

# Littoral and Parasitic Isopods from Kerala : Family Anthuridae—1

BY

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*(With four text-figures)*

For our knowledge of the isopod fauna of the Indian waters we are indebted to Stebbing (1904a, 1905), Barnard (1935, 1936), and Chopra (1923, 1930). The present study, conducted during the period 1951-54, showed that our fauna is comparable to that of any other region with respect to abundance and variety. Hoping to stimulate further work on the subject I present the results of my study in a series of short papers, and begin with the family Anthuridae.

This work was done during the tenure of a scholarship, for which I take this opportunity to thank the Government of India and the University of Kerala. My sincere thanks are due to Dr. C. C. John, former Professor of Marine Biology and Fisheries, under whose supervision this work was done.

## Family ANTHURIDAE

So far nine species belonging to six genera have been recorded from the Indian waters. Of these four were collected from Kerala, three from Ceylon, and one each from Chilka Lake and the Arakan coast. The present collection includes six genera which can be distinguished by the following key :

1. Carpus of pereopods four to seven underriding propodus, mouth parts normal.....2  
Carpus of pereopods four to seven not underriding propodus, mouth parts modified.....5
2. Maxilliped three- to four-segmented.....3  
Maxilliped five-segmented.....4
3. Second segments of maxillipeds fused.....*Xenanthura*  
Second segments of maxillipeds not fused.....*Cyathura*



4. Pleon segments distinct, third segment of maxilliped as broad as the adjacent segments, body pigmentation simple. . . *Apanthura*  
 Pleon segments indistinct, third segment of maxilliped narrower than the adjacent ones, body pigmentation conspicuous. . . . .  
 . . . . . *Mesanthura*
5. Statocyst present, maxilliped four-segmented, second segment produced. . . . . *Accalathura*  
 Statocyst absent, maxilliped three- or four-segmented, second segment not produced. . . . . *Paranthura*

### ***Xenanthura* Barnard, 1925**

This genus includes only three species, two of which appear in my collection. A revised definition of the genus, key to the species, and detailed descriptions of *X. orientalis* and *X. linearis* have been published (Pillai 1963).

#### ***Xenanthura orientalis* Barnard**

*Xenanthura orientalis* Barnard, 1935, p. 307, figs. 17a-h ; Pillai, 1963, p. 265, fig. 1.

**Distribution.** This species has so far been recorded only from brackish water localities in Kerala, south India.

#### ***Xenanthura linearis* Pillai**

*Xenanthura linearis* Pillai, 1963, p. 268, figs. 2-3.

**Distribution.** Like *X. orientalis*, this species has been recorded only from brackish water localities in Kerala, south India. It can tolerate nearly fresh water. -

### ***Cyathura* Norman & Stebbing, 1886**

According to Barnard (1925) *Cyathura* includes a few species without eyes and others with brush-like first antennae. He expressed the opinion that these species might have to be removed from *Cyathura*. In the present collection I have observed variation in the presence or absence of the eyes. Specific identification of the following three species is, therefore, made with some reservation. The three species differ thus:

1. Inner border of palm of first peraeopod with a tooth near the base, unguis long. . . . . 2  
 Inner border of palm of first peraeopod without a tooth, unguis short. . . . . *pusilla*
2. Fifth segment of first peraeopod projecting. . . . . *carinata*  
 Fifth segment of first peraeopod not projecting. . . . . *indica*



**Cyathura carinata** (Kroyer)

*Cyathura carinata* Norman & Stebbing, 1886, p. 124; Barnard, 1925, p. 140.

*Cyathura estuarius* Barnard, 1914, p. 334a, pl. 27D.

Length 7.0 mm.

**Distribution.** This species is common in the estuarine region at Quilon, Kerala. It has been previously recorded from China, East London, Algoa Bay, North Atlantic, Mediterranean, and the Baltic Sea.

**Cyathura pusilla** Stebbing

*Cyathura pusilla* Stebbing, 1904a, p. 9, pl. 6B; 1910, p. 91; Barnard, 1925, p. 140.

Length 5.6 mm.

**Distribution.** This species has been recorded only from Ceylon and British East Africa.

**Cyathura indica** Barnard

*Cyathura indica* Barnard, 1925, p. 140, pl. 4, fig. 7; 1935, p. 306.

Length 5.7 mm.

**Distribution.** This species has been previously recorded from Singapore, Thailand, Ceylon, Pamban, and Kerala.

**Apanthura** Stebbing, 1900

**Apanthura sandalensis** Stebbing (Fig. 1)

*Apanthura sandalensis* Stebbing, 1900, p. 621, pl. 65a; Barnard, 1925, p. 141.

*Apanthura dubia* Barnard, 1914, p. 342a, pl. 28D.

Body is rather slender and of uniform width. Head is nearly half the length of the first peraeon segment. Eyes are present. Peraeon segments one to three are subequal, four to seven are longer. Pleon is fully segmented. First peduncular segment of first antenna is setose, flagellum is three- to four-segmented, flagellum of second antenna is four-segmented. Third segment of the palp of the mandible is very short and carries two apical setae. Maxilliped is four-segmented. Carpus of first peraeopod is triangular and slightly projecting at its apex, propodus has a small projection in the middle of its inner border, dactylus when closed overreaches the apex of the fifth segment. Second peraeopod is gnathopodal in character, carpus is considerably immersed in the merus, propodus is ovate. Seventh peraeopod has its carpus slightly underriding the propodus and carries two inner spines. Telson is linguiform, with a narrowly rounded apex, its dorsal surface is minutely spiny. Exopod of uropod is elongated and very slightly overreaches the telson.



Length 7.0 mm.

A single specimen was obtained in the plankton collected at Trivandrum.

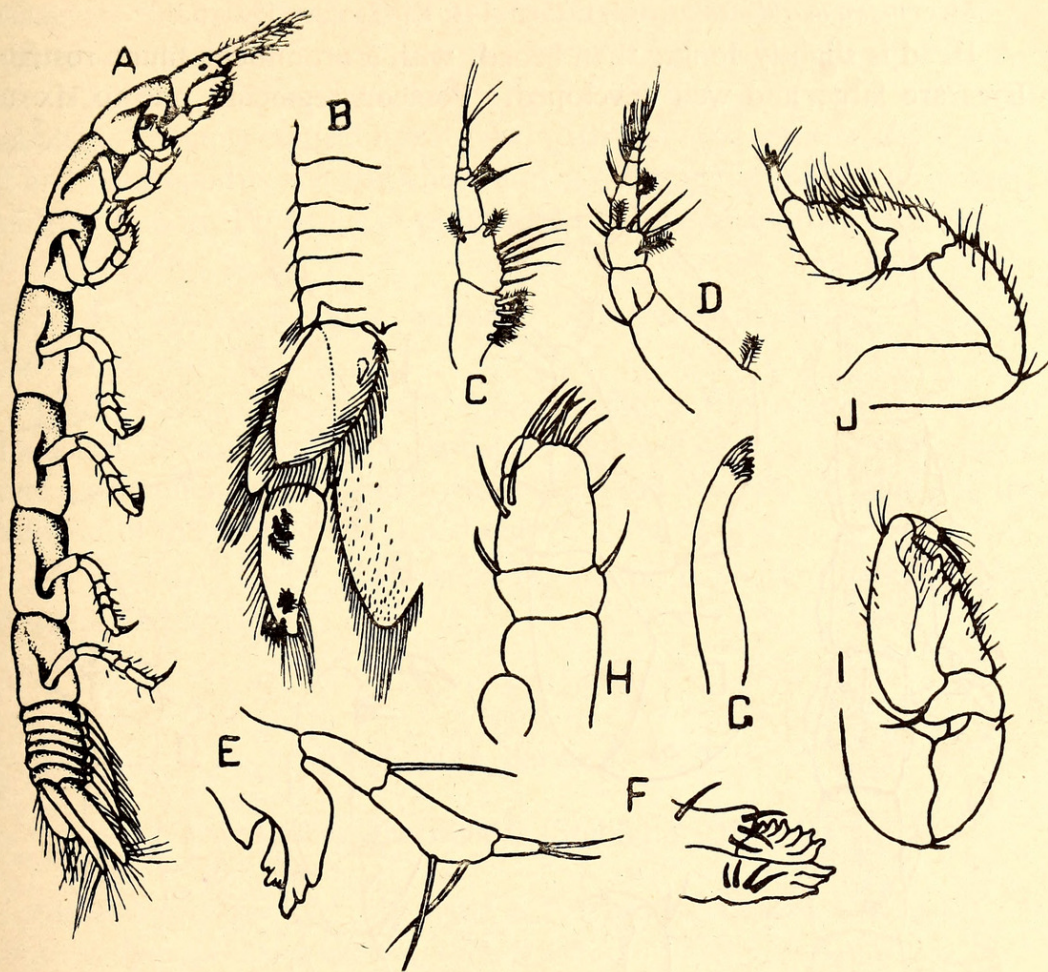


Fig. 1. *Apanthura sandalensis* Stebbing. Female

A. Lateral view; B. Posterior part of body, dorsal view; C. First antenna; D. Second antenna; E. Mandible; F. Same, cutting edge enlarged; G. First maxilla; H. Maxilliped; I. First pereopod; J. Second pereopod

**Distribution.** This species has been previously recorded from Loyalty Islands, South Africa, Chilka Lake, and Kerala.

**Remarks.** The presence of a tooth on the palmar border of the first pereopod is an important character of this species. Barnard (1925, p. 141) says that this tooth may or may not be present. But in the illustrations published by him (1914, pl. 28D) and in the cotype in the British Museum (*vide* Barnard 1925, p. 141) a tooth is present at the base of the propodus. In my specimen there is a conical tooth-like projection in the middle of the inner border and the border of the palm distal to the tooth is straight. The inner surface of the carpus and the propodus is setose. The first pereopod of my specimen is very much like that of *A. africana* Barnard (1914).



**Mesanthura Barnard, 1914**

***Mesanthura maculata* (Haswell) (Fig. 2)**

*Mesanthura maculata* Barnard, 1925, p. 144; Kirtisinghe, 1931, p. 129.

Head is slightly longer than broad, with a prominent blunt rostrum. Eyes are large and well developed. Peraeon segments one to six are

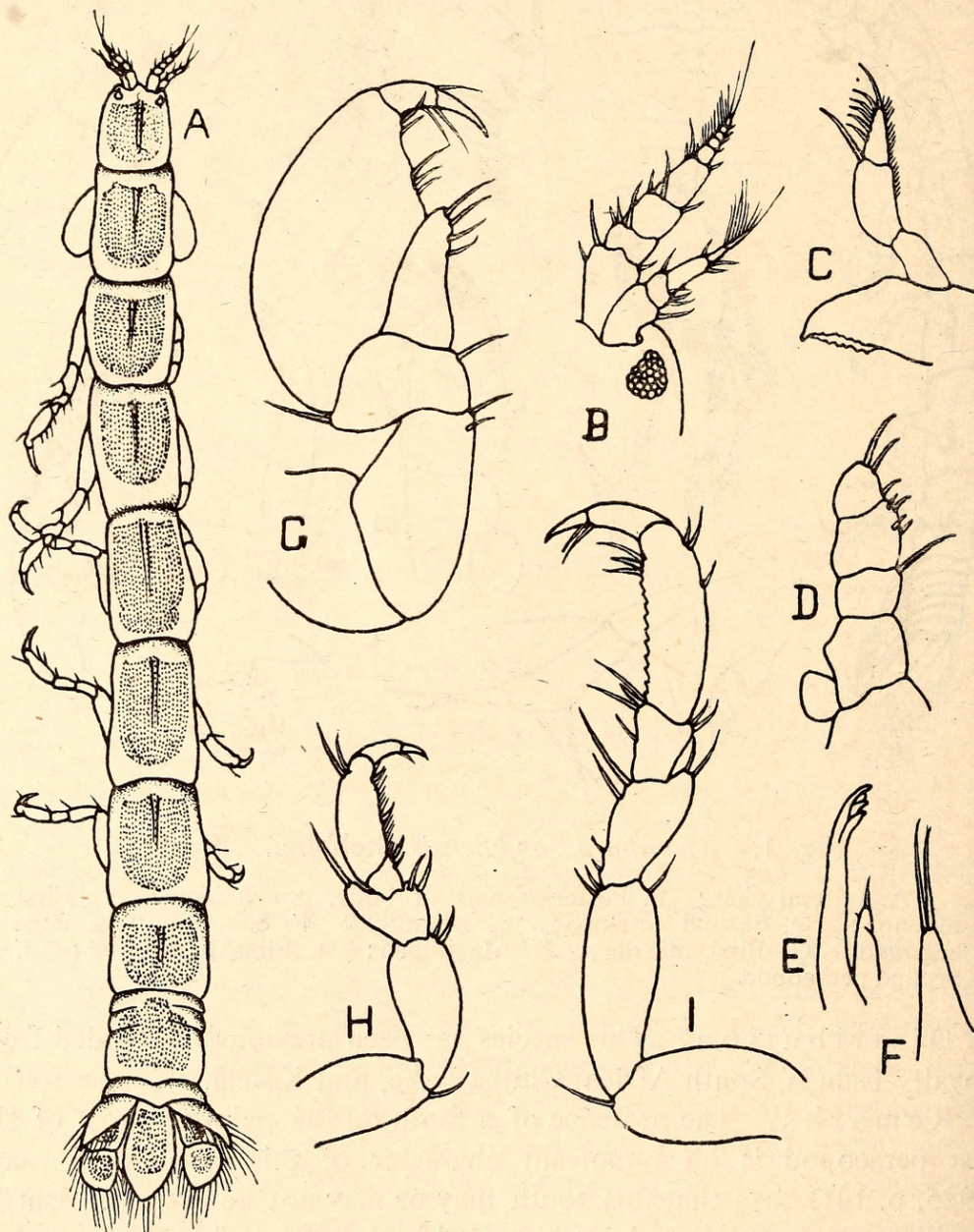


Fig. 2. *Mesanthura maculata* (Haswell). Female

A. Dorsal view ; B. Cephalon and antennae, dorsal view ; C. Mandible ; D. Maxilliped ; E. First maxilla ; F. Second maxilla ; G. First peraeopod ; H. Second peraeopod ; I. Seventh peraeopod

subequal in length, seventh is smaller. Pleon is as long as the seventh peraeon segment and its first two septa are laterally visible. Flagellum



of first antenna is three-segmented and slightly brush-like. Flagellum of second antenna is four- to five-segmented. Mandibular palp is stout, second segment is swollen, with a long inner spine, third segment is triangular and small with a row of setae, its outer border is hairy, cutting edge of the mandible is feebly serrate. First maxilla is apically quadridentate, its inner lobe is small and is tipped with a small spine. Second maxilla is a simple conical lobe tipped with two long spine setae. Carpus of first peraeopod is apically blunt and projecting, propodus is swollen, dactylus is short. Propodus of posterior legs is serrate on the inner border.

Length 10.0 mm.

Several specimens were collected from the inter-tidal region at Cape Comorin.

Body is whitish with black chromatophores distributed in a very characteristic manner. The cephalon, peraeon segments, and the pleon have a prominent dorsal patch, the telson and the two segments of the endopod of the uropod are also similarly coloured.

**Distribution.** Port Jackson, Victoria, South Australia, New Zealand, and Ceylon.

#### **Accalathura Barnard, 1925**

##### **Accalathura borradalei (Stebbing) (Fig. 3)**

*Calathura borradalei* Stebbing, 1904a, p. 700, pl. 49A; Chilton, 1924, p. 881.

*Accalathura borradalei* Barnard, 1925, p. 149.

Length 10.0 mm.

Body white with branched chromatophores forming distinct patterns.

Several specimens were collected from the inter-tidal region at Quilon.

**Distribution.** Maldiv Islands, Thailand and India.

**Remarks.** This species can be recognized by the following characters. First antenna is slender and the second is very stout. Third segment of the palp of the mandible carries a row of prominent spines. Distal part of the first maxilla has about eleven backwardly directed teeth. Second segment of the maxilliped is produced forwards into a large apically rounded lobe reaching the middle of the fourth segment. Propodus of the first peraeopod is produced at its inner proximal part, its inner border is prominently setose, dactylus is strong and spiny along the inner border. Propodus of second peraeopod is ovate and armed along the inner border with five strong spines. Seventh peraeopod is very long, carpus has four and the propodus six spines arming



the inner border. Telson is perfectly linguiform, with broadly rounded apex. There is a prominent median statocyst.

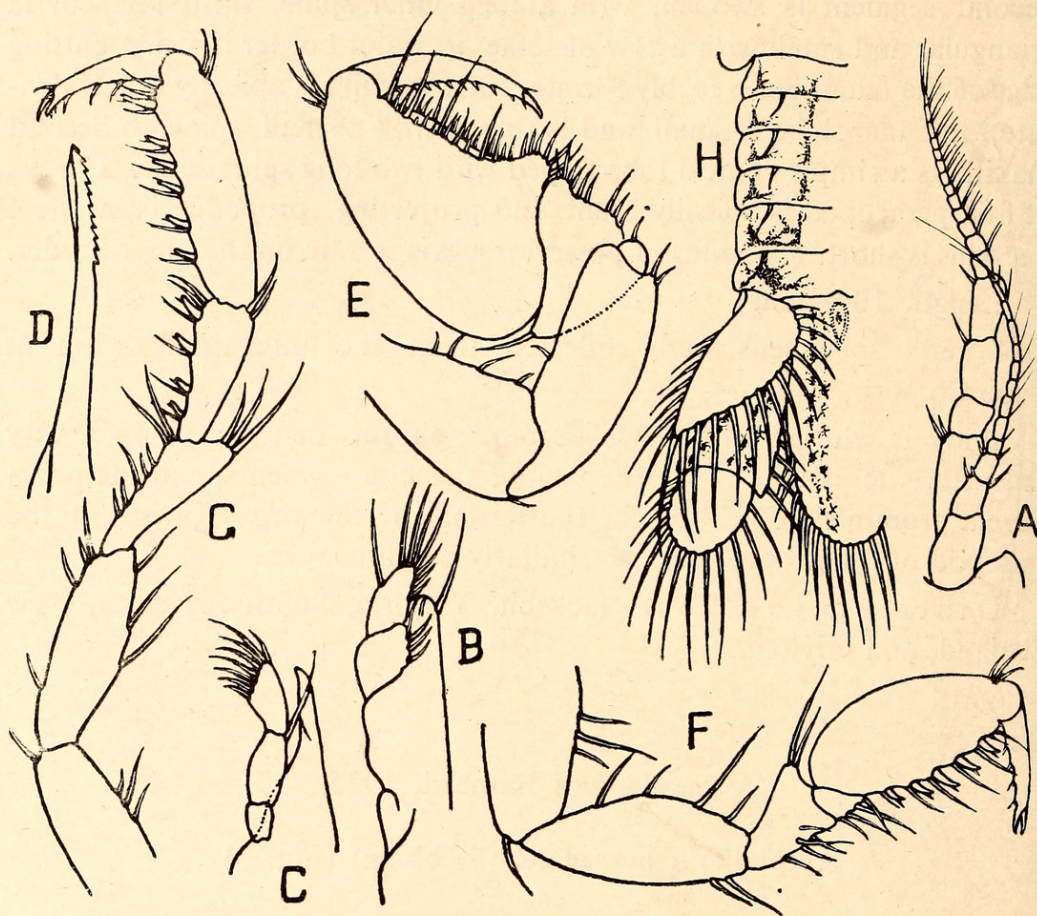


Fig. 3. *Accalathura borradalei* (Stebbing)

A. First and second antennae; B. Maxilliped; C. Mandible; D. First maxilla; E. First peraeopod; F. Second peraeopod; G. Seventh peraeopod; H. Posterior part of body, dorsal view

**Paranthura** Bate & Westwood, 1868

***Paranthura plumosa*** sp. nov. (Fig. 4)

Body gradually broadens to the fifth peraeon segment. Head is slightly longer than broad and about two-thirds the length of the first peraeon segment. Rostrum is small and the antero-lateral corners of the head are produced. Eyes are well developed. First peraeon segment is the narrowest and the seventh is the shortest. Pleon is short and longer than the seventh peraeon segment, segmentation is visible, last pleon segment is produced at its postero-median part.

First antenna is shorter than second, peduncle is three-segmented, first segment is large and almost twice as long as broad, the rest of the appendage is sharply bent outwards. Flagellum is five-segmented. First antenna of the male is longer than second, peduncle is three-segmented.



and the flagellum is eight-segmented and stouter than the peduncle, each flagellar segment carries a bunch of long hairs very much similar to that of *Leptanthura tenuis* G.O. Sars. Second antenna is similar in both

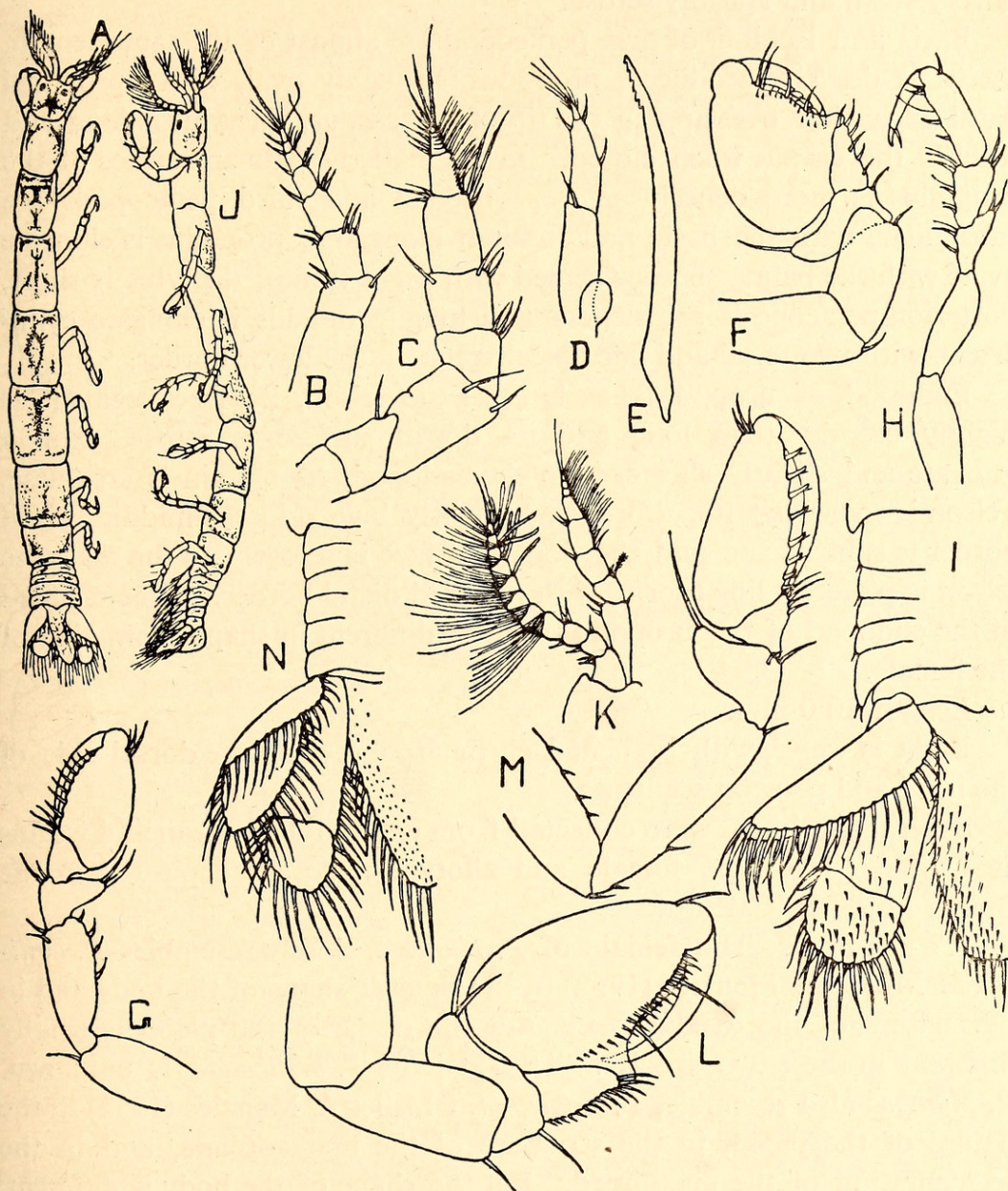


Fig. 4. *Paranthura plumosa* sp. nov.

A-I. FEMALE : A. dorsal view ; B. First antenna ; C. Second antenna ; D. Maxilliped ; E. First maxilla ; F. First pereopod ; G. Second pereopod ; H. Seventh pereopod ; I. Posterior part of body, dorsal view  
J-N. MALE : J. Lateral view ; K. First and second antennae ; L. First pereopod ; M. Second pereopod ; N. Posterior part of body, dorsal view

sexes, second segment of the peduncle is large and the rest of the appendage is bent outwards, in the female the flagellum is composed of a large basal segment and a series of small segments, in the male it is clearly four-segmented. Incisor process of the mandible is long, first



and third segments of the palp are subequal, third segment carries a comb of setae. First maxilla is long, with backwardly directed teeth at the distal part. Maxilliped is four-segmented but the fourth segment is very small and apically setose.

Basis and ischium of first peraeopod are almost of the same length, merus is dorsally produced, propodus is roughly oval, with a proximal basal expansion overlapping the tip of the carpus, dactylus is long and reaches the carpus when closed. In the male the palmar surface of the propodus is more densely setose. Second and third peraeopods are subsimilar, with the basis and ischium elongated, propodus is elongate ovate with the palmar border armed with eight spines, dactylus is short. Posterior peraeopods are slender and long, propodus is elongate cylindrical, with two basal and one apical spine on the lower border.

Endopod of uropod is as long as the telson, its free segment is slightly broader than long and its dorsal surface is setose, exopod is ovate and slightly shorter than the endopod, its margin is crenulate. Telson is somewhat linguiform and slightly bulged in the middle, distal border is subtruncate and the dorsal surface is setose. In the male the telson is perfectly linguiform, with rounded distal border. Free segment of the endopod of the uropod is slightly different in shape from that of the female.

Length 10.0 mm.

Body is white, with branched chromatophores on the dorsal side of the head and peraeon segments.

Several specimens were collected from empty tubes of sabellid worms at Quilon. Holotype female and allotype male are deposited in the Indian Museum, Calcutta.

**Remarks.** The female of *P. plumosa* closely resembles *P. bellicauda* Miller & Menzies (1952) in the general shape of the body and in the nature of the caudal fan. But the shape of the pleon is totally different in these two species. The male of *P. bellicauda* is unknown. *P. plumosa* also resembles *P. ostergaardi* Miller & Menzies (1952) in the nature of the pleon, in the structure of the first antenna, and in the segmentation of the maxilliped. But the shape of the body is different. Miller & Menzies do not say anything of the sexual dimorphism in these species; it is very pronounced in *P. plumosa*.

According to Barnard (1925) the flagellum of the second antenna in both sexes is formed of a single flattened segment and this is very characteristic of the genus *Paranthura*. In *P. plumosa* the flagellum in the female is composed of a large basal segment followed by a series of small segments and in the male clearly four-segmented. This is almost like the flagellum of *P. bellicauda* and *P. ostergaardi*. In his definition of the genus Barnard also stated that the maxilliped is three-segmented. But as observed by Miller & Menzies in *P. bellicauda*



and *P. ostergaardi*, the maxilliped in *P. plumosa* is four-segmented. Miller & Menzies suggested that this might be a useful subgeneric character. But before coming to a conclusion it is necessary to examine all the other species. As observed by Miller & Menzies this segment can be easily overlooked and might actually be present in many other species. As the genus *Paranthura* includes a large number of species a division is desirable, provided it is based on firm grounds.

## REFERENCES

- BARNARD, K. H. (1914): Contributions to the crustacean fauna of South Africa. III. Additions to the Marine Isopoda with notes on some previously incompletely known species. *Ann. S. Afric. Mus.* 10: 325a-358a, 359-442, pls. 27-38.
- (1925): A revision of the family Anthuridae with remarks on some morphological peculiarities. *J. Linn. Soc. Zool.* 36: 109-160, pl. 4.
- (1935): Report on the Amphipoda, Isopoda and Tanaidacea in the collections of the Indian Museum. *Rec. Indian Mus.* 37: 279-319.
- (1936): Isopoda collected by R.I.M.S. Investigator. op. cit. 38: 147-191.
- CHILTON, CH. (1924): Fauna of the Chilka Lake. Tanaidacea and Isopoda. *Mem. Indian Mus.* 5: 875-895, 1 pl.
- CHOPRA, B. (1923): Bopyrid isopods parasitic on Indian Decapoda Macrura. *Rec. Indian Mus.* 25: 411-450, 11 pls.
- (1930): Further notes on bopyrid Isopods parasitic on Indian Decapoda Macrura. op. cit. 32: 113-147, 3 pls.
- KIRTISINGHE, P. (1931): Note on an Isopod, *Mesanthura maculata*, new to the fauna of Ceylon. *Spol. Zeylan.* 16: 129-130.
- MILLER, M. A., & MENZIES, R. J. (1952): The isopod crustacea of the Hawaiian Islands. III. Superfamily Flabellifera, family Anthuridae. *Occa. Pap. Bernice P. Bishop Mus. Honolulu* 21: 1-15.
- NORMAN, A. M., & STEBBING, T. R. R. (1886): On the crustacea Isopoda of the Lightning, Porcupine and Valour expeditions. *Trans. Linn. Soc. London* 12: 77-141, pls. 16-27.
- PILLAI, N. K. (1954): A preliminary note on the Tanaidacea and Isopoda of Travancore. *Bull. Res. Inst. Univ. Travancore* 3: 1-21.
- (1963): Observations on the genus *Xenanthura* (Isopoda, Anthuridae). *Crustaceana* 5: 263-270.
- SARS, G. O. (1899): Crustacea of Norway. 2. Isopoda. 270 pp. Bergen.
- STEBBING, T. R. R. (1900): On the crustacea brought by Dr. Willey from the South Seas. *Willey's Zool. Res.* 5: 618-625, pls. 65-66.
- (1904a): Gregarious crustacea of Ceylon. *Spol. Zeylan.* 2: 1-26.
- (1904b): Marine Crustaceans. 12. Isopoda with description of a new genus. *Fauna Geog. Mald. Laccad. Archip.* 2: 699-721, pls. 49-53.
- (1905): Report on the Isopoda collected by Prof. Herdmann at Ceylon. *Ceylon Pearl Oyst. Fish. Rep.* 4: 1-64, pls. 1-12.
- (1910): Isopoda from the Indian Ocean and British East Africa. Percy Sladen Trust Expedition. *Trans. Linn. Soc. London* 14: 90-95, pl. 7.





1966. "Littoral and parasitic isopods from Kerala: Family Anthuridae-I." *The journal of the Bombay Natural History Society* 63, 152–161.

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