

LARVAL AND POSTLARVAL STAGES OF *SICYONIA* H. M. EDWARDS  
(DECAPODA, PENAEIDEA: SICYONIIDAE)

V. T. PAULINOSE

Regional Centre of National Institute of Oceanography  
Pullepady Cross Road, Cochin-682 018

ABSTRACT

A third protozoal stage and a late postlarval stage of a species belonging to the genus *Sicyonia* are described here with illustrations. The protozoa of *Sicyonia* can be easily distinguished by the presence of the long antennular peduncle and the three long terminal setae.

Only two specimens, belonging to the genus *Sicyonia* were collected from the Indian Ocean during the International Indian Ocean Expedition (IIOE), probably indicating the rarity of the species.

*Key words*: Postlarva, *Sicyonia*, Indian Ocean.

INTRODUCTION

The development of *Sicyonia* is known for the species *S. sculpta* from the works of Monticelli and Lo Bianco (1900), Lo Bianco (1909) and Heldt (1938); and for the species *Eusicyonia stimpsoni* from the works of Pearson (1939) and for *S. wheeleri* from Gurney (1943) and *S. brevirostris* from Cook and Murphy (1965).

The larval specimens were obtained from the entire IIOE collections. One is a third protozoa and the other a postlarva. Lack of description of the larval stages of the species of *Sicyonia* from the Indian Ocean renders it difficult to determine the species of the protozoa. Since *Sicyonia lancifera* is the common species recorded from the Indian Ocean, it is only reasonable to assign both the protozoa and postlarva to this species.

DESCRIPTION

*Larval stage*

Protozoa III: Length 2.8 mm (Fig. 1), (New record). Material: 1 specimen.

Locality: Stn. Ar. Dd. 47 (IOBC, 1969), 08°53' N, 53°09' E — East of Somalia.

Rostrum very short. Carapace without supraorbital spines. Antennular peduncle long with 4 segments, the terminal segment has 3 long setae, almost equal in length and 2 short satae. All the thoracic segments are free from the carapace. The abdominal somites are well marked and possess dorsomedian spines on the first 5 abdominal somites only, increasing in length progressively. Dorsolateral spines present on the fifth and sixth abdominal somites. The uropods are well developed;

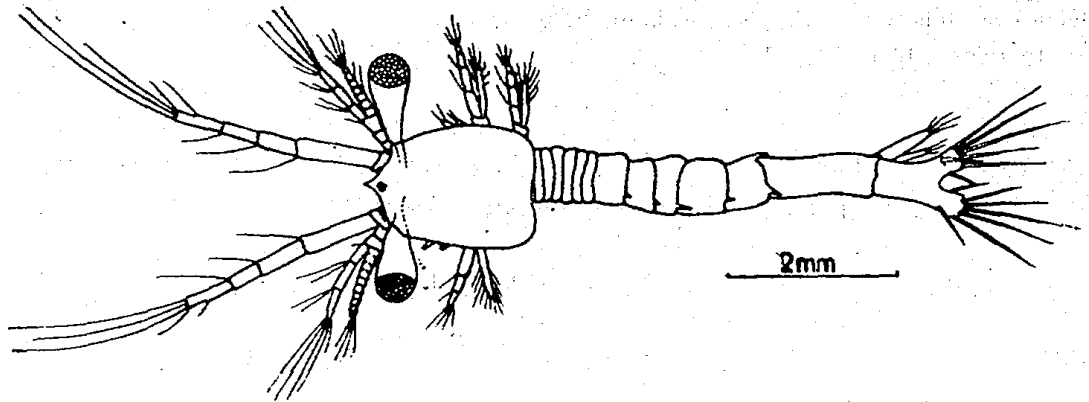


Fig. 1. *Sicyonia* H. M. Edwards, Protozoa III.

telson has a wide notch and each ramus bears 7 setae. The protozoa of *Sicyonia* can be distinguished from those of the other genera of penaeids by the presence of the long antennular peduncle and the three long antennular setae.

*Post larva* : Length 8.0 mm (Fig. 2 a-i) Material : 1 specimen

Locality : Stn. Dm 217 (IOBC, 1969), Lat. 08°58' S, Long. 104°59'E, off Krakathoa, Southwest of Java.

Rostrum extends up to the tip of the 1st segment of the antennular peduncle. Three of the rostral teeth are borne on the carapace which is a characteristic feature of *Sicyonia*. A prominent lateral carina present on both sides of the rostrum. A few central setae also present. Supra orbital and pterygostomian spines absent. The region of the antennular spine is angular. Hepatic spine present but comparatively short.

Antennule short with 2 flagella, peduncle stout and 3-segmented. The tip of the antennular scale squarish in shape with numerous setae and a terminal spine also present. Antennae (Fig. 2b, c) resemble slightly to those of *S. brevirostris* as described by Cook and Murphy (1965). Mandible has a stout, 2-segmented palp bearing setae (Fig. 2d). Maxillule has an endopodite and an exopodite with a proximal and distal gnathobasic endites. The endopodite bears a long spiny setae on its inner margin, towards the tip, and 2 short stout setae on its outer margin. It has 6 setae towards the base, on the outer margin (Fig. 2e). Maxilla has a large exopod and a small endopod with 3 short teeth at its tip. The protopod has four endites and an epipod (Fig. 2f). Maxilliped I has a well-developed, foliaceous exopod. The endopod small and unsegmented bearing a seta at its terminal end and 3 stout setae at its inner margin, in the middle portion. The distal endites are setose and larger than the proximal endites which are slightly segmented (Fig. 2g). Maxilliped II well developed with a 5-segmented endopod. A number of stout setae are present at its margin. An epipod is also present but an exopod is wanting (Fig. 2 h). The third maxilliped and the pereopods are without exopods. The branchiae on the maxillipeds and pereopods have developed two rows of small protuberances on their outer sides.

Ventromedian spines are present on the first 5 abdominal somites. The one on the 5th somite is slightly reduced. Dorsomedian spines are absent on the abdomen but there is a strong dorsal carina present throughout the abdomen. However, there is a short dorsal spine on the first abdominal somite present anteriorly. The sixth abdominal somite is 1.5 times longer than the fifth abdominal somite. Uropods are well developed. Exopods and endopods are present. Exopod of uropod is without a terminal spine with its tip rounded and bearing setae. The tip of the telson is pointed ending in a short spine. Three pairs of short lateral marginal spines are also present. Stout setae are situated on the telson plate towards the apex (Fig. 2i).

DISCUSSION

The characters like lateral carina on the lower side of the rostrum, rostral teeth on the carapace, well developed dorsal carina on the abdomen, abdominal

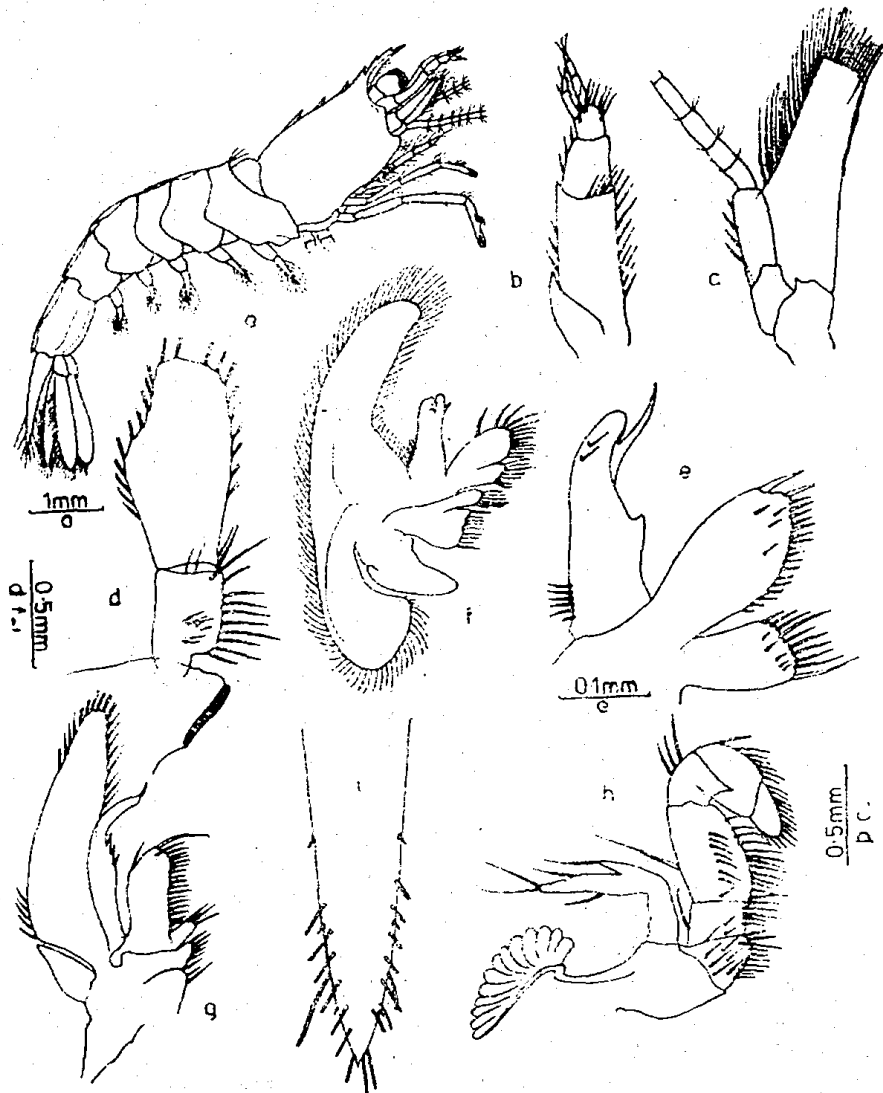


Fig. 2. *Sicyonia* Sp. H. M. Edwards, Postlarva. (a) entire animal, (b) antennule, (c) antenna, (d) mandible, (e) maxillule, (f) maxilliped I, (g) maxilliped II, (h) maxilliped III and (i) telson.

pleura armed with spines the absence of exopods on thoracic legs and a dorsomedian spine directed anteriorwards on the first abdominal somite are some of the characteristic features of the genus *Sicyonia*. The descriptions of the maxillae, mandible and maxillipeds of the present specimen agree fully with those of the genus *Eusicyonia* by Kubo (1949). Hence it is clear that the specimen belongs to the genus *Sicyonia*.

In the first place, the present protozoa possesses certain characters similar to the third protozoa of *Sicyonia brevirostris*, i.e., in the presence of paired dorsolateral spines on the fifth and sixth abdominal somites and dorsomedian spines on 1 to 5 abdominal somites. But it differs from *S. brevirostris* in the number of lateral setae on the endopod of the 2nd appendage (1 + 2 + 3 in *S. brevirostris* and 1 + 2 + 2 in the present larva). The only other species of *Sicyonia* whose stages are known is *S. wheeleri* by Gurney (1943). The important difference noted in the present specimen is that there is only a single pair of lateral spines on the sixth abdominal somite whereas there are two pairs of lateral spines in the protozoa III of *S. wheeleri*. Hence, it is difficult to assign the larvae to any of these species.

The postlarva differs from those of *S. brevirostris*, *S. stimpsoni*, *S. wheeleri* and *S. carinata* in many characters, although having more similarity with *S. brevirostris*. The only species of *Sicyonia* recorded from the Indian Ocean region is *Sicyonia lancifera* the larval stages of which are also not known. It is quite likely that these two stages belong to this species. Hence they may be tentatively assigned to *S. lancifera*.

Only two specimens were available from a total of 1927 HIOE samples. It is difficult to find any satisfactory answer to its scarcity in the Indian Ocean. However, it is noteworthy that these two specimens were collected during day time and from two distant localities, northeastern and northwestern Indian Ocean, indicating that the species is having a wide range of distribution.

#### ACKNOWLEDGEMENT

The author is grateful to Dr. V.V.R. Varadachari, Director, National Institute of Oceanography, Goa, for facilities given and to Dr. M. Krishnan Kutty for his encouragement. I also wish to thank Dr. T.S.S. Rao, Head, Biological Oceanography Division of N.I.O., Goa, for his constant interest.

#### REFERENCES

- Cook, H.L. and M.A. Murphy, 1965. Early developmental stages of the Rock Shrimp *Sicyonia brevirostris* Stimpson reared in the laboratory. *Tulane Stud. Zool.* 12(4): 109-127.
- Gurney, R., 1943. The larval development of the penaeid prawn from Bermuda of genera *Sicyonia* and *Penaeopsis*. *Proceedings of the Zoological Society of London*, Series, B.113: 1-16.
- Heldt., J.H., 1938. La reproduction Cheles crustaces. Decapodes de la famille des *Penaeides*. *Annals Institute de Oceanographie Monaco*, N.S. 18, Fascicle, 2: 36-306.
- IOBC, 1969. *Handbook to the International Zooplankton Collection*. Indian Ocean Biological Centre, Cochin, 1: 1-141.

- Kubo, I., 1949. Studies on the penaeids of Japanese and its adjacent waters. *Journal of Tokyo College of Fisheries*, **36**: 1-467.
- Lo Bianco, S., 1909. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del Golfo di Napoli. *Mitt. Zool. Sta. Neapel*, xix: 513-618 (Crustacea, Decapoda) pp. 601-618, *Sicyonia sculpta* larva like Claus, 1876, pp. 2, p. 616)
- Monticelli, F.S. and Lo Bianco, S., 1900. Sullo Sviluppo dei Penaeidi, del Golfo di Napoli (Notes riassuntive). *Monit. Zool. ital.*, xi 23-31 (*Amalopenaeus*, *Penaeus*, *Sicyonia*, *Solenocera*).
- Pearson, J.C., 1939. The early life histories of some American Penaeidae, chiefly the commercial shrimp, *Penaeus setiferus* (Linn.) *Bulletin, Bureau of Fisheries*, **49**(30): 1-73.