



NOTES ON THE TUBICOLOUS POLYCHAETE *PECTINARIA*  
(*PECTINARIA*) *ANTIPODA* SCHMARDA FROM  
LAKSHADWEEP, ARABIAN SEA

*By*

A. MISRA AND R. K. CHAKRABORTY

*Zoological Survey of India, Calcutta*

(With 8 Text-figures)

INTRODUCTION

During a faunistic survey of the Lakshadweep undertaken by the Zoological Survey of India in the winter 1979-80, one of us (A. M.) had an opportunity to make some polychaete collections from the coralline sediments of the Kavaratti Atoll. Among the material collected, an interesting tubicolous polychaete referable to *Pectinaria* (*Pectinaria*) *antipoda* Schmarda was discovered. The present paper deals with the taxonomic and ecological observations made on the species. The occurrence of this widely distributed Indo-west-Pacific species on Lakshadweep is its second record on the Indian coast, the first one being made on Andamans (Tampi & Rangarajan, 1964).

Kavaratti, the headquarters of the Lakshadweep group, situated about 300 km off the Calicut in the West coast of India. The island is about 6 km in length and 1 km in greatest breadth, lying in north-south direction. Like most of the islands in the group, the Kavaratti is bounded by coral reef enclosing a shallow lagoon in the west and storm beaches consisting of coral pebbles and boulders in the east. Sedimentological studies (Mallik, 1976, 1979) indicate that the bottom sediments of Kavaratti lagoon consist of various types of corals of sand and gravel size produced by breaking up of the reef by mechanical processes. Besides these, the calcareous algae (*Halimeda*), shells of gastropods, bivalves, foraminifers, ostracods and bryozoans are present. The reef margins are characterised by gravel and coarse sands. In the shallow lagoon the sand varies from coarse to medium. The sands almost entirely consist of calcium carbonate.

Very little information is available on the biological aspects of these islands. The pioneering work on the general fauna of Maldives and Lakshadweep Archipelago of Gardinar (1903) is followed by scant and scattered work. Nagabhushanam and Rao (1972) while dealing with

the ecological aspects of the marine fauna of Minicoy island, gave an account of the polychaete worms of the island along with a detailed faunistic list. Rao & Misra (1983) dealt with interstitial polychaetes of Lakshadweep in connection with their studies on meiofauna.

#### SYSTEMATIC ACCOUNT

Class : POLYCHAETA

Family : PECTINARIDAE

**Pectinaria (Pectinaria) antipoda** Schmarda, 1861

(Text-figs. 1-8)

*Pectinaria antipoda* Schmarda, 1861, p. 46, pl. 14, fig. 199 ;

Pruvot, 1930, p. 78, pl. 3, figs. 93-95 ;

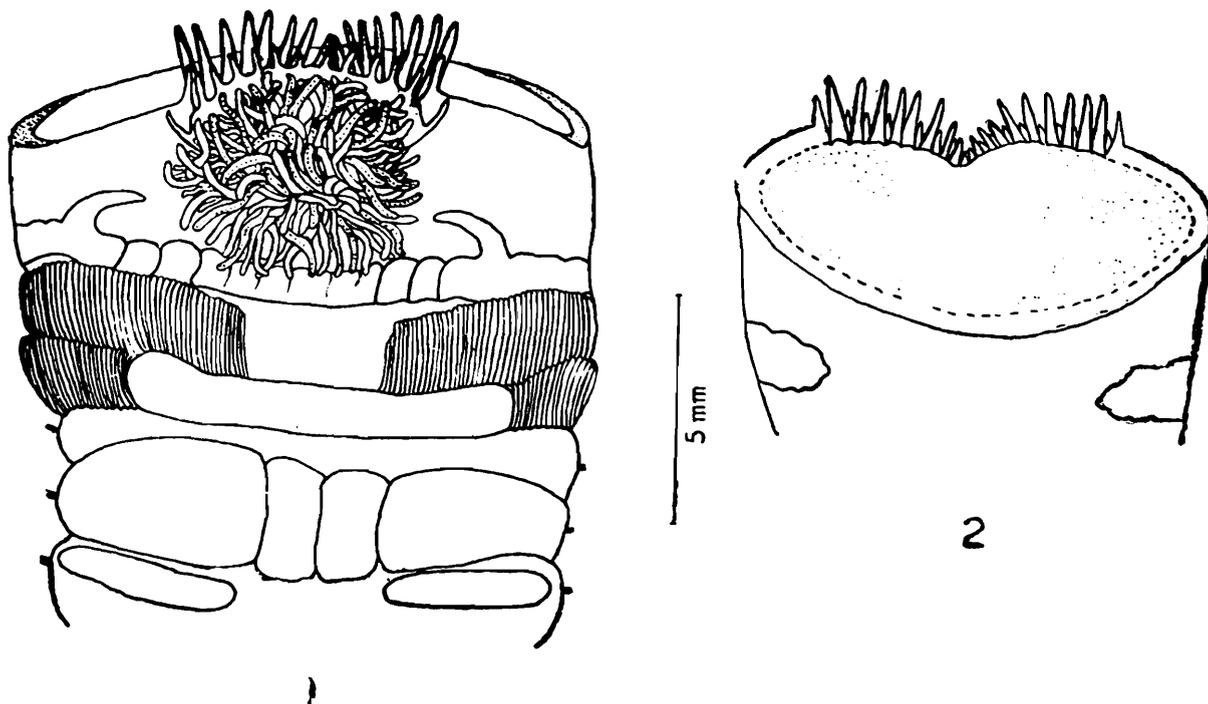
Fauvel, 1932, p. 214 ; Tampi & Rangarajan, 1964, p. 117, fig. 67-70.

*Pectinaria (Pectinaria) antipoda* Fauvel, 1953, p. 403, fig. 211 e-g ;

Gibbs, 1971, p. 193.

*Material* : 1 ex., Z. S. I. Reg. No. An 1522/1 ; B. P. Haldar & A. Misra ; Kavaratti atoll ; 1st january, 1980.

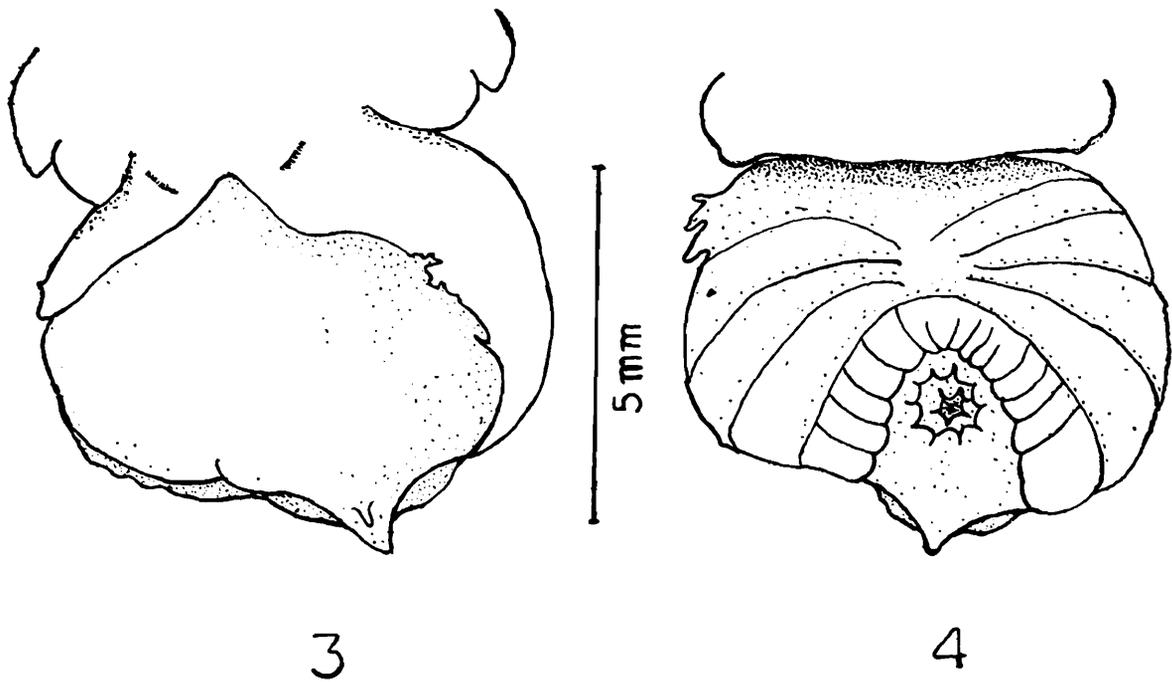
*Description* : Body large, reaching a length of 58 mm and 13 mm width across the operculum. Body large and stout with an anterior



Text-fig. 1-2. 1, ventral view of head 2. Dorsal view of head

operculum and three body regions. Cephalic region with 4 segments, thorax with 3 segments and abdomen with 14 segments. Opercular margin smooth, ventrally bears a fan of stout golden paleae (10 pairs), and ventro-laterally the first pair of tentacular cirri. A cephalic veil

forming a hood in front of mouth and surrounded by numerous buccal tentacles, quite free from the bases of the first pair of tentacular cirri and partly jointed to the operculum ventro-medially. The second pair of tentacular cirri on the 2nd cephalic segment mounted laterally on a flange which extends from the dorso-lateral surface across the ventrum. Third and fourth segments with lamellated gills. Fifth, sixth and seventh with notosetae only. Fourteen abdominal segments of which thirteen with both notosetae and uncini and the next one with only notosetae. Nine to ten scaphal hooks on each side of the dorsal surface at the junction of abdomen and scaphe. Scaphe large, oval and well differentiated from the abdomen, with more or less smooth edge and broadly pointed anal ligule with a small anal cirrus. Notosetae all capillaries and of two types, one with narrow, straight, winged and smooth tips, the other with spinulose tips. Uncini with two rows of seven major teeth and three to four minor teeth above the basal gouge.



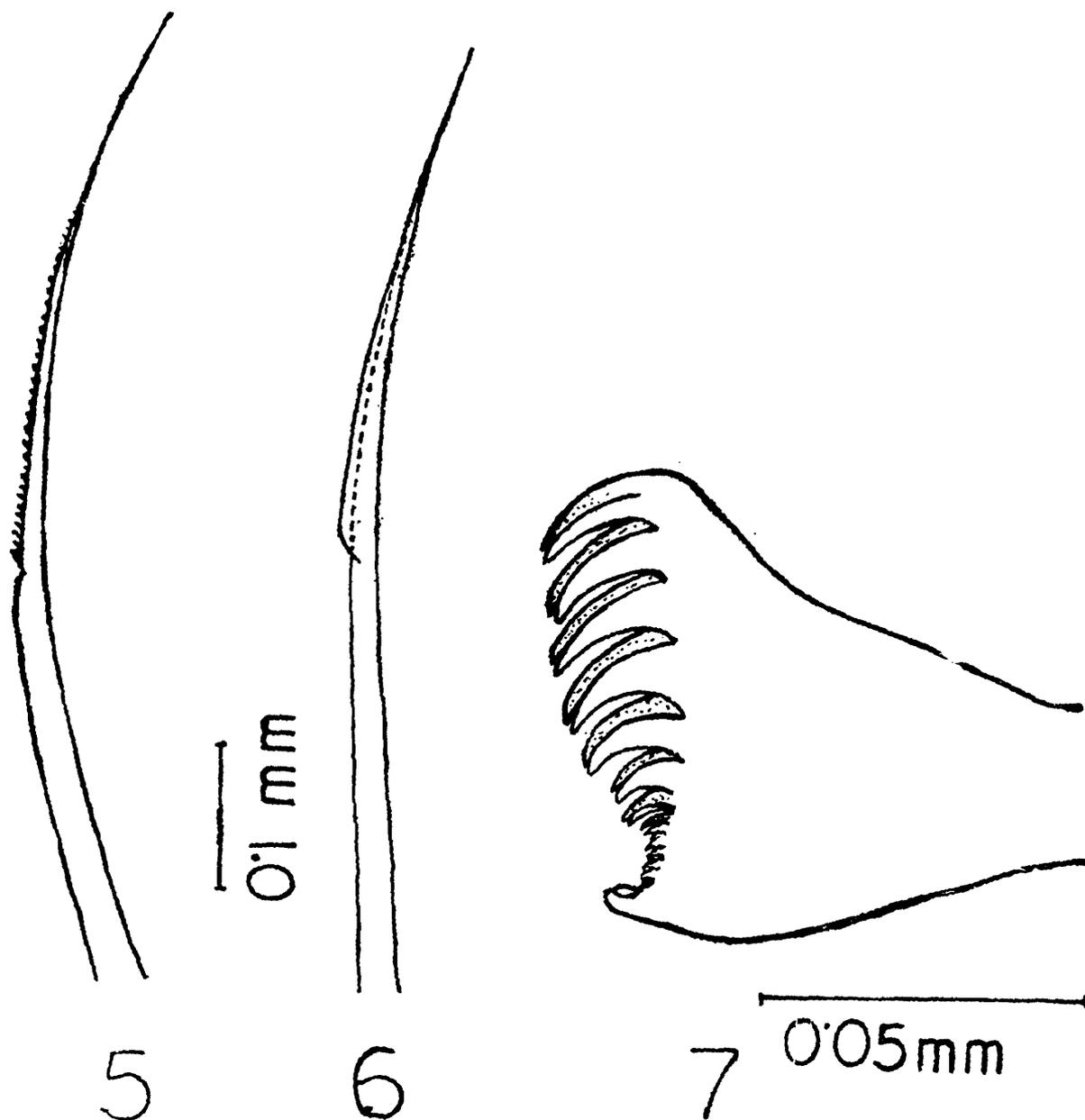
Text-figs. 3-4. 3. Dorsal view of scaphe 4. Ventral view of scaphe

The calcareous tube (Text-fig. 8) is cylindrical and hollow tusk-shaped, gradually narrowing to the posterior end. It is mostly composed of uniformly small-sized gastropod shell cemented together by calcareous substance secreted by the worm. The gastropod shells are placed uniformly directing the operculum outward. The tube is 90 mm long. Its diameter varies from 14 mm at the anterior end to 6 mm at the posterior end.

*Ecological notes :*

The specimen was collected at two meters depth in the lagoon bottom towards the reef. The tube opens at both the ends, absolutely

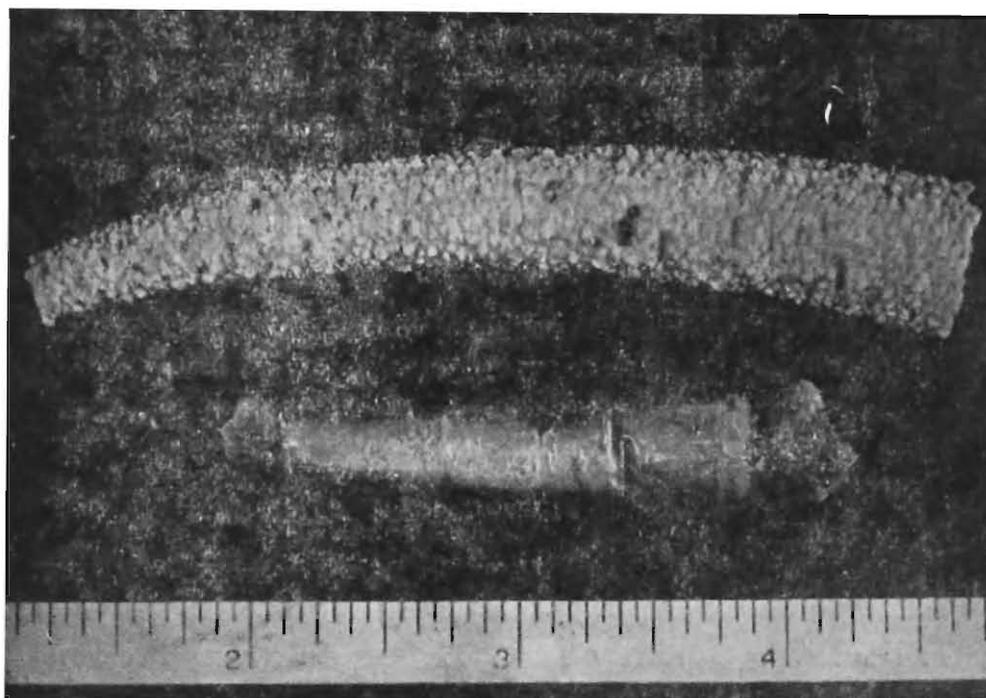
free and 3/4th of it remains buried in the loose coralline sand. The rear end of the tube normally projects above the surface of the sand. From the position of the anterior end of the tube below the sediment surface, it appears that the species is a sub-surface detritus feeder. As the tube is free, the worm is free to move from place to place in search of food.



Text-figs. 5-7. 5 & 6. Notopodial capillaries 7. Uncinus.

*Remarks:* After the original description by Schmarda (1861) from New South Wales, Australia in the Pacific Ocean, the species was subsequently been reported from New Caledonia, Pacific Ocean (Pruvot, 1930); Koweit Harbour, Persian Gulf (Fauvel, 1932); Andamans, Indian Ocean (Tampi & Rangarajan, 1964) and Solomon Islands, Pacific Ocean (Gibbs, 1971). The present record from Lakshadweep, Indian Ocean helps to bridge a long distributional gap between the Persian Gulf and the Andamans in the Indian Ocean.

Taxonomically, the present specimen closely agrees with the species *Pectinaria (Pectinaria) antipoda* Schmarda except for the following minor variations. Cephalic veil partly fused to the operculum, scaphe distinctly separated from the rest of the body and neither indented nor papillose, notosetae capillaries with winged and smoothed tips, uncini with double rows of seven major teeth only. We consider that these differences can reasonably be regarded as intra-specific variations. However, the tube of the species is characteristic in that the building material composed mostly of very carefully selected small gastropod shells cemented together by the calcareous substance and placing the opercular surface of all the shells outwards.



Text-fig. 8. Calcareous tube and the entire worm.

Though the surface sediment is richer in organic content, the top few centimeters of the substrate below to it contain organic matter richer in bacteria. The worm obtains its food with the help of buccal tentacles extending them through the sediment and collecting the organic material into the mouth in much the same way as the worms that feed at the surface. Thus, the species is protected better from any predators than those of the surface feeders. But as the detritus could not be collected very rapidly in the sub-surface sediment, the worm is frequently compelled to move out from place to place. Such a report of free movement is well known in *Pectinaria* and *Cistenides* (MacGinitie & Mac Ginitie, 1968). This involves the risk of damage to the tube in the long run and ultimately the utility of the tube in providing a shelter to the worm.