

LARVAL AND POSTLARVAL STAGES OF THE GENUS  
*TRACHYPENAEOPSIS* BURKENROAD (PENAEIDAE: PENAEINAE)  
FROM THE INDIAN OCEAN

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ABSTRACT

A third mysis and a late postlarva of the genus *Trachypenaeopsis* are described and illustrated here for the first time, from the eastern Indian Ocean. Only two specimens were obtained for the present study, from a total collection of 1927 IIOE samples. Only three species of the genus *Trachypenaeopsis* are hitherto known, of which, two are from the Indo-Pacific and the third one, from the Atlantic.

Diagnostic features of the postlarvae of *Trachypenaeopsis* include, a relatively short rostrum, well developed and stout antennal spine, exopods on all walking legs and a median acicular spine on the telson. A comparison of characters found in the late mysis stage of *Trachypenaeopsis*, *Penaeopsis* and *Atypopenaeus* is also made.

**Key-words:** *Trachypenaeopsis*, Penaeidae, Indian Ocean.

INTRODUCTION

A larval and a postlarval stage in the development of the genus *Trachypenaeopsis* Burkenroad have been recorded from the eastern Indian Ocean and reported here for the first time. The specimens were in the late mysis and postlarval stages.

The larvae were collected from coastal regions, at two stations in depths ranging from 130 to 200 m, southeast of Visakhapatnam in the Bay of Bengal and southwest off Phuket, in the Andaman Sea. Since, very little is known about the larval stages of *Trachypenaeopsis* spp. these larvae could only be identified tentatively as belonging to genus *Trachypenaeopsis*. The specimens differed clearly from all other genera and species described previously. The postlarva clearly showed certain characters of the adult *Trachypenaeopsis*, such as the presence of a short rostrum, a well-developed hepatic spine which is absent in the mysis, a stout antennal spine, the presence of exopods on all walking legs and a median acicular spine in the telson. These characters support the identification of the postlarva as belonging to the genus. Since there is no previous record of larvae or postlarvae of this genus from the Indian Ocean, this is the first record from the eastern Indian Ocean.

DESCRIPTION

The existing species of *Trachypenaeopsis* are *T. richtersii* (Miers), *T. mobilispinis* (Rathbun) and *T. minicoyensis* (Thomas). *T. mobilispinis* is an

Atlantic form, hence, there are only 2 species recorded from the Indo-Pacific waters. Therefore, the larvae might belong to either of the two species. The previous records of *T. minicoyensis* were from the western Indian Ocean (Thomas 1972) from Minicoy and Laccadive Archipelago, in the Arabian Sea. Kubo (1949) described *T. richtersii* from Japanese waters. The present larvae were collected from the Bay of Bengal which may be considered as extended area for the distribution of the larva of *Trachypenaeopsis* to the eastern parts of the Indian Ocean (Bay of Bengal). Since only a single specimen was available for study it is difficult to determine the species of the larva with certainty and hence it is treated as *Trachypenaeopsis* sp. and nothing more is known about the distribution and abundance of the species.

The genus *Trachypenaeopsis* is closely related to *Atypopenaeus* de Man (1911), but can be easily identified from the latter by characters such as the short rostrum, antennal spine, short antennular flagella, the nature of the telson etc. The larvae of these two genera are similar in having dorsomedian spines on the abdominal somites and telson. But in the larva of *Trachypenaeopsis*, the dorsomedian spine on the 3rd abdominal somite was absent. Larva of *Penaeopsis* agrees with larva of *Trachypenaeopsis* in more characters than by any other genus. But the former can be distinguished from the latter by the presence of a pair of dorsolateral spines on the 5th abdominal somite. In both *Trachypenaeopsis* and *Penaeopsis* the telson has a median spine and seven pairs of telsonic processes. A comparison of the characters of the late mysis stage of *Penaeopsis*, *Atypopenaeus* and *Trachypenaeopsis* are given in Table I.

**Table I.** Comparison of characters of the late mysis stage of *Penaeopsis*, *Atypopenaeus* and *Trachypenaeopsis*.

| Features   | <i>Penaeopsis</i>    | <i>Atypopenaeus</i>     | <i>Trachypenaeopsis</i>              |
|--|----------------------|-------------------------|--------------------------------------|
| Rostrum  | Long                 | Medium                  | Short.                               |
| Antero-inferior margin of carapace.                      | Serrate              | Serrate                 | Serrate                              |
| Antennal and hepatic spines                              | Present              | Only hepatic present.   | Absent.                              |
| Ventro-median spines on thoracic segments.               | Absent               | Absent.                 | Present on the 7th thoracic segment. |
| Thoracic legs.   | With exopods (1-5)   | With exopods (1-5)      | With exopods (1-5)                   |
| Dorso-median spines on abdominal segments.               | Present on 4, 5 & 6. | Present on 3, 4, 5 & 6. | Present on 5 & 6.                    |
| Paired dorsolateral spines on the 5th abdominal segment. | Present.             | Present.                | Absent.                              |
| Spine formula of telson.                                 | 7 + 1 + 7.           | 7 + 1 + 7.              | 7 + 1 + 7.                           |

**Larval stage :**

**Mysis III :** Length 4.9 mm (Fig. 1 a-h).

**Material :** 1 specimen.

**Locality :** Stn. AB 92 lat. 16° 40' N; long. 83° 58' E. (IOBC, 1969) — Off Visakhapatnam on the east coast of India, in the Bay of Bengal.

Rostrum extends slightly beyond the eyes and bears 3 dorsal teeth and an epigastric tooth. Supraorbital spines and hepatic spines absent. Pterygosto-

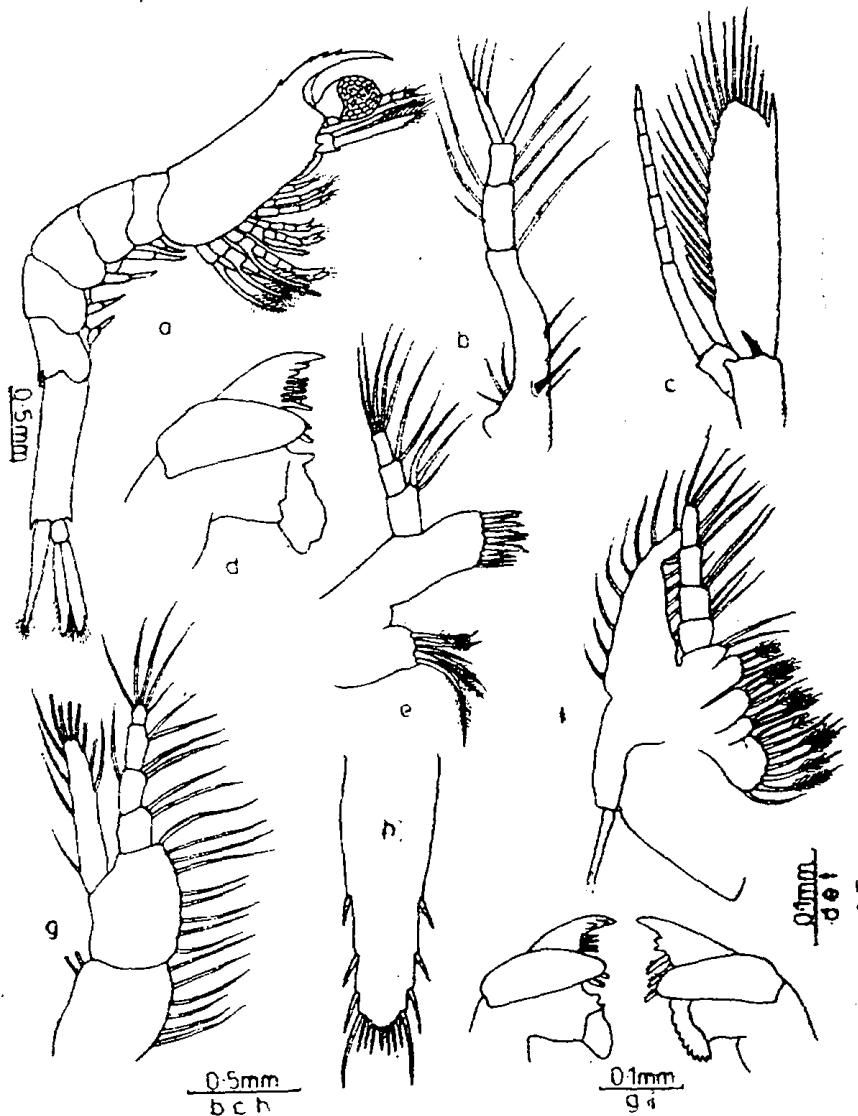


Fig. 1. *Trachypenaeopsis* sp. Burkenroad, Mysis III. (a) whole animal (b) antennule (c) antenna (d) mandible (e) maxillule (f) maxilla (g) maxilliped (h) telson (i) mandibles of L & R side, showing asymmetry.

mian spines well developed; and the anteroinferior margin of the carapace serrated forming 4-7 spinules (Fig. 1 a).

The antennule has a 3-segmented peduncle and 2 unjointed flagella of equal length, at the tip. The inner flagellum bears a single seta terminally. The basal segment of the peduncle bears a prominent spine (Fig. 1 b). Antennal scale bears numerous setae and a terminal spine distolaterally; endopod is multi-segmented. A spine present at the basal part of the antenna (Fig. 1 c). Mandibular palp unsegmented; 7 denticular setae present on the left mandible (Fig. 1 d) and 3 on the right mandible (Fig. 1 i). Maxillule without exopod; endopod 3-segmented and distal segment bears 5 setae terminally; endites have stout plumose setae (Fig. 1 e). Maxilla has an elongated exopod which bears 17 setae. The basal seta is thick and stout. The endopod with 4 segments and the terminal segment bears 3 setae. The proximal and distal endites bear strong, plumose setae (Fig. 1 f). The maxillipeds have developed exopods (Fig. 1 g). All thoracic legs with exopods.

Dorsomedian spines present only on 5 and 6 abdominal segments (Fig. 1 a). Dorsolateral and anal spines absent. Pleopods well developed, uniramous and without setae.

The telson tapers at the tip. There are 4 pairs of apical and 3 pairs of lateral spines and a median spine in the telson making the spine formula,  $7 + 1 + 7$  (Fig. 1 h).

#### Postlarval stage:

Late Postlarva: Length 6.7 mm.

Material: One specimen.

Locality: Stn. AB 18. lat.  $07^{\circ} 41' N$ ; long.  $97^{\circ} 95' E$ . (IOBC, 1969)  
South-west off Phuket in the Andaman Sea.

Rostrum short with 4 dorsal teeth and an epigastric tooth; tip pointed and slightly tilted upwards. A few short setae present in between the rostral teeth, dorsally. Antennal and hepatic spines present but pterygostomial spine absent; antero-inferior margin of carapace is round. Antennule has segmented flagella and a short peduncle. Endopod of antenna multisegmented and the scale broad, with numerous setae on its inner distal margin, a thick carina present laterally on the outer margin, with a spine at its tip.

Mandible with incisor and molar processes; palp 2-segmented. The distal segment foliaceous with numerous setae. Denticular setae disappear from the incisor. Maxillule with endites having numerous setae and endopod reduced. Thoracic legs were all found broken, but the last pair of legs appeared to be possessing rudimentary exopods. A dorsal carina present on the posterior end of the 6th abdominal segment which ends in a short spine, a characteristic feature of the genus. A short ventromedian spine is also present on the seventh

thoracic segment, in between the 4th pair of pereopods. Pleopods uniramous and bearing setae. Telson with a long median spine and 4 pairs of short apical spines and 3 pairs of posterolateral spines. The spine formula is 7 + 1 + 7.

#### DISCUSSION

The larvae of *Trachypenaeopsis* are the least known of the less commercially important genera, like *Parapenaeus*, *Trachypenaeus*, *Penaeopsis*, *Atypopenaeus* etc. The late mysis stage of *Trachypenaeopsis* is very similar to the same stage larva of *Penaeopsis*, in several characters (Paulinose, 1973). The former differs from the latter by the presence of a supraorbital spine and a hepatic spine on carapace and a dorsomedian spine on the 4th abdominal segment which are absent in *Trachypenaeopsis*. The postlarva shows some of the characteristic features of the adult *Trachypenaeopsis*, like the presence of a short rostrum and a hepatic spine, the presence of a stout antennal spine, subdentiform nature of the anteroinferior margin of the carapace, rounded pterygostomial angle and the presence of exopods on all the walking legs. The absence of a parapenaeid spine, the presence of a dorsomedian, acicular spine on the 6th abdominal segment, and a median spine in the telson are also other important characters found in the adult *Trachypenaeopsis*. Therefore, the post-larvae could be reasonably assigned to the genus *Trachypenaeopsis*.

According to de Man (1911) *Trachypenaeopsis* is closely related to *Atypopenaeus*. The larvae of *Atypopenaeus* resemble those of *Trachypenaeopsis* in the nature of the rostrum and telson. The larvae of *Atypopenaeus* can be distinguished from the larvae of *Trachypenaeopsis* by the presence of dorsomedian spines on the posterior 4 abdominal segments (3-6), the presence of a hepatic spine and by the absence of a ventromedian spine on the 7th thoracic segment.

Unfortunately, only 2 specimens were obtained from the entire 1927 IIOE collections and no detailed study could be made on the distribution and abundance of the genus. Paulinose (1982) has given some of the important characters of a few other genera.

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