

ON THE OCCURRENCE OF *LEPIDASTHENIA OHSHIMAI* OKUDA  
(FAM. POLYNOIDAE, POLYCHAETA) IN PALK BAY, SOUTH INDIA\*

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INTRODUCTION

THE genus *Lepidasthenia* enjoys a world wide distribution and has been reported from all oceans of the world. Over 40 species have been reported so far and are distributed on the Western and Eastern shores of North America, Hawaiian Islands, Philippine Islands, Japan, China, New Zealand, Australia, East Indies, Maldives, Minicoy, Zanzibar, Red Sea, Persian Gulf, Mediterranean Sea, Galapagos Islands and the Atlantic Ocean. Potts (1910) recorded the following four species in the Indian Ocean, viz., (1) *L. elegans* (Grube) in Zanzibar; (2) *L. maculata* Potts in Prison Island, Zanzibar; (3) *L. microlepis* Potts in Hulule, Male atoll, Maldive Archipelago; and (4) *L. minikoensis* Potts in Minicoy. *L. microlepis* has also been recorded from the coral stones in Andaman islands (Fauvel, 1953). *L. minikoensis* was first recorded in Minicoy in a tube with *Iphione muricata*. Crossland has collected *L. minikoensis* from Galapagos Islands living as commensals with a terebellid (Monro, 1928). *L. maculata* var. *striata* is said to live in tubes of *Phyllochaetopterus* (Fauvel, 1953).

In 1931 Prof. H. Ohshima and Mr. H. Ikeda observed another interesting instance of commensalism in this genus. They collected two large specimens with somewhat incomplete pygidia from the burrows of the apodus holothurian, *Protankyra bidentata* (Woodward et Barrett) below the low tide-mark at Tomioka Bay, Kumamoto Prefecture, Japan. Okuda (1936) observed certain peculiarities in the setal structure of these two worms and described them as *Lepidasthenia ohshimai*, a species new to science. It is remarkable that this is the only species in this genus which lives as a commensal with a holothurian. This species has not been reported so far from elsewhere, and even in the type locality several attempts to collect this specimen in 1935 were not successful.

During the course of investigation of the bottom fauna of Palk Bay (79° 09' E, 9° 20' N.), two specimens of this genus were collected from a depth of 6 fathoms using a Petersen's grab. One measuring 88 mm. in length was slightly incomplete at the posterior portion, but the other was complete with the pygidium and measured 96 mm. in length. After careful examination and comparison with Okuda's (1936) description, they have been identified as *Lepidasthenia ohshimai*, and their occurrence in Palk Bay extends the distribution of this species to Indian Ocean. The photograph of this species given by Okuda is not satisfactory and the posterior portion of the animal is not known. A brief description of the species is given to fill up the existing lacunae so that it may be useful to other scientists working in the field.

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*Lepidasthenia ohshimai* Okuda

The complete specimen with 80 setigers measures 96 mm. long and 3 mm. broad excluding the feet (Plate I, figs. 1 & 2). Posteriorly it terminates in an anal segment devoid of setae and carries a dorsal anus and two short anal cirri, situated ventrally. The dorsum is slightly arched and the ventral surface is flat with two raised, rounded, lateral ridges running along the entire length. The prostomium is nearly hexagonal, broader than long, with well-marked median sulcus, dividing it into two halves (fig. 1). The anterior pair of eyes is large, rounded, dorso-lateral in position and slightly anterior to the middle of the prostomium. The posterior pair, smaller than the anterior, is located at the postero-lateral corners. The lateral as well as the median tentacles are mounted on broad, elongated ceratophores. The median tentacle is slightly longer than the laterals. A pair of stout tentacular palps, three times as long as the median tentacle, with its surface covered with numerous, short, slender papillae is present. Two pairs of tentacular cirri, with a bulbous enlargement ending in a short terminal filament, are mounted on short cirrophores. The dorsal pair, twice as long as the median tentacle, is slightly longer than the ventral pair but shorter than the tentacular palps. Behind the prostomium there is a small, crescentic nuchal gibbosity, the margin of which is smooth. On either side of the posterior margin of the prostomium, a small papilla is seen situated in the nuchal groove.

The parapodia are well developed, project laterally and slightly longer than the width of the body in the middle and posterior region. The notopodium is reduced to a small knob with an enclosed aciculum (fig. 2) and is devoid of setae. The neuropodium is an elongated, conical structure with two vertical, parallel, nearly equal, rounded fillets. The dorsal cirri are long with filiform tips, inserted on elongated cirrophores (fig. 3) and extend beyond the tips of the setae in the anterior region of the body. In the posterior region, however, they are shorter. The ventral cirrus of the first setiger arises from the base of the foot (fig. 4) and is nearly three times as long as the ventral cirrus on the second setiger. From the second setiger onwards the ventral cirri are short, inserted on the middle of the parapodia and do not reach the end of the parapodia.

The neuropodium carries 13-15 upper, bidentate and 9-10 lower, unidentate setae arranged in a vertical spreading fascicle. In addition to this, there is a small semicircular arc of 4-8 unidentate setae ventrally. The upper bidentate setae (figs. 5 & 6) measuring 2400-2700  $\mu$  long and 22-25  $\mu$  broad, have their tips bifurcated into two unequal, slender, sharp spines, the longer spine nearly 4 times as long as the shorter one. The bidentate setae bear 12-14 small, thin, curved, smooth-edged plates. Vertical lines are seen running along the shaft from the bifurcation. The unidentate setae of the neuropodium (fig. 7) have fine, long, curved tips and 8-9 lamellae in the spinous region. The setae from the ventral semicircular arc (fig. 8) resemble the unidentate setae of the neuropodium but the number of lamellae in the spinous region are more, being 12-13.

There are 31 pairs of small elytra, inserted on segments 2, 4, 5, 7, 9 . . . . 21, 23, 26, 29, 32 etc. as characteristic of the genus and continue to the hind-end of the worm. The first pair of elytra is large, almost circular, measuring 1.45 mm. in diameter and covers  $\frac{3}{4}$  of the prostomium. The inner margins are brown in colour. The succeeding elytra are very small, slightly broader than long (fig. 9), colourless, inserted on the distal end of long elytriphores and project horizontally on either side of the body, the tips of the elytra reaching the tips of pedal lobes in the anterior region (fig. 2). In the posterior region the elytriphores become gradually shorter

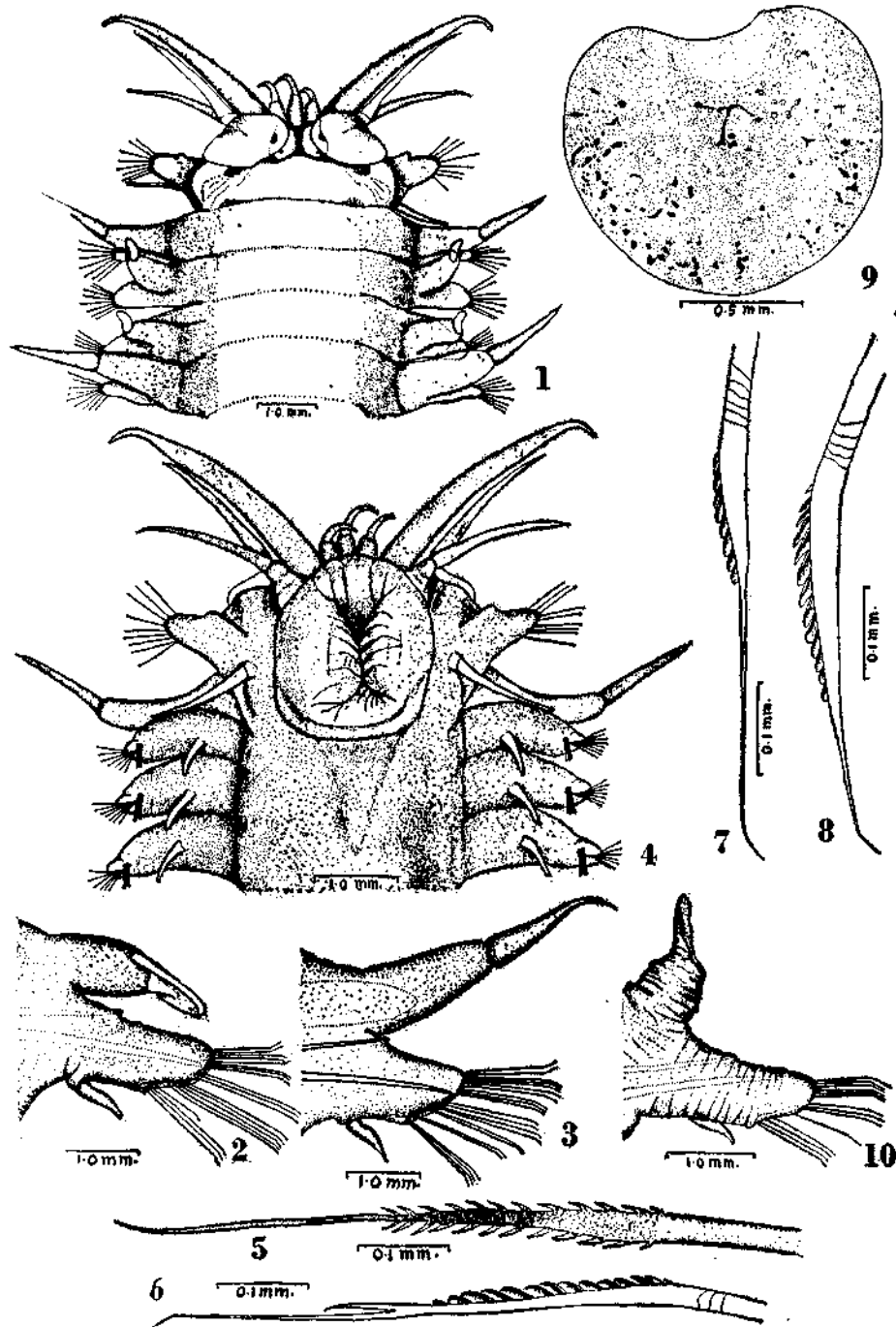


FIG. 1. Anterior extremity in dorsal view. FIG. 2. 15th parapodium of the right side, posterior view. FIG. 3. 16th parapodium of the right side, posterior view. FIG. 4. Anterior extremity in ventral view. FIGS. 5 & 6. Two views of upper, ventral, bidentate bristle from the 15th parapodium. FIG. 7. Unidentate bristle of the 15th parapodium. FIG. 8. A seta in the ventral semicircular arc of the 15th parapodium. FIG. 9. Elytra from the 15th setiger. FIG. 10. 71st parapodium of the right side, posterior view.

with the result that the tips of elytra do not reach the tips of the pedal lobes (fig. 10). The scar of the elyrophore is elongated in an antero-posterior direction.

Nephridial papillae are small, whitish and they open in each segment on a small conical mass situated between the lateral longitudinal ridge and the base of the parapodia on the ventral side. They are first noticed from the 7th setiger and are more prominent in the middle and posterior regions.

#### Colour

The dorsal surface of the worm is steely grey with bluish reflections. The dorsal cirri are black, standing out as a clearly demarcated distal segment of the cirrophores, which are brown. The second incomplete specimen was of a lighter colour with a narrow chocolate brown transverse band at the posterior margin of each segment on the dorsal side extending from one foot to another.

#### Locality

Palk Bay, South India, muddy bottom at a depth of 6 fathoms.

#### REMARKS

It will be seen from the description that *L. ohshimai* markedly differs from all other species of *Lepidasthenia* in the nature of the bifid, ventral bristle. It bears a close resemblance to *L. sibogae* recorded by Horst (1917) off the North-East point of Timor at a depth of 27-54 meters in which the ventral bifurcated setae have a long, acute, slender limb 2-3 times as long as the shorter limb. But *L. sibogae* differs markedly from *L. ohshimai* in having elytra in the form of minute, oval buds mounted on long elyrophores with annular grooves. The dorsal cirri also are inserted on long, annulated cirrophores in *L. sibogae*.

As stated already *L. ohshimai* is the only species of this genus which is reported to live as a commensal on a holothurian. Since the Palk Bay forms were obtained with a grab from a depth of 6 fathoms it is difficult to say whether they live as a commensal or not. However, it is a point of interest to note that no holothurian has been encountered so far in a number of grab collections made from the locality in which the worms were found and as such one can reasonably conclude that the forms occurring in Palk Bay are free living in soft mud.

#### SUMMARY

The paper records the occurrence of *L. ohshimai* Okuda in Indian waters for the first time and points out the differences with relation to other species of *Lepidasthenia* occurring in Indian waters.

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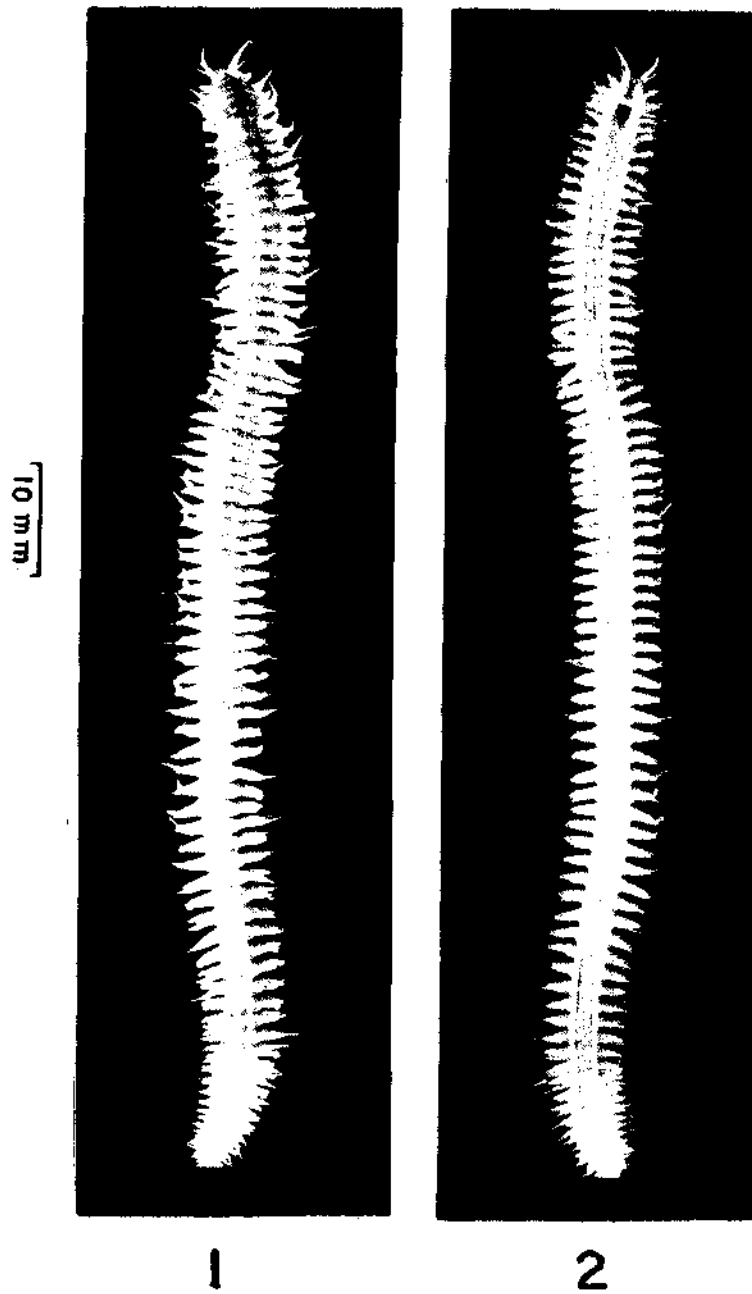


PLATE 1, FIG. 1. Dorsal view of an entire worm measuring 96 mm. in length. FIG. 2. Ventral view of the same animal.

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