

## *Metalycaea globosa* Stephensen, a valid species of Oxycephalidae (Amphipoda, Hyperiidea)

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**Abstract.** *Metalycaea globosa* Stephensen (1925) has not been recorded since its creation and, hence, its validity was considered doubtful. Semonova, in Vinogradov *et al.* (*Zool. Inst. Acad. Sci. USSR, Leningrad*, pp. 1-49†, 1982) treated it as a synonym of *Lycaea* Dana. The present record of males and juveniles of both sexes of *M.globosa* from the Indian Ocean establishes its validity. *Metalycaea globosa* closely resembles *Lycaea serrata* Claus (1879) of the family Lycaeidae Claus, but the recognizable differences, such as the shape and structure of carpus of pereopods one and two, basis of pereopod seven and dactylus of pereopods 3-6, are sufficient to distinguish *M.globosa* from *L.serrata*. The most significant difference between *M.globosa* and *L.serrata* is the total absence of maxillae one and two in the former—the prime character of Oxycephalidae: they are present, although in reduced condition, in *L.serrata*.

### Introduction

The genus *Metalycaea* was proposed by Stephensen (1925) in the family Oxycephalidae to accommodate a new species, *Metalycaea globosa*, represented by three females in the collections of the Thor Expedition from the Mediterranean. Since its creation, this species has never been rerecorded and hence it was considered of doubtful validity. The original description by Stephensen (1925) was based on an 8 mm long female. This description also applied to *Lycaea serrata* Claus (1879), and this led Bowman and Gruner (1973) to believe that *M.globosa* is the female of *L.serrata* Claus, the description of which was based on a male. Stephensen had five males of *L.serrata*, but did not associate them with *M.globosa*, obviously because the collections were made separately. Shoemaker (1945) had both males and females of *L.serrata* obtained in different tows of the net, and gave what he thought to be the first description of the male of *L.serrata*. Unfortunately, the illustrations given by Stephensen and Shoemaker were based on different sexes or were of different growth stages. Hence, the question of the validity of *M.globosa* remained open.

The International Indian Ocean Expedition (IIOE) (Hansen, 1966) collections contain both sexes of *M.globosa* taken from widely separate localities in the Indian Ocean. Detailed study shows that the present specimens clearly conform with the description provided by Stephensen and differ from that of *L.serrata* Claus. *Metalycaea* should be regarded as a valid genus of the family Oxycephalidae. A detailed description of the males of *M.globosa* is given for the first time and is compared with that of the female (Stephensen, 1925). An illustration of the juvenile male is also provided.

### Results

Sub order Hyperiidea

Family Oxycephalidae

Genus *Metalycaea* Stephensen

*Metalycaea* Stephensen, 1925, p. 193; Fage, 1960, p. 6.

*Lycaea* Bowman and Gruner, 1973, p. 8; Vinogradov *et al.*, 1982, p. 391.

**Material**

Four adult males, four juvenile males and two juvenile females were recorded from the IIOE collections.

*Occurrence*

Four adult males (7.8–8 mm) from a single collection off Karachi (23°43'N and 65°50'E) in the Arabian Sea; two juvenile females (4.6 mm) from the western side of the Maldives (02°01'N and 67°31'E); four juvenile males (6.1–6.4 mm), two each from the west coast of Sumatra (01°28'S and 92°28'E) and off the northwest coast of Australia (18°30'S and 110°00'E).

*Diagnosis*

Body rather plump, not elongated. Cephalon relatively large, without rostrum. Eyes large, covering the entire surface of the head. Pereon segments successively decreasing in depth backwards, coxal plates distinct. Pleon as long as pereon, composite pleon segment as long as telson, latter apically rounded. First and second antennae of male typically oxycephalid. Pereopods one and two simple, with slight expansion of carpus. Pereopod five clearly longer than pereopod six, basis not expanded. Pereopod seven reduced in size, basis rather elongated, followed by five segments. Rami of uropods one and two free, those of uropod three partially free.

*Metalycaea globosa* Stephensen

*Metalycaea globosa* Stephensen, 1925, p. 183, Figure 71; Fage, 1960, p. 6.

*Lycaea serrata* Bowman and Gruner, 1973, p. 8; Vinogradov *et al.*, 1982, p. 385, Figure 208 (part).

Adult male 8.10 mm. Figure 1A and Figure 2 (A–K).

Juvenile male 6.10 mm. Figure 1B and Figure 3 (A–J).

*Male*

*Description.* Cephalon large and swollen, as long as combined length of first four pereon segments, roughly half length of pereon. Rostrum absent. Eyes very large, occupying the entire surface of the head. Pereon somewhat tumid, segments successively decreasing in depth backwards. Coxal plates subsimilar and distinct, set off by distinct septa. Pleon fairly deep and robust, as deep as seventh pereon segment plus its coxal plates, first three segments gradually and progressively narrowing backwards, fourth segment relatively short, sixth and seventh fused as usual, subequal to fourth in length. Telson as long as double pleon segment, regularly narrowing distalwards, apex broadly rounded.

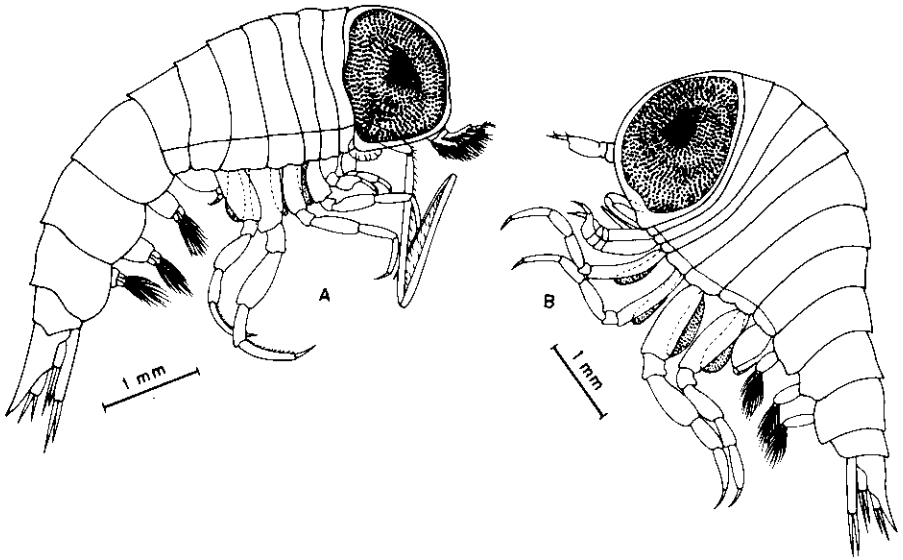


Fig. 1. *Metalycaea globosa* Stephensen. (A) Adult male; (B) juvenile male.

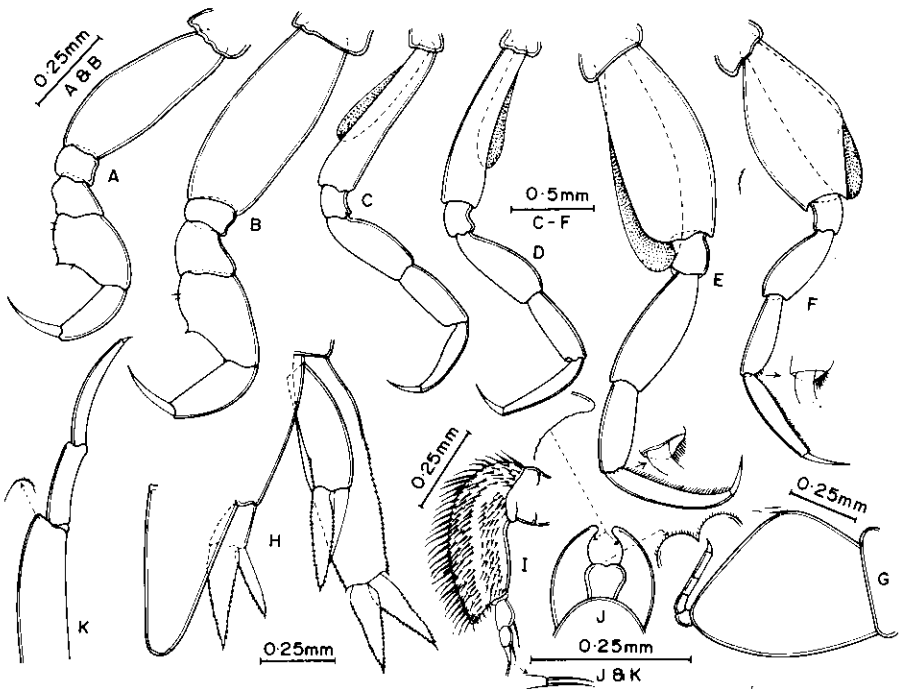


Fig. 2. *Metalycaea globosa* Stephensen (adult male). (A) Pereopod 1; (B) pereopod 2; (C) pereopod 3; (D) pereopod 4; (E) pereopod 5; (F) pereopod 6; (G) pereopod 7; (H) uropods and telson; (I) antenna 1; (J) maxilliped; (K) mandible.

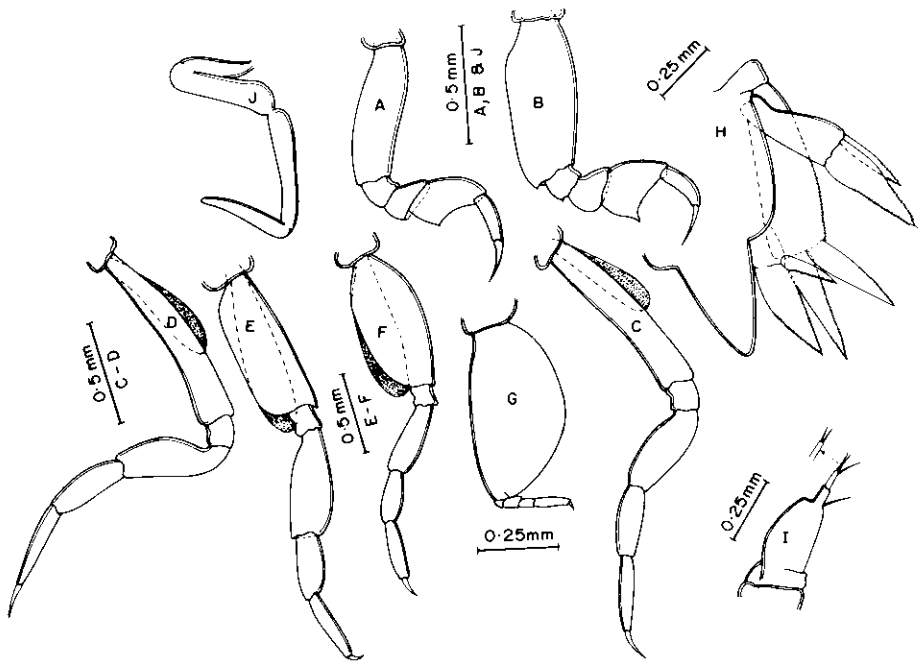


Fig. 3. *Metalycaea globosa* Stephensen (juvenile male). (A) Pereopod 1; (B) pereopod 2; (C) pereopod 3; (D) pereopod 4; (E) pereopod 5; (F) pereopod 6; (G) pereopod 7; (H) uropods and telson; (I) antenna 1; (J) antenna 2.

First antenna apparently with short, indistinctly three-segmented peduncle; flagellum four-segmented. First flagellar segment stout and set nearly at right angles to peduncle, with inner and lateral patches of olfactory structures extending length of segment, inner distal corner moderately produced, shifting rest of flagellar segments to outer distal part, not exactly subterminal; each of last three flagellar segments with single seta, last segment very slender.

Second antenna well developed and five-segmented. First segment short but stout; second twice as long as first; third and fourth successively becoming shorter; fifth segment very short; outer margin of all segments spinulose.

Mandible with moderately developed cutting plate; palp three-segmented, second segment longest and third shortest. Maxilliped with two lateral lobes narrowing distalwards and median low distally bilobed lamina.

Pereopods one and two subsimilar, but first clearly smaller than second. Carpus of both legs slightly enlarged and produced into low triangular projection or process making limb weakly subchelate. Dactylus long and slender. Pereopods three and four slender and subsimilar, with none of segments enlarged; propodus rather long and slender, dactylus relatively short. Pereopod five stouter and clearly longer than all others, basis somewhat enlarged and roughly rectangular, propodus slender and as long as merus, dactylus relatively very small. Pereopod six more slender and shorter than pereopod five, its basis

elliptical rather than rectangular, rest of appendage similar to that of previous limb. Pereopod seven small and much reduced in size, as in oxycephalids, its basis highly flattened and widened, but clearly smaller than basis of sixth pereopod, segments 3–7 distinct, together about half length of basis, dactylus small but distinct.

First uropod when held straight backwards reaching or slightly exceeding tip of telson. Its protopod two and a half times longer than rami, distal part of both borders serrated, rami subsimilar, with serrated borders, both clearly separated by septa. Second uropod extending just beyond protopod of first, its protopod as long as endopod and bearing a few teeth at distal part of inner border; rami generally unequal in size and set off by partition, exopod clearly smaller, with smooth outer border. Third uropod inserted at base of telson and just reaching tip of latter, protopod very short, partially fused with endopod, exopod smaller than endopod, with smooth outer border.

### *Female*

*Description.* Cephalon relatively shorter, equal to length of first three pereon segments combined. Pereon segments broader and more inflated than in male. Double pleon segment clearly longer than telson. Telson only slightly longer than broad, but almost twice as long as broad in male.

First antenna four- to five-segmented and simple, distal segment very small. Second antenna absent. Head showing a distinct oral projection, more prominent than in male. Mandible simple, cutting edge rudimentary, palp absent. Pereopods five and six subsimilar, whereas greatly unequal in male, propodus internally smooth but spinulose in male. Marginal serrations on uropods extremely weak in juvenile females, but clear in adult males. Dactylus of pereopods 1–4 of same length, whereas those of pereopod one and two clearly longer in male. Basis of pereopod seven distinctly narrower than in male. Telson reaching middle of endopod of the first uropod, over-reaching in male.

### **Discussion**

*Metalycaea globosa* closely resembles *L.serrata* Claus, but there are a few recognizable differences, sufficient to distinguish them from *L.serrata*. In *M.globosa*, the head is relatively small. The carpus of pereopods one and two is narrower, and the median inner projection is much smaller, almost obsolete. The merus of these legs is less curved on the inner side and is devoid of any armature. There is also a recognizable difference in the shape of the basis of pereopod seven; in *M.globosa*, there is a prominent bulge on the posterior side, but it is evenly convex in *L.serrata*. In *L.serrata*, the dactylus of pereopods 3–6 is very small and absent in the seventh. In *M.globosa*, the dactylus of all limbs is very prominent, even of the seventh (Figures 2 and 3).

The most significant difference between *M.globosa* and *L.serrata* is the total absence of maxillae one and two in the former. They are present, although in reduced condition, in *L.serrata*. This is the character which prompted me to include *M.globosa* in Oxycephalidae.

The original record of this oceanic species by Stephensen (1925) was from three widely spaced stations at depths of 25, 65 and 1000 m, all made during the night. At these sites, the depth of the bottom varied from 1000 to 2700 m. The present records are all from 200–0 m where the depths ranged from 2255 to 5486 m and, except for the adult males, all the remaining specimens were recorded during the night. The distribution pattern of *M.globosa* suggests that, although rare, they are Indo-Mediterranean species, with a possible extension into the Pacific.

Even though the present collections came from four widely spaced areas in the Indian Ocean, the prevalent hydrographic conditions in these areas were found to be more or less similar—surface temperature, salinity and oxygen concentration varied from 28.5 to 29°C, 35.5 to 36‰ and 4.5 to 5 ml l<sup>-1</sup>, respectively.

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