

THE GENUS *EURYTE* PHILIPPI (COPEPODA, CYCLOPOIDA) IN INDIAN WATERS

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(With 1 text-figure)

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I—INTRODUCTION

The copepod genus *Euryte* Philippi has wide distribution in all the oceans and Sewell (1949) has briefly outlined its distributional records. *Euryte robusta* Geisbrecht and *E. brevicauda* Sewell are recorded from the Indian Ocean (Sewell, *loc. cit.*) and the present communication reports a third species which appears to be *E. propinqua* Brady.

With such extensive distribution it is but natural, examples that exhibit small differences should have been described either as variations of the known species or as new species. Added to this are the facts that reports of occurrence have been from scattered localities and in most cases the number of specimens collected have been very meagre. At present the genus is supposed to contain the following species and varieties:

E. longicauda Philippi, 1843

E. minor, Scott, 1905

E. curticornis Sars, 1915

E. longiseta Grandori, 1925

E. robusta Geisbrecht, 1900

E. propinqua Brady, 1910

E. longicauda var. *antarctica* Thompson, 1863

E. similis Scott, 1912

E. brevicauda Sewell, 1949

The material for the present study was obtained from the Gulf of Mannar off Mandapam during the tenure of a Govt. of India Scholarship at the Central Marine Fisheries Research Institute and contains *E. robusta*, *E. brevicauda* and *E. propinqua*. The last species was described by Brady (1910) from the Antarctic and has never again been reported. The reasons for assigning the present material to *E. propinqua* are dealt with later. I am thankful to Dr. S. Jones, Director, Central Marine Fisheries Research Institute for his encouragement and for giving facilities for the collection of the materials, and to Dr. A. P. Kapur, Director, Zoological Survey of India for his kind suggestions for the improvement of the paper.

II—SYSTEMATIC ACCOUNT

Euryte robusta Giesbreht, 1900

1900. *Euryte robusta* Giesbreht, p. 58, pl. iv, figs. 1-14, 16 and 18.
1949. *Euryte robusta*: Sewell, pp. 31-33, fig. 2.

Three male and two female specimens of this species have been obtained from weed washings of the Gulf of Mannar on 23rd September, 1960. Sewell (*loc. cit.*) has described this species in some detail. The present material corresponds in all features with his description. However, some fresh sketches (Text-fig. 1, A, B) are given here to facilitate comparison with other species discussed in the present work. Male (Text-fig. 1, C) shows usual points of sexual dimorphism. Antennule is 16-jointed and geniculate. Urosome is 6-segmented, the genital segment carrying at each of its postero-lateral corners a pair of spines of unequal length. The spines are borne on small prominence which represents the sixth pair of legs. Caudal ramus is four times longer than wide and is only a little shorter than the last two abdominal segments combined. Size: female, 0.80 mm. and male, 0.61 mm.

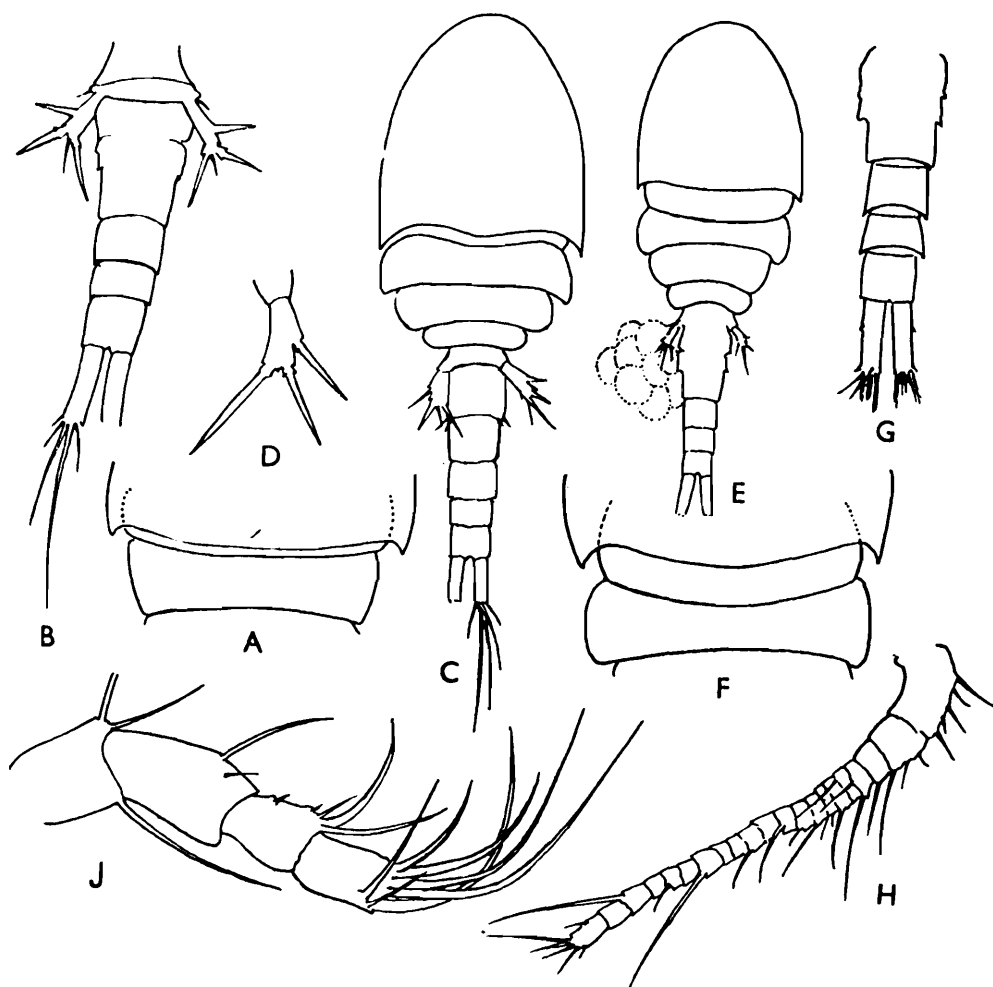
Euryte brevicauda Sewell, 1949

1949. *Euryte brevicauda* Sewell, pp. 33-35, fig. 3.

One female and two male specimens of this species were collected on 16th September, 1960 from amongst the weeds of the Gulf of Mannar off Mandapam. Female of this species is described by Sewell (*loc. cit.*) and the male is described by Ummerkutty (In Press).

Prosoma is apparently 5-segmented, the fusion between cephalosome and first pedigerous segment being incomplete. The genital segment which is the result of the coalescence of the two segments is broader in its proximal part, and is a little shorter than the three abdominal segments combined. Caudal rami and last abdominal segment are of equal length. The spine on the outer lateral margin of fifth leg (Text-fig. 1, D) is as long as the outer apical spine; the inner apical spine is a little longer than both the other spines; the apical seta is slender.

Like the other species of the genus male (Text-fig. 1, E) differs from female in the smaller size and the sexual dimorphism manifested in the antennule and urosome. The former is 16-segmented and strongly hinged, reaching to posterior margin of the prosomal segment. Urosome is 6-segmented. Caudal rami are slightly longer than the last abdominal segment. Size: female, 0.75 mm. and male 0.56 mm.



TEXT-FIG.—1. A-C. *Euryte robusta*. A, female first, second and third prosomal segments ; B, female urosome with fifth legs ; C, male dorsal view. D & E. *Euryte brevicauda*. D, female fifth leg ; E, male dorsal view. F-I. *Euryte propinqua*. F, female dorsal view ; G, female labrum ; H, female antennule ; J, female antenna.

Euryte propinqua Brady, 1910

1910. *Euryte propinqua* Brady, p. 566, fig. 53.

1912. *Euryte similis* T. Scott, p. 570, pl. i, figs. 14-22.

1863. *Euryte longicauda* var. *antarctica* Thompson, p. 95, pl. v, figs. 15-19.

Five female specimens of this species were collected on 23rd Sept. 1960 from weed washings, of the Gulf of Mannar.

In life, a beautiful pinkish tinge is seen over the length of caudal rami, margins of prosomal and urosomal segments, joints of segments of swimming legs and along the mid-dorsal cephalosome. In formalin-preserved specimens the bright pink colour fades out and

persists only in caudal rami. Prosome is apparently 5-segmented, the fusion between cephalosome and first pedigerous segment being incomplete. The latter segment is, however, much narrower than the cephalosome and the second pedigerous segment. In urosome (Text-fig. 1, F) the genital segment is equal to the three abdominal segments combined together. Caudal ramus is four and a half times longer than wide and is little shorter than the last two abdominal segments combined. There are six setae on each ramus, two of which are jointed. The rostrum is incurved and broad. The labrum is a wavy structure with about nine stout teeth on either convex sides (Text-fig. 1, G).

Antennule (Text-fig. 1, H) is 21-segmented, the constituting segments having the following relative lengths:

1	2	3	4	5	6	7	8	9	10	11
15.4	8.0	5.0	3.0	3.5	3.2	1.8	3.0	3.9	4.3	4.2
12	13	14	15	16	17	18	19	20	21	
4.3	3.6	3.0	5.0	3.6	3.6	4.0	5.4	5.4	8.0	= 100

Antenna (Text-fig. 1, J) oral appendages and the swimming legs are very close to those of the earlier species. Fifth leg is rectangular, about three times as long as wide. A striking difference from the earlier two species is noticed in the lengths of spine on the fifth legs. The spines on outer margin of distal segment is just as long as the outer terminal spine; the inner terminal spine as in other species is the longest; the seta on the apex is slender and rather sharp. Size: female, 0.75 mm.

III--REMARKS

Sewell recognized only four species in this genus: *E. robusta*, *E. longicauda*, *E. curticornis* and *E. brevicauda*. *E. propinqua* and *E. similis* are considered by Gurney (1927) as synonymous and Sewell (1949) "as slight variations of *E. robusta*" Sewell thinks that *E. longicauda* var. *antarctica* comes much nearer to *E. robusta* as the caudal ramus figured by Thompson is four times longer than wide which is much shorter than that of *E. longicauda*.

E. propinqua, *E. similis* and *E. longicauda* var. *antarctica* are reported from the same general geographical area and it would appear that these three forms are synonymous. *E. propinqua* has priority over *E. similis*, *E. longicauda* var. *antarctica* having been described only as a variety. However, the earlier description of all these three forms are very inadequate and the correct identification of the species on the basis of these descriptions is very difficult. The present material is thought to represent *E. propinqua* because, it certainly differs from *E. robusta* in many characters and appears to exhibit all the salient features indicated by Thompson, Brady and Scott. Further, it is not desired to add as new name for the present material to confuse the already complex nomenclature. *E. propinqua* and *E. robusta* are compared and contrasted in table I.

Table I—Differences between *E. robusta* and *E. propinqua*.

<i>E. robusta</i> Giesbrecht	<i>E. propinqua</i> Brady
1. Prosome is oval both in dorsal and lateral view.	Prosome is oval only in dorsal view; in lateral view the posterior half is much narrower than the anterior half.
2. First pedigerous segment is more or less fused with cephalosome.	The fusion between the first pedigerous segment and the cephalosome is incomplete and former is distinct from the latter.
3. First prosomal segment is more than twice as long as all other prosomal segments combined, the ratio being 5:2.	First prosomal segment is just one and a half times as long as the rest of the prosomal segments combined, the ratio being 3:2.
4. The proportions of urosomal segments and caudal ramus are as follows: 14.0 32.0 11.3 8.7 13.0 21.0 100.	The proportions of urosomal segments and caudal ramus are as follows: 15.0 29.0 13.5 11.0 12.5 19.0 100.
5. In fifth legs the relative lengths of outer marginal, outer apical and inner apical spines are: 35.8 32.7 28.8 100.	In fifth legs the relative lengths of outer marginal, outer apical and inner apical spines are: 39.2 35.3 25.5 100.
6. In life, caudal rami are dirty brown in colour. Formalin preserved specimens become opaque.	In life, caudal rami are pinkish in colour and this persists even in formalin preserved specimens.

Broadly speaking it would appear that the genus *Euryte* contains two groups of species, *robusta*-group and *longicauda*-group. The former contains *E. robusta*, *E. propinqua* and *E. brevicauda*, and it has its area of distribution mainly in the southern hemisphere, the Antarctic, Indian Ocean, the south Pacific and presumably the south Atlantic. That *E. robusta* or its related forms have managed to extend their distribution also to the warmer regions of the northern hemisphere is proved by the fact that the former species has been recorded by Gurney in Suez canal. As already noted, both *E. robusta* and *E. brevicauda* have been recorded from the Malay Archipelago. The present studies indicate that all these three species are common also in South east coast of India.

The *longicauda*-group contains four species: *E. longicauda*, *E. curticornis*, *E. longiseta*, and *E. minor*. The first three appear to be valid species. Sewell (*loc. cit.*) did not mention *E. minor* in his discussion of the genus. Sars (1921) has reported this species from the Norwegian coast. "This form was considered by Scott and also by

myself as only a variety of *E. longicauda*. I am, however, now of the opinion that it should more properly be regarded as a separate though closely related species" (p. 107). According to Sars, *E. minor* is different from *E. longicauda* in the size, in the more slender form of the body, in the nature of the genital segment and in the less divergent ovisacs. Kiefer (1929) includes this form in *E. longicauda*, but Lang (1946) distinguished it as a separate species by the relatively longer abdomen and the divergent caudal rami. Gooding (1957) follows T. Scott (1905) and considers it a variety of *E. longicauda*. In any case, both species are closely related, separate from other species of the genus. Species of the *longicauda*-group have so far been recorded from the northern temperate and cold waters.

E. longicauda is separable from all other species by its exceedingly long caudal rami, "equalling in length to the last three segments combined" *E. brevicauda* probably presents the other extreme with short caudal rami while in other species various gradations from these levels are noticed. The suggested separation of the *robusta* group and *longicauda* group is purely tentative and is mainly based on distributional tendencies.

IV—SUMMARY

Euryte robusta, *E. brevicauda* and *E. propinqua* are briefly described; the last species is reported here for the first time after its original description. It is tentatively suggested that the species of the genus *Euryte* are separable into *robusta*-group and *longicauda*-group. The former includes *E. robusta*, *E. propinqua* and *E. brevicauda*, and the latter *E. longicauda*, *E. similis*, *E. curticornis* and *E. longiseta*.

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