

**NEW RECORD OF *BESTIOLINA ARABICA* ALI *et al.*, 2007
(CALANOIDA: COPEPODA) FROM KHOR AL-ZUBAIR
CANAL AND SHAT AL-ARAB RIVER, SOUTHERN IRAQ**

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ABSTRACT

Bestiolina arabica, is calanoid copepod belonging to the family Paracalanidae, recorded for the first time from the brackish waters of Khor Al-Zubair canal, and Shatt Al-Arab River Southern Iraq. Measurements, illustrations, photos, remarks, dominance and ecology are demonstrated, as well as specimens of *B. arabica* from Iraqi marine and brackish waters were comparing with those of NW Arabian Gulf.

INTRODUCTION

Copepods are the major components of the zooplankton in the NW Arabian Gulf. They comprised about 85%-95% of the total zooplankton of Khor Al-Zubair and NW Arabian Gulf (Khalaf, 1988, 1991, 1992; Salman *et al.* 1990) It is, therefore, of special interest to know the forms which comprise the copepod fauna of this region. Khor Al-Zubair represents the most variable water body environment, with high fluctuation in hydrological factors, influenced by fresh water outflow from Tigris and Euphrates, at the north, as well as the marine water inflow from Arabian Gulf, in the south, so organisms inhabited this variable environment undergoes a high environmental stress, performing the communities of less diversity, and high productivity.

Bestiolina Arabica recently described by Ali *et al.* (2007) as a new species of calanoid copepod belong to the family paracalanidae from the coastal water of Bubiyan Island, Kuwait territorial region. This paper provides occurrence, distribution and comparative description of some morphological characteristics with the original description of *Bestiolina arabica*, which will be well presented in remarks. *Bestiolina arabica* is the sixth species in the genus (Ali, *et al.* 2007). Members of the genus *Bestiolina* (Copepoda, Calanoida, Paracalanidae) are relatively small, they barely exceed 1.00 mm in length, and common in estuarine habitats (Ali, *et al.* 2007; Sewell, 1912, 1914; Shen & Lee, 1966; Andronov, 1972a,b; Li & Xuang, 1984; McKinnon *et al.*, 2003).

MATERIALS AND METHODS

A surface plankton samples were collected from Khor Al-Zubair canal near Khor Al-Zubair port (station I), on 26 June and 25 July 2007; and from Shatt Al-Arab estuary southern Iraq, opposite of Fao town (station 2), on 15 October and 18 November 2006, (Fig. 1). Two samples from Khor Al-Zubair, as well as two samples from Shatt Al-Arab estuary at different periods were collected, using 120 μm mesh sized plankton net, of 40 cm. in diameter of mouth aperture. The samples were preserved in 5% formaldehyde solution. Specimens were dissected and examined by using an Olympus dissecting microscope, all drawing and photos were made by using compound microscope type Zeiss (47 46 20-9900 West Germany), with the aid of camera Lucida and electronic eyepiece camera.

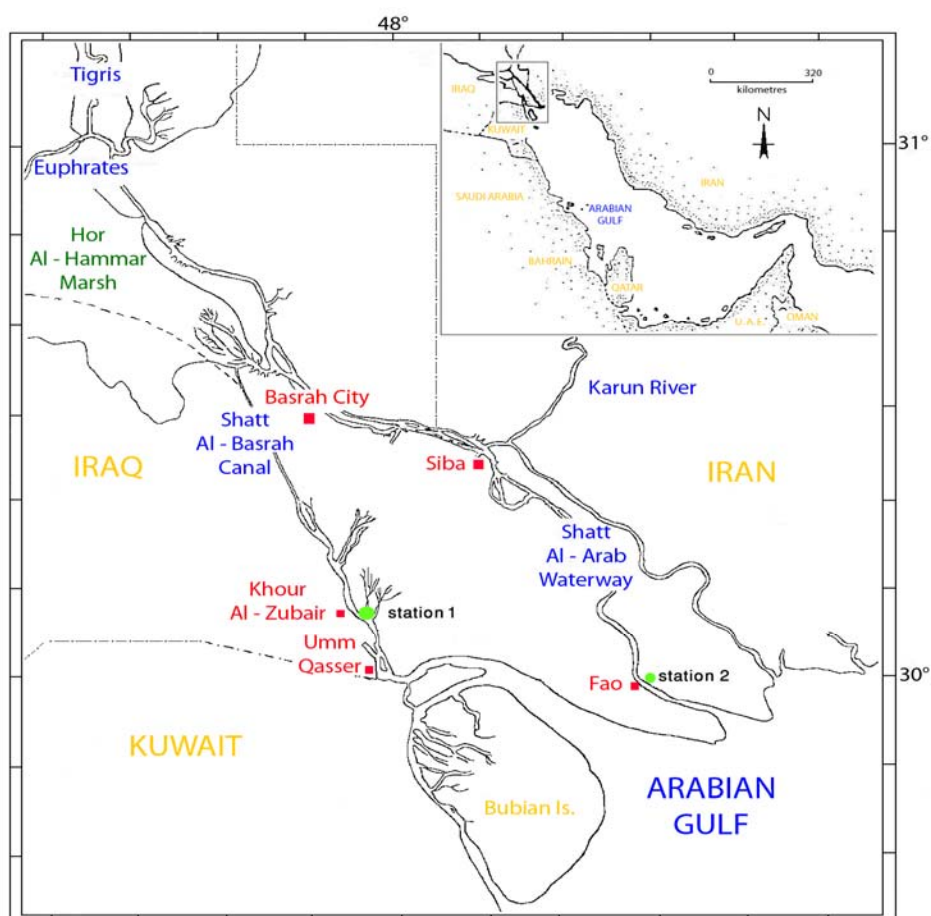


Fig.(1): Location of sampling stations

DESCRIPTION

Locality and Material examined:

Khor Al-Zubair port (station 1), 27 July 2007 (~10 m depth) as a part of Khor Al-Zubair monitoring project, surface salinity and surface temperature were 35.6‰ and 21°C, respectively; Shatt al-Arab estuary, (station 2).

Description of female.

Total body length (0.7-0.9 mm), average of 20 examined specimens of *Bestiolina arabica* from Khor Al-Zubair station. Cephalosome and first pedigerous somite fused and slightly gibbous dorsally (fig. 2A, B). Somites 4 and 5 completely separate, with posterolateral corners rounded and symmetrical in dorsal aspect. Rostrum well developed, bifid and strong (fig. 2E). Body widest at level of first pedigerous somite; ratio of prosome to urosome length 3.4: 1. Urosome of 4 free somites with genital double somite longer than each of free abdominal somites; genital double somites symmetrical (fig. 2A, D). Caudal rami symmetrical, about two times as long as wide, with 4 distal setae and one reduced seta distally on medial margin (Ali *et al.*, 2007).

Description of male.

Total body length (0.75-0.9 mm) average of 10 examined specimens, more morphological diagnosis as in female, but male is differentiated from female by: Dorsal cephalic hump visible in dorsal view (fig. 2C), located at level just posterior to basis of antennules; ratio of prosome to urosome length ca. 2.4: 1. Urosome (fig. 2I) of 5 somites with short genital somite carrying single genital aperture on left side. First abdominal somite longer than second and third. Caudal rami (fig. 2I) symmetrical, about 2 times as long as wide with 4 distal setae and 1 reduced on medial margin (Ali *et al.*, 2007).

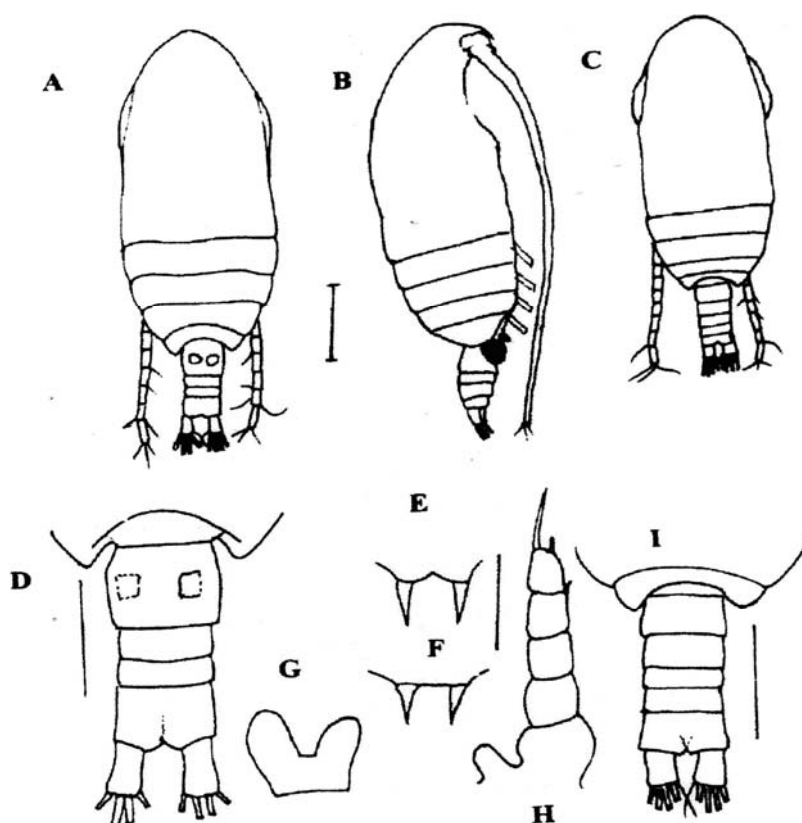


Fig. (2): *Bestiolina arabica*, female. A, dorsal view; B, lateral view; D, urosome, dorsal view; E, rostrum; G, fifth pair of legs. Male. C, dorsal view; F, rostrum; H, leg 5; I, urosome, dorsal view. Scale bars: A, B, C, 0.2 mm; D, I, 0.1 mm; E, F, G, H, 0.05 mm.

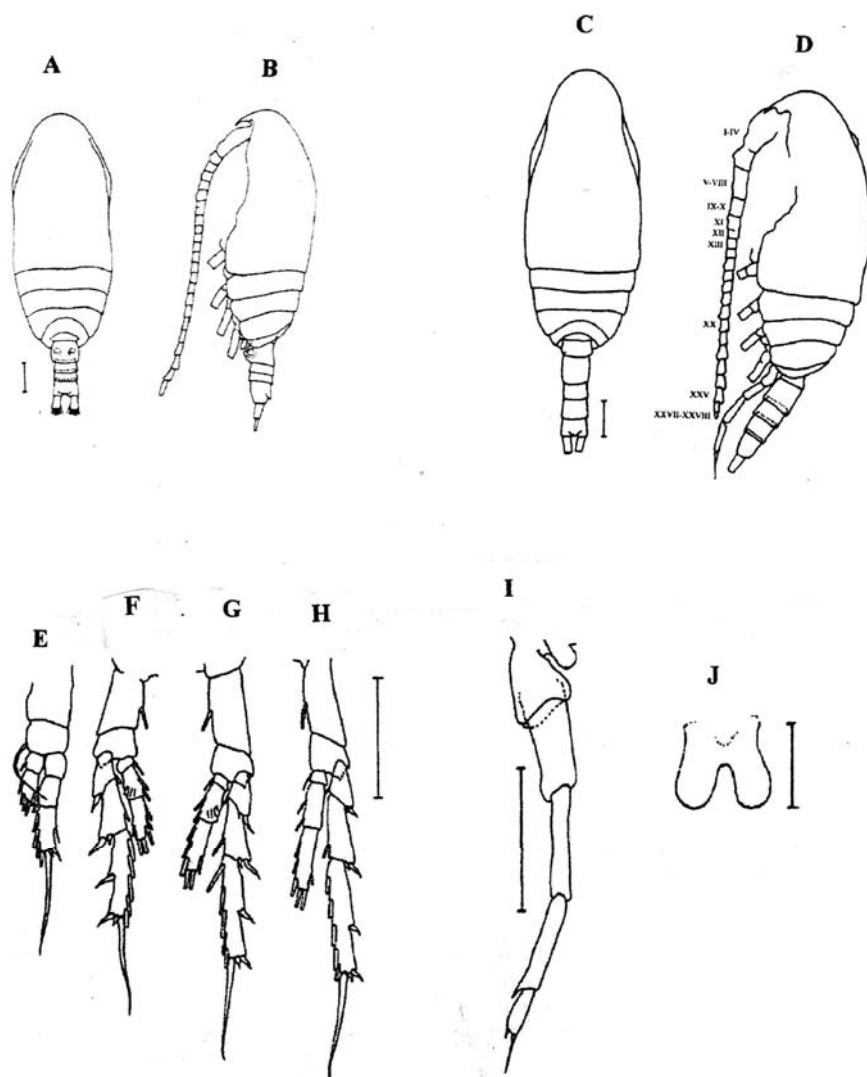


Fig. (3): *Bestiolina arabica*, female. A dorsal view; B, lateral view; J, leg 5. Male. C, dorsal view; D, lateral view; E-I, legs 1-5. Scale bars: A, B, C, D, E-J, 0.01 mm. After (Ali *et al.*, 2007), original description

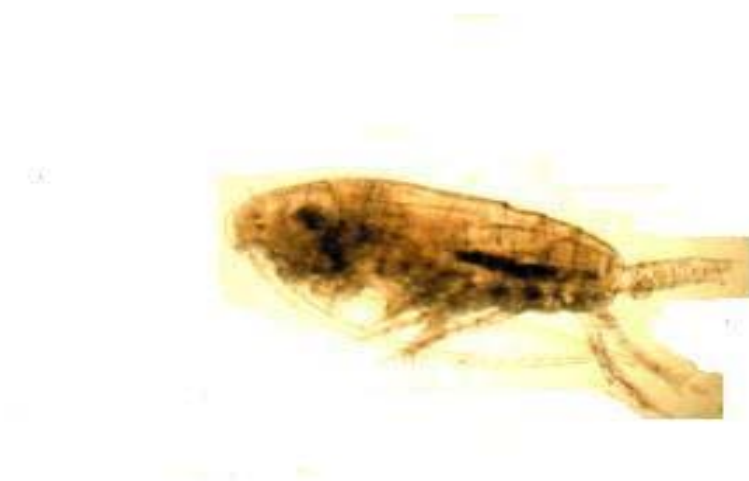


Fig.(4): A. *Bestiolina arabica* , female, lateral view.



Fig. (4): B. *Bestiolina arabica*, male, lateral view.

ECOLOGY

Bestiolina arabica was described for the first time around the Kuwaiti Island, where surface salinity and surface temperature were 37.06‰ and 28.6°C in August 2004, (Ali *et al.*, 2007). The present paper represents first record of this species in Iraqi marine and brackish water of Khor Al-Zubair, this species was occurred in Khor Al-Zubair, (station 1) at salinities ranging between 25‰ and 35‰, and temperature were 21°C and 26°C

during June and July 2007 respectively. The number of individuals ranging between 153 ind./m³ and 5304 ind./m³ at June and July respectively. It was obvious that *Bestiolina arabica* is the second dominant species after *Acartia pacifica*; the members of *Bestiolina* are common in estuarine habitats (Sewell, 1912, 1914; Shen & Lee, 1966; Andronov, 1972b; Li & Xuang, 1984; McKinnon *et al.*, 2003), and while the present species most dominant and productive in Iraqi Brackish water of Khor Al-Zubair and Shatt Al-Arab, this generally as a result of availability of favorable environmental conditions, so this environment may be considered as an original creative and inhabitant area for *Bestiolina arabica*. It is obviously that this species was distributed to adjacent Kuwaiti marine water from its creative brackish water environment of Khor Al-Zubair canal.

REMARKS

The specimens of the present species slightly differ from the specimens of same species described from the NW Arabian Gulf, around the Kuwaiti Island of Bubiyan by:

First antennules of both sexes in all examined specimens of present species extended to the end of caudal rami, whereas they reached to posterior margin of anal somite in specimens described from Kuwaiti environment (figs. 2A, C; 5A,B; 3B, D).

In the female, leg 5 is present as a strongly reduced pair of rounded symmetrical lobes that lack any vestige of segmentation or armature in original description (fig. 3J), after (Ali, *et al.* 2007) but in present specimens the two lobes of leg 5 were slightly asymmetrical (figs. 2G; 6A).

In the male, leg 5, strongly asymmetrical: Right leg rudimentary and reduced to an unarmed, rounded lob reaches to half of first segment of left leg. Left leg uniramous and slender, 5 segmented, and longer than urosome (fig. 3I), after (Ali *et al.*, 2007). In present specimens, leg 5 of male (figs. 2H; 6B), of the same structure, but it is slightly differs from the above description by: Right leg extended to $\frac{3}{4}$ the length of the first segment of left leg; the length of all segments of left leg nearly of the same size, and they viewed thicker and shorter than those which was described from Kuwaiti environment, (Ali *et al.*, 2007).

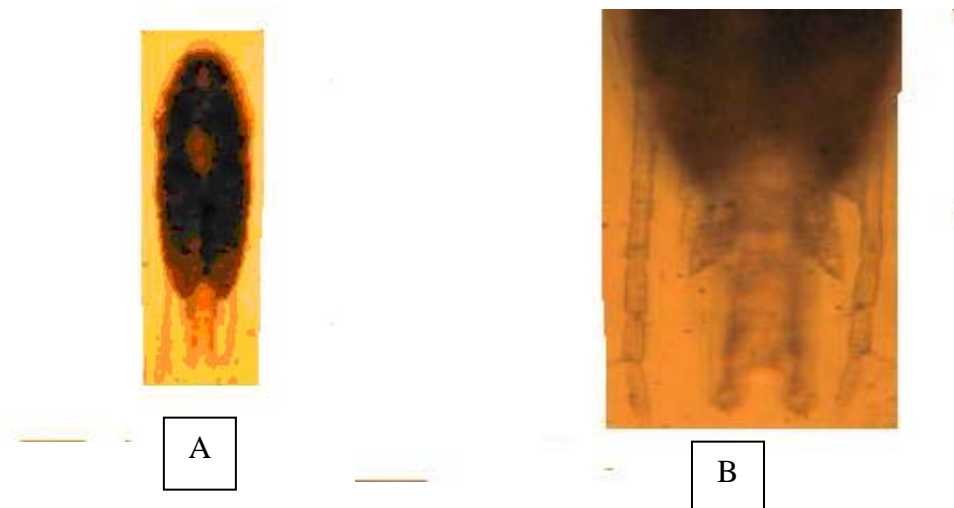


Fig. 5, A. *Bestiolina arabica*, male, dorsal view
B. *Bestiolina arabica*, male, dorsal view showing the length of first antennules., urosome and last metasomal somites.

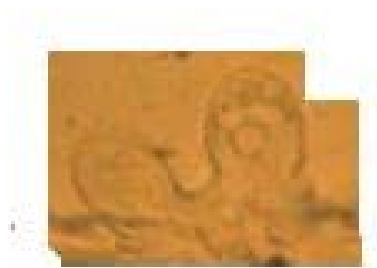


Fig. 6, A. *Bestiolina arabica*, female, leg 5 (two asymmetrical lobes)



Fig. 6, B. *Bestiolina arabica*, male, leg 5, one vestigial & another 5 segmented.

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***Bestiolina Arabica* (Ali et al.,)**

(Calanoid copepods)

Paracalanidae *Bestiolina arabica*