

THYSANOTE POLYFIMBRIATA, A NEW LERNAEOPODID
COPEPOD PARASITIC ON *EPINEPHELES*
IN KERALA WATERS

By

C. PRABHA and N. KRISHNA PILLAI

*Department of Aquatic Biology and Fisheries,
University of Kerala, Trivandrum 695 007*

(With 3 Text-figures)

INTRODUCTION

Genus *Thysanote* is characterised by the presence of fimbriate processes on the maxillae or the hind part of the trunk or both. In most of the species these processes are few. During the course of a survey of the copepods parasitic on the fishes of the Kerala coastal waters the first author collected from an unidentified species of *Epinepheles* five females, some of them with the male, of a remarkable copepod belonging to *Thysanote*. The processes are so elaborately branched that they produce two bushy growths setting this species apart from all the others hitherto known. We, therefore, describe it as *Thysanote polyfimbriata*, the name alluding to the unusually large number of processes present. As the existing definition of the genus is inadequate we give below a new definition.

DESCRIPTION OF SPECIES

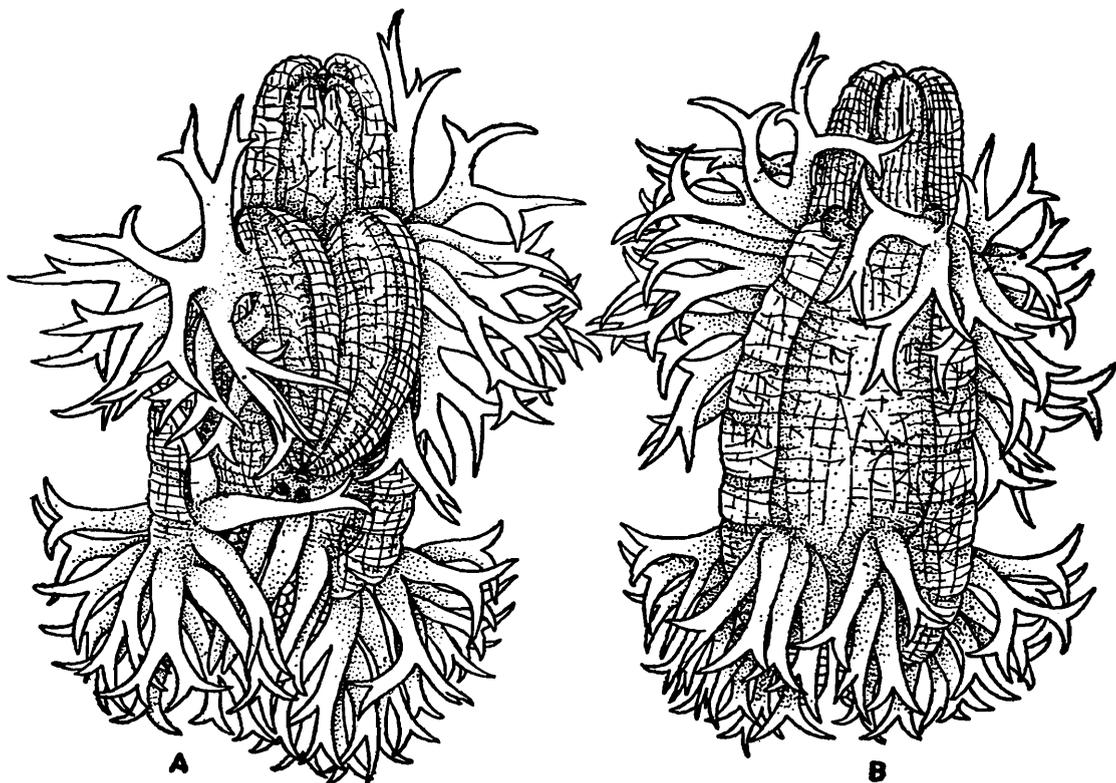
Thysanote polyfimbriata n. sp.

(Text-fig. 1, A-B,)

Material : Five females, some of them with males, from the gill arches of *Epinepheles* sp. examined at Trivandrum. The holotype, female, will be lodged in the Zoological Survey of India, Calcutta. Three paratypes will be kept in the Department of Aquatic Biology and Fisheries, University of Kerala, Trivandrum.

Female : Body short but stout and somewhat dorsoventrally flattened and enveloped in a very loose, moderately wrinkled, chitinous covering. Cephalothorax only slightly longer than broad, about half as broad as trunk, in dorsal view anterior border bilobed. Carapace small but distinct. Trunk gradually widening backwards, about twice as broad and three times as long as cephalothorax, postero-median part concave making the hind end broadly bilobed. Genital or abdominal process

absent. Caudal rami unbranched, narrowing distalwards, as long as the trunk processes. Postero-lateral and submedian dorsal part of trunk with about twenty to twenty five pairs of processes, dichotomously branched, though irregularly, up to four times rendering the counting of

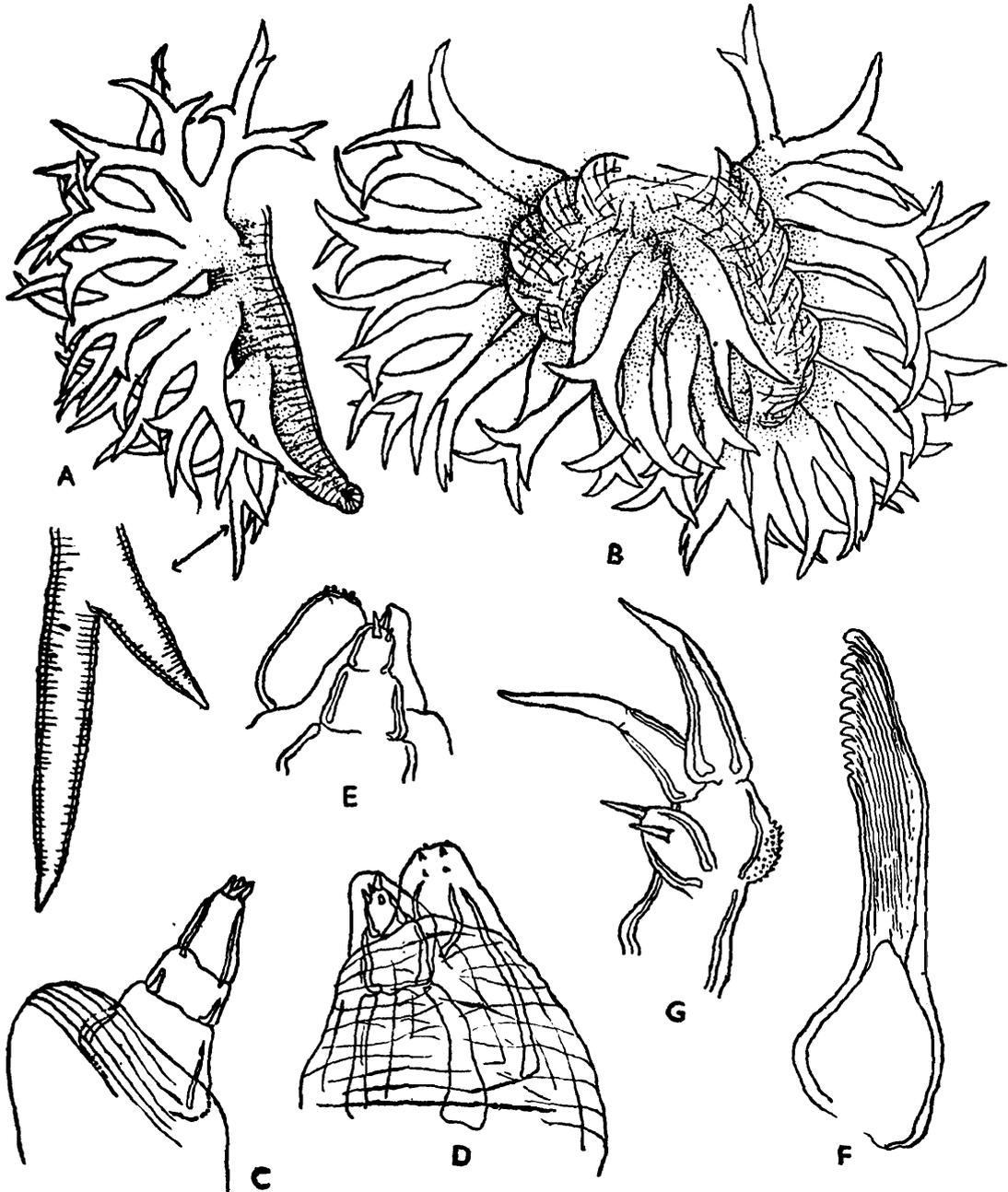


Text-fig. 1.—*Thysanote polyfimbriata* n. sp., ♀ ;
A—ventral view ; B—dorsal view

their exact number difficult, end branches apically acute, submedian dorsal ones branched only twice. Egg sacs short, oblong, with large, closely packed hexagonal eggs.

Antennule apparently four-jointed, basal segment highly swollen, overlapping the second segment, third segment short, fourth narrowing, with an apical bunch of four blunt processes or spines. Antenna curving inwards, almost fully covered by the chitinous envelope, rami subequal in size, exopod with three pairs of denticles, endopod two-jointed, distal segment with four teeth. Mandible fairly stout and slightly bent inwards in the middle, toothed border comparatively long, with ten rather large blunt teeth, successively decreasing in size backwards, first tooth alternating with a subsidiary tooth. Maxillule with short stout stem, its outer distal part with a prominent hemispherical bulge covered with teeth exactly as in *T. eleutheronemi* Rangnekar (= *T. decemfimbriata* Pillai, 1962), apex with two subsimilar (inner slightly longer) stout processes longer than the stem ; palp moderately large, ovate, with two spines. Maxillae comparatively long, when folded backwards reaching the base of the caudal rami, fully separated and

connected at their tips to a small cup-shaped bulla ; maxillary glands small but prominent. Each maxilla with three processes, first highly branched and attached to the base of the appendage, second smaller and attached to the middle of the basal half, third smallest and attached in the middle. Maxilliped comparatively small, almost fully covered by the chitinous envelope, tip of distal segment alone exposed. Basal



Text-fig. 2. (A-G)—*Thysanote polyfimbriata* n. sp.

A—maxilla with processes ; B—postero-lateral part of trunk with processes, dorsal view ; C—antennule ; D—antenna, outer view ; E—same, inner view ; F—mandible ; G—maxillule.

segment with inner median process surmounted by a spine, ventral border of distal segment distally serrated and terminating in a spine, unguis fused with the segment.

Length minus the trunk processes 4.26 mm.

Male: Body typically of the *Brachiella* type, curved downwards and covered by a loose chitinous envelope, exposing only the mouth cone, maxillae, maxillipeds and caudal rami. Body proper slender, clearly demarcated into a stout cephalothorax and elongate-oblong trunk, these two separated by a deep constriction. Carapace apparently absent, trunk indistinctly segmented. Caudal rami long and apically blunt, without armature.



Text-fig. 3. (A-K)—*Thysanote polyfimbriata* n. sp.

A—maxilliped ; B-K. male ; B—male, lateral view ; C—antennule ; D—antenna ; E—mandible ; F—maxillule ; G—maxilla, lateral view ; H—same, inner view ; I—maxilliped ; (J-K)—same, tip of distal segment.

Antennule four-jointed, second segment with outer distal spine, fourth segment with five short spines and a long spine. Antenna with two-jointed, fairly broad protopod, exopod laminate, with one spine

and spinulose surface, endopod two-jointed, basal segment with inner patch of spinules, inner part of distal segment produced into a spiny lobe, unguis strongly curved. Mandible with short cutting edge, with seven sharp primary teeth, first alternating with a subsidiary spine. Maxillule very much like that of female but more slender, inner spical spine shorter than outer, palp with two short teeth instead of spines. Maxilla with stout conical basal segment carrying a pustulose inner pad, distal segment basally broad, distally narrowed and strongly curved. Maxilliped with slightly curved rectangular basal segment, distally armed with three toothed processes, distal segment strongly curved, apically produced below the unguis as a four-lobed process.

Length 1.18 mm.

DISCUSSION

To date the following species have been described under this genus :— *T. pomacanthi* Kroyer (1864), *T. appendiculata* (Steenstrup & Lutken, 1861), *T. lampri* (Scott & Scott, 1913), *T. lobiventris* (Heller, 1868), *T. fimbriata* (Heller, 1868), *T. epinepheli* Yamaguti (1939), *T. longimana* Wilson (1913), *T. ramosa* (Richiardi, 1880), *T. eleutheronema* Rangnekar (1961), *T. rastrellegeri* Rangnekar (1961), *T. octofimbriata* Tripathi (1962), *T. decemfimbriata* Pillai (1962), *T. gymnobrachiata* Kabata (1968), *T. heterodactyla* Kirtisinghe (1964). and *T. furcata* Kirtisinghe (1964). Pillai (1969) transferred *Thysanotella multifimbriata* Bassett-Smith (1898) to *Thysanote*. Thus the genus now contains sixteen species. Pillai (in press) made *T. octofimbriata* Tripathi and *T. decemfimbriata* Pillai synonyms of *T. eleutheronema*. The genus would thus contain fourteen species excluding the present new species.

As in the case of many other genera of parasitic copepods *Thysanote* also suffers from the drawback that information on many species including the type species is very inadequate. Available information indicates that *T. polyfimbriata* shows the closest resemblance to *T. pomacanthi* Kroyer, *T. fimbriata* (Heller) and *T. lobiventris* (Heller). However in the present species the processes are much more numerous and elaborately branched. This character, the most important specific character, easily distinguishes *T. polyfimbriata* from all the others.

No species of *Thysanote* has so far been described in detail. We have therefore described the present species, a remarkable one, in detail. While describing *T. gymnobrachiata*, Kabata (1968) suggested that the absence of processes on the maxillae should be included as a generic character. Moreover the most upto date definition of the genus

by Yamaguti (1963) is very inadequate. We give below a revised definition of the genus.

“Body demarcated into cephalothorax and trunk. Cephalothorax short, somewhat dorso-ventrally flattened and remaining in line with the trunk or slightly bent downwards. Trunk rather swollen, with or without posteromedian lobe, postero-lateral parts with branched or unbranched processes. Caudal rami like the processes, median-ventral, unbranched. Antennule usually four-jointed. Antenna biramous, endopod two-jointed. Mandible with cutting edge long, with at least one subsidiary tooth. Maxillule generally with two large apical processes, occasionally with an additional small process, palp with two (rarely four) processes. Maxillae usually short, free, with or without branched or unbranched processes. Maxillipeds small”.

“Male *Brachiella* type, elongated. Cephalothorax and trunk demarcated by a deep constriction. Caudal rami prominent. Maxilla with conical and maxilliped with cylindrical basal segment”.

SUMMARY

A new species of *Thysanote*, *T. polyfimbriata*, is described and a new definition of the genus is provided. *T. polyfimbriata* is unique in having bushy growths of processes on the maxillae and trunk, the processes dichotomously branched at least four times.

ACKNOWLEDGEMENT

We express our gratitude to Dr. N. Balakrishnan Nair for critically examining this paper and also for forwarding it for publication.

REFERENCES

- BASSETT-SMITH P. W. 1898. Further new parasitic copepods found on fish in the Indo-tropical region ; *Ann. Mag. nat. Hist.*, **2** : 77-98.
- HELLER, C. 1868. Crustaceen der Novara Expedition ; **2** : 1-280.
- KABATA, Z. 1968. Copepods parasitic on Australian fishes. 8. Families Lernaepodidae and Naobranchiidae ; *J. nat. Hist.*, **2** : 505-523.
- KIRTISINGHE, P. 1964. A review of the parasitic copepods of fish recorded from Ceylon with descriptions of additional forms ; *Bull. Fish. Res. Stat. Ceylon*, **17** : 45-132.
- KROYER, H. 1864. Bidrag til kundskab om Snyltekrebsene ; *Naturh. Tidsskr.*, **1** : 321-426.

- PILLAI, N. K. 1962. Copepods parasitic on south Indian fishes. Families Lernaepodidae and Naobranchidae ; *J. mar. Biol. Ass. India*, **4** : 58-94.
- PILLAI, N. K. 1969. Notes on some copepods in the collection of the British Museum (N. H.) London ; *J. mar. Biol. Ass. India*, **11** : 149-174.
- PILLAI, N. K. (in press) Copepods parasitic on Indian marine fishes ; *Fauna of India*.
- RANGNEKAR, M. P. 1961. Copepods parasitic on fishes of Bombay. 1. Lernaepodoida ; *J. Univ. Bombay*, **29** : 193-205.
- RICHIARDI, S. 1880. Sopra due nuove specei di crostacei parassiti ; *Proc. verb. Soc. Tosc. Sc. Nat. Pesci. Zool. Anz.*, **26** : 69.
- SCOTT, T. & SCOTT, A. 1913. *The British parasitic copepoda* ; Ray Society London, 256 pp., 72 pls.
- STEENSTRUP, J. J. S. & LUTKEN, C. F. 1861. Bidrag til Kundskab... copepoder ; *K Dansk Vidensk. Selsk. Skr. Naturv. og Math.*, **5** : 341-432.
- TRIPATHI, Y. R. 1962. Parasitic copepods from Indian fishes. 6. Actheri-formes ; *Proc. 1st All India Congress Zool.*, **2** : 218-233.
- WILSON, C. B. 1913. Crustacean parasites of West Indian fishes and land crabs with descriptions of new genera and species ; *Proc. U. S. nat. Mus.*, **44** : 189-277.
- YAMAGUTI, S. 1936. Parasitic copepods from fishes of Japan. Part 6. Lernaepodoida ; *Vol. Jubil. Yoshida*, **2** : 529-627.
- YAMAGUTI, S. 1963. *Parasitic copepoda and Branchiura of fishes*. Interscience Publishers, London :1-1059.