESULTS

A total of 68 individual were collected from five stations in the northern coast of the Persian Gulf and Gulf of Oman.

Material and habitat. 1 ♀ 3 ♂ Dylam 30° 2'52.51"N 50° 8'43.97"E; 11 ♀ 4 ♂ Bandar Abbas 27°10'59.01"N 56°19'10.19"E; 12 ♀ 7 ♂ Koohestak 26°48'12.10"N 57° 1'22.33"E; 3 ♀ 2 ♂ Old Jask 25°43'48.16"N 57°45'48.99"E; 14 ♀ 11 ♂ Chabahar (Tis) 25°21'52.25"N 60°36'29.90"E; Detritus sand and seaweeds.

Taxonomy

Order CANUELLOIDA Khodami *et al.*, 2017

Family CANUELLIDAE Lang, 1944

Genus *Canuellina* Gurney, 1927

Canuellina insignis Gurney, 1927

Diagnosis. P1-bearing somite fused to cephalosome. Body thin and long without demarcation between prosome and urosome. Distal segment of P3 exopod and endopod with four setae/spines. P4 exp-2 without inner seta.

Description of female (figures 2A, 3A, 4A). Body linear, length measured from tip of rostrum to posterior margin of furcal rami 937 μ m. First pedigerous somite fused to cephalosome. Rostrum rectangular and elongate, broad and defined at base with two sensilla at apex. Genital double-somite larger than other segments, with lateral sub-cuticular rib. Genital field with paired copulatory pores; gonopores paired; eggs arranged in a row in egg sacs. Furcal rami divergent and rectangular, nearly

four times as long as wide, with seven setae. Antennule 6-segmented. Antenna biramus; exopod 7-segmented; endopod with three segments. P1-P4 with three-segmented rami; P4 endopod with short segments. P5 incorporated into segment with four setae. Setal formula as follows:

	Exopod	Endopod
P1	0.0.2.2.3	1.1.2.2.2
P2	0.1.2.2.2	1.1.1.2.2
P3	0.1.0.2.2	1.1.0.2.2
P4	0.0.0.2.2	1.0.1.1.1

Description of male (figures 2B, 3B, 4B). As in female but smaller and genital double-somite separate. Total body length 782 μm . Antennule chirocerate with 7 segments. P4 enp-3 with finger-like process on inner side. Genital field occupied genital segment; with well-developed chitinous processes.

Distribution. *C. insignis* was recorded from the Red Sea, Suez Canal and Inhaca Island.



FIGURE 2. *Canuellina insignis*: Habitus, Dorsal (CLSM); (A) female; (B) male.



FIGURE 3. *Canuellina insignis*: Habitus, Lateral (CLSM); (A) female; (B) male.



FIGURE 4. *Canuellina insignis*: Habitus, Ventral (CLSM); (A) female; (B) male.

DISCUSSION

Gurney (1927) established the genus *Canuellina* to accommodate a single female found in Suze Canal. Later, both male and female were reported and described from Mozambique (Wells, 1967). Wells (1967) recognized inner seta on the first and second segment of P2 endopod, not described and figured by Gurney (1927). He concluded that the seta might be overlooked by Gurney (1927). Moreover, Por (1984) summarized *Canuellina* synapomorphies as follows: 1) antenna with 7-8 segmented exopod, 2) P1-P4 exp-3 with 7, 6, 4, 4 and enp-3 with 6, 5, 4, 3 seta/spine respectively, 3) P4 endopod segments very short, 4) female genital field reduced. In addition, he suggested to remove *Canuellina* from the rest of the family and place in a new family. However, only a comprehensive molecular analysis can clarify the genus position in the Canuelloida. This is the third report of *C. insignis* in the world and the first record for the Persian Gulf and Gulf of Oman.

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