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New species of the genus *Scaphocalanus* (Calanoida: Scolecithricidae) from the Iskenderun Bay – northeastern Levantine Basin

Zahit Uysal[1] & Alexandra Shmeleva[2]
[1]*Middle East Technical University, Institute of Marine Sciences. P.O. Box 28, Erdemli, 33731, Turkey*
E-mail: uysal@ims.metu.edu.tr
[2]*Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine, 2 Nakhimov Avenue, Sevastopol 335011, Crimea, Ukraine*

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Abstract

A new calanoid copepod species *Scaphocalanus emine* n. sp. is described for the first time from the Iskenderun Bay, northeastern Levantine Basin. *S. emine* is similar to *S. affinis* (Sars, 1905) having both identical orientation of the posterolateral corners of the cephalothorax and a median crest on the forehead. The new species is also similar in some features to *S. affinis* in the structure of Re1P1- lacking the outer marginal spine and by the presence of the rounded apex on the distal internal margin. It differs from *S. affinis* as the median crest on the forehead is smaller and due to the presence of a rudimentary endopod furnished with an apical spine on the P5. Originality in construction of the P1 and P5 distinguish the new species from other *Scaphocalanus* species.

Abbreviations: A1 – antennule; A2 – antenna; Md – mandible; Mx1 – maxillule; Mx2 – maxilla; Mxp – maxilliped; P1, P2 – swimming legs of first and second pairs; P5 – fifth pair of legs; Re1, Re3 – first and third segments of exopod; Ri1, Ri2 – first and second segments of endopod

Introduction

The specimen described here for the first time was found in plankton samples which were collected in shallow coastal waters of the northeastern Levantine Basin (Iskenderun Bay), as part of a systematic study of the calanoid copepods in the region. This specimen presents morphological features similar to those of *Scaphocalanus*.

We have carefully checked all the pertinent literature on the genus *Scaphocalanus* (Sars, 1905; Brodsky, 1950, 1955; Tanaka, 1961; Hure & Scotto di Carlo, 1968; Park, 1970, 1982; Bowman & Abele, 1982; Campaner, 1984; Schulz, 1987; Vyshkvartseva, 1993; Vyshkvartseva & Prusova, 1997) and revealed that *Scaphocalanus emine* n. sp. is similar to *Scaphocalanus affinis* (Sars, 1905); however the new species presents some differences.

Materials and methods

Zooplankton samples were collected at a coastal station in the Iskenderun Bay (see Fig. 1) on board R/V *Bilim* of the IMS-METU on 7 July 1999. The coordinates of the station are 36° 49′ 72″ E, 35° 54′ 22″ N. Vertical net tows were performed by means of a Nansen closing net with 112 micron mesh size (Net mouth opening diameter = 70 cm). This station is coastal (total depth = 20 m) and only the top 15 m depth zone was sampled. Average temperature and salinity for the top 15 m were 27.71 °C and 38.91, respectively. Of the filtrates gelatinous organisms were sorted aboard R/V *Bilim* whilst live, remaining organisms were preserved with 10% formalin (borax buffered) for further analysis in the lab. In addition, ambient physical and chemical parameters were also recorded.

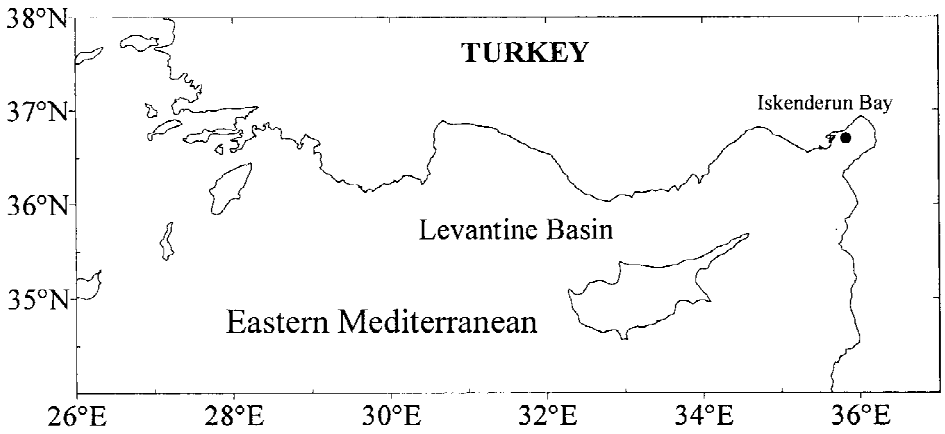

Figure 1. Map showing the location of zooplankton sampling station in the Iskenderun Bay.

Results

The detailed morphological description of the new species, based upon a single female from the Iskenderun Bay is given below. New species *Scaphocalanus emine* is named in memory of Dr Uysal's mother. She was a dedicated elementary school teacher for 28 years.

Scaphocalanus emine n. sp. (see Fig. 2, a–o)

Holotype; adult female holotype N5 have been deposited in the Institute of Marine Sciences of Middle East Technical University in Erdemli, Icel, Turkey.

Female: (see Fig. 2, from a to o). Total length is 3.2 mm. Total length of cephalothorax and abdomen are 2.4 and 0.8 mm, respectively. The cephalothorax is 3.5 times as long as the width. The forehead has a median crest. The frontal margin of the head is rounded laterally (see Fig. 2b). The last two thoracic segments are fused producing a triangular expansion which is pointed at the apex, the border of which has no spines in rows (see Fig. 2a).

The abdomen has four segments (see Fig. 2c–d). The proportional lengths of the segments and furca are as 28:16:15:8:10=100. The abdomen is about 4 times shorter than the cephalothorax. The genital segment is the largest of all abdominal segments with genital swelling produced below. Distal part of spermatheca extend dorsally and widen from the lateral view like a sack. Second urosomal segment is the same length as its width. The first 3 segments are fringed with fine teeth on the distal margin. The furcal rami is 1.9 times longer than wide (see Fig. 2d). Antennule was broken and only the first four segments remained on the examined specimen. The first segment had no spinules in rows on the posterior distal margin (see Fig. 2g).

The rostrum has two relatively long, thin and narrow ended filaments (see Fig. 2e). Antenna displays the endopod to be about 1.3 times as long as the 6-segmented exopod. The mandible has three setae at the basipodite with a short inner and outer branch (see Fig. 2i). Mx1 is small, rudimentary, with well developed branches and with numerous short spines and setae (see Fig. 2j). Mx2 lacks large or very strong setules (see Fig. 2k). The terminal segment of the Mx2 has three longer vermiform and five amalliform sensory filaments of which two are larger. Mxp with relatively long basipodite, has three short setae on the anterior margin (see Fig. 2l).

P1 basis with well developed plumate inner seta (see Fig. 2m). ReP1 is three-segmented. Re1P1 without the outer marginal spine, has the rounded apex on the distal internal margin. Re2P1 possesses small spinules and small setae at the outer margin. Re3P1 displays one long, strong and slightly curved spine with short spinules. The apical setae of Re3 is very long and consists of two parts (connected like a joint) which is unusual for copepods. RiP1 is one-segmented, long and reaches to the base of the setae on the inner border of the Re2P1, with three inner and two apical plumate long setae, with thin, small setae on the outer border. P2 basis segment has a small patch of minute spinules on the posterior surface near the proximal inner margin (see Fig. 2n). ReP2 is three-segmented. Re1P2 shows an outer spine which is long and curved; the posterior surface of Re1P2 contain a few strong long and short spines; Re3 terminal spines about equal as Re3 with about 30 strong teeth. RiP2 is two-segmented. Ri2P2 has two long distal and three lateral setae and possessing a few short spinules at the

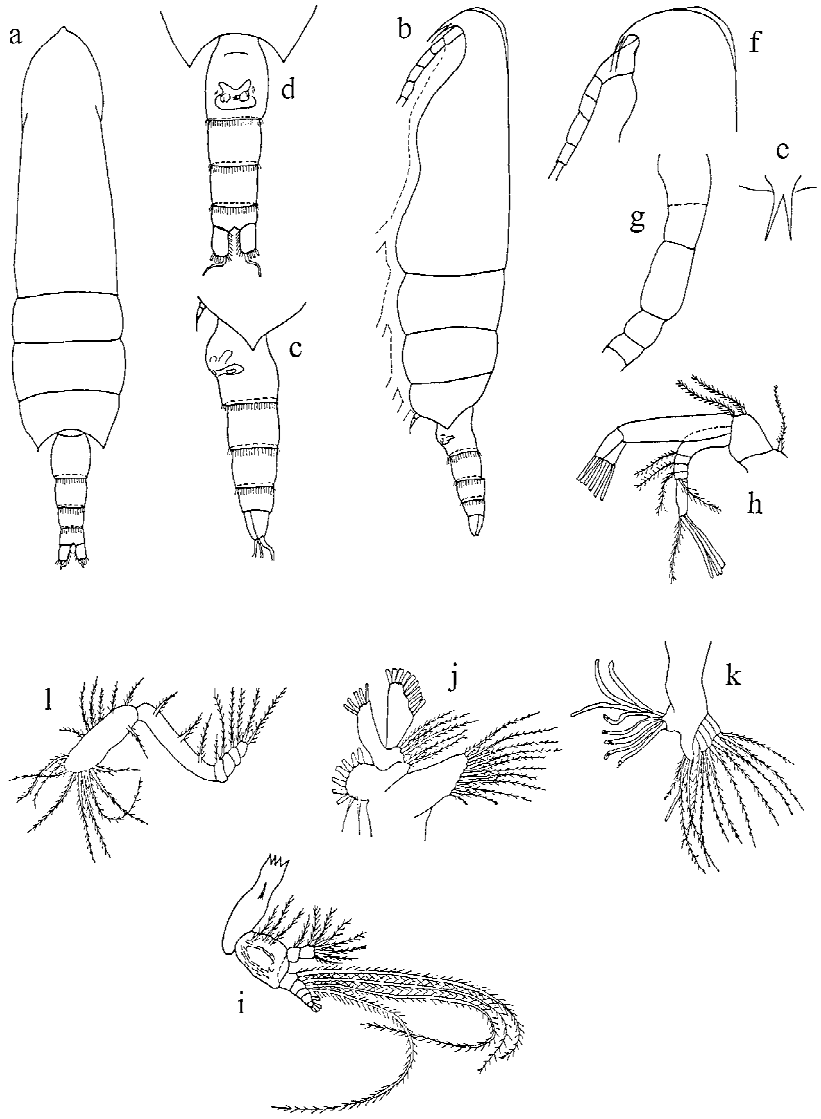

Figure 2a–l. Scaphocalanus emine n. sp. (adult female a–o) (a) dorsal view of whole specimen; (b) lateral view of whole specimen; (c) abdomen in lateral view; (d) abdomen in dorsal view; (e) rostrum in dorsal view; (f) rostrum and crest in lateral view; (g) antennule, only four segments remained; (h) antenna; (i) Md; (j) Mx1; (k) Mx2; (l) Mxp.

anterior surface and 5 relatively long spinules at the outer margin. P3 and P4, were broken off.

The three-segmented P5 is symmetrical (see Fig. 2o). The distal segment is 2.2 times as long as wide and has four spines. The outer spine is very small and the inner spine is very large – 1.6 times longer than the distal segment and strongly serrated. Apical setae are strong and unplumate. There is a rudimentary endopod, furnished with one apical spine. This is in fact unusual for the P5 for the genus *Scaphocalanus*. Similar characteristic structures were found in a non-mature female type of *Parascaphocalanus zenkevitchi* (Brodsky, 1955).

Remarks

Scaphocalanus emine is similar to *S. affinis* having identical orientation of the posterolateral corners of the cephalothorax and by having a median crest on the forehead. The new species is also similar in some features to *S. affinis* by the structure of Re1P1- lacking the outer marginal spine and with the presence of the

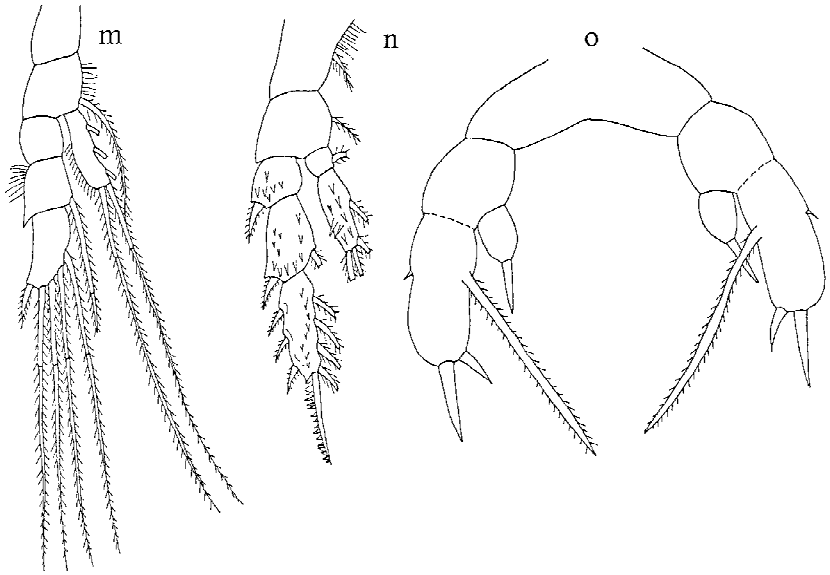

Figure 2m–o. (m) P1; (n) P2; (o) P5.

rounded apex on the distal internal margin. It differs from *S. affinis* by having a smaller median crest on the forehead and due to the presence of a rudimentary endopod furnished with an apical spine on the P5. *S. emine* is smaller in size than *S. affinis*. The originality of construction of the P1 and P5 distinguish the new species from other *Scaphocalanus* species.

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