

A NEW LERNAEID COPEPOD PARASITE (COPEPODA: CYCLOPOIDA) FROM KERALA

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ABSTRACT

A copepod parasite, *Lernaea osphronemi* sp. nov. collected from the body surface of *Osphronemus goramy* Lacepede, at Pannivelichira, Kerala is described in detail. The identity of the new species is established by comparing with all other known species in this genus.

INTRODUCTION

The genus *Lernaea* was first created by Linnaeus (1758) with the description of *Lernaea cyprinacea*. So far about 40 species of *Lernaea* have been described, which are harmful parasites of fresh water fishes (Kabata, 1985). The taxonomy of this genus is highly confusing due to the remarkably uniform structure of the appendages. The shape of the 'anchor' and its 'arms' are the most important characters to identify the species (Harding, 1950). The anchor and its arms are designated as holdfast. The basic shape of individual holdfast is determined by the type of fish tissue within which it developed. Intraspecific variations were observed on the holdfast structure by several authors. The shape and arrangement of holdfast are generally accepted as the identifying characters.

Lernaea osphronemi sp. nov.

Material: Large number of females were collected from the body surface of *Osphronemus goramy* Lacepede, from a fresh water pond of State Fisheries Department at Pannivelichira, Kerala, India. (The holotype females will be deposited in the Indian Museum, Calcutta, India).

Post metamorphosis adult female: (Fig. 1): Cephalothorax hemispherical, small, anterior to holdfast, bearing antennae and mouth parts. Holdfast consisting of two pairs of horns dorso-ventrally placed and ventral branches slightly longer than dorsal; branches simple with blunt tips. Variations in structure of holdfast noticed among infra-populations. Body subcylindrical, unsegmented and gradually expanding in breadth posteriorly. Neck comprising of second to fourth leg bearing segments and circular in cross section. At region of second pair of leg, a node like swelling present, while at places of third and fourth legs, very slight constrictions visible laterally. Behind fifth pair of legs lies pregenital prominence hemispherical and bilobed. Abdomen subconical with two constrictions ventrally giving appearance of three segmented nature and carrying small single segmented uropods distally.

First antenna: (Fig. 2): Uniramous, three segmented, basal segment very long and equals length of second and third segments combined, bearing nine short setae and a long one on distal part. Second segment short, bearing three small and a long setae. Third segment longer than second, carrying ten setae of varying length; seven apical in

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position, out of which, two thicker and longer than others.

Second antenna (Fig. 3): Uniramous, two segmented, segment subequal in length. Basal segment unarmed; distal segment with

two small setae along the posterior margin, a clog like spine and four slender setae distally.

Labrum: Small flattened semicircular plate, overlying mandibles and first maxillae.

Second maxilla: (Fig. 4) Two segmented, basal segment very stout and broad, distal segment small with two curved strong claws.

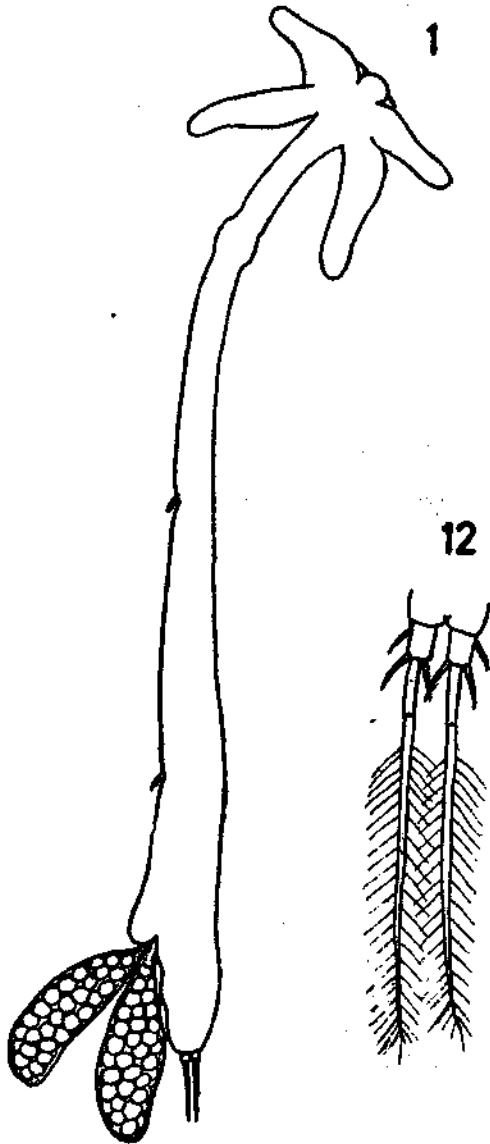


FIG. 1. Post metamorphosis adult female.
FIG. 12. Uropod.

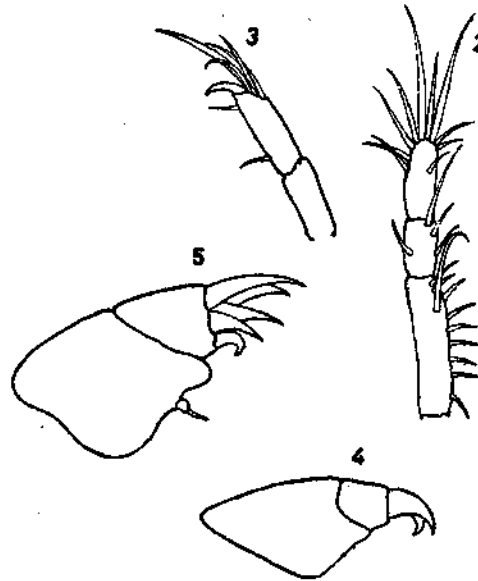


FIG. 2. First antenna.
FIG. 3. Second antenna.
FIG. 4. Second maxilla.
FIG. 5. Maxilliped.

Maxilliped (Fig. 5): Two segmented, basal segment broad and stout with a small papilla armed with an apical setule, and slightly projected on the median margin of distal part. Terminal segment comparatively very short bearing one short curved and four large subequal strong claws at its anterior margin.

Thoracic legs (Figs. 6, 7, 8 & 9): First four pairs of legs are biramous; rami three segmented. Sympod two segmented; proximal segment with a small seta on inner margin distally; distal segment with a fine

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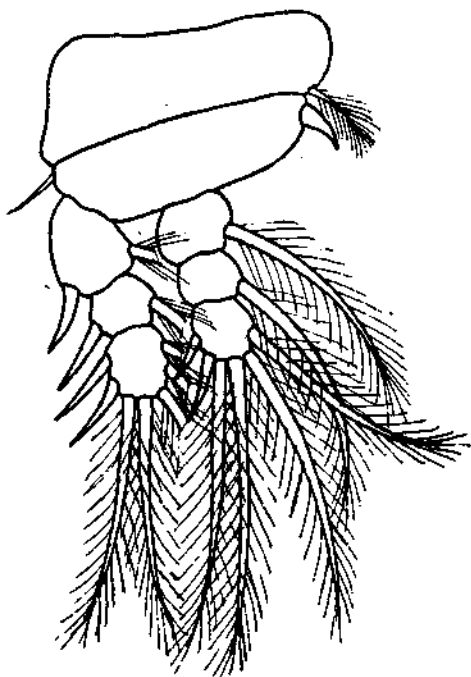


FIG. 6. First leg.

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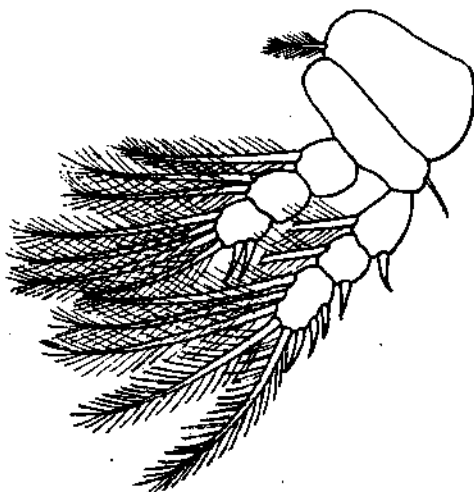


FIG. 7. Second leg.

seta lateral to base of exopod. In first leg a curved spine-like structure present at medio-lateral margin of distal segment.

Fifth leg (Fig. 10): Reduced, one segmented with four small setae of unequal length on distal margin. *Sixth leg* (Fig. 11) represented as a single seta.

Uropod (Fig. 12): Subcylindrical each bearing a long straight seta extending posteriorly, two small setae on either side and another small seta on medio-lateral margin. Arrangements of spines and setae are given below:

TABLE I. *Leg armature: Arabic numerals denote setae; Roman numerals denote spines.*

	Endopod			Exopod		
Leg I	0 1	0 1	II-4	I-1	I-1	II-5
Leg II	0-1	0-2	II-4	I-1	I-1	III-5
Leg III	0-1	0-2	II-4	I-1	I-1	III-5
Leg IV	0-1	0-2	II-3	I-1	I-1	III-5

DISCUSSION

A total of nine species of *Lernaea* have been recorded from India and South-East Asia. They are *L. cyprinacea* Linnaeus (1758), *L. oryzophila* Monod (1932), *L. polymorpha* Yu (1938), *L. lophiara* Harding (1950), *L. chackoensis* Gnanamuthu (1951), *L. bengalensis* Gnanamuthu (1956), *L. arcuata* Soejanto (1965), *L. hesarangattensis* Srinivasa-char and Sundarabai (1974), and *L. bhadransis* Seenappa, Manohar and Shetty (1980). The present new species shows resemblance to *L. lophiara* and *L. bengalensis* in its general body shape. The ventral arms of the holdfast slightly shorter than dorsal in *L. lophiara*, whereas in *L. osphronemi*, the dorsal arms are shorter than ventral and also differs in other characters. *L. osphronemi* resembles *L. bengalensis* in the shape of the holdfast, but the holdfast arms are non-variable in shape in *L. bengalensis* whereas in the new species holdfast exhibit variations among the members of infrapopulation (Margolis,

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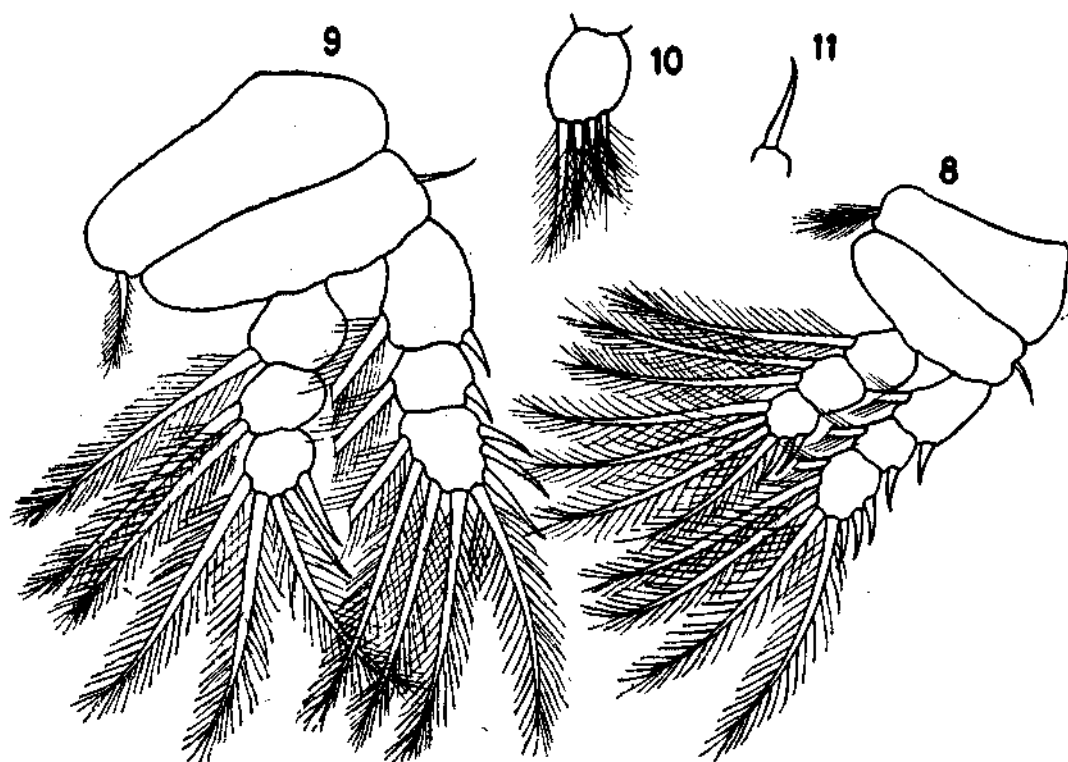


FIG. 8. Third leg.
FIG. 9. Fourth leg.

FIG. 10. Fifth leg.
FIG. 11. Sixth leg.

et al., 1982). In the present species variations such as bifurcations and branching of tip of the arms, differences in the length-breadth proportions of the arms were observed. In addition, it differs from *L. bengalensis* in the segmentation and arrangement of spines and setae of first and second antennae. Fifth and sixth legs are absent in *L. bengalensis* whereas it is present in *L. osphronemi*. The pregenital prominence in *L. bengalensis* is pressed together to form a 'heel' but in the present species the pregenital prominence is bilobed and distinct. Considering the structure of the holdfast, segmentation and setation of appendages, the present one differs from all other known species of *Lernaea*.

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