

STUDIES ON NEW OR LITTLE KNOWN POLYCHAETES FROM
INDIAN SEAS

1. *TROCHOCHAETA WATSONI* (FAUVEL) AND *POECILOCHAETUS*
SERPENS ALLEN*

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INTRODUCTION

DISOMIDAE Mesnil 1897, a well established family is known through only two genera, *Disoma* Oersted 1843 and *Poecilochaetus* Claparedi 1874. Hannerz (1956) included *Poecilochaetus* in a separate family *Poecilochaetidae* and Pettibone (1963) established a new name *Trochochaetidae* for Disomidae Mesnil 1897 (=Disomididae Chamberlin, 1919) since it has been preoccupied in protozoa (Ehrenberg, 1831) as cited by Pettibone (1963).

These two families are represented in the Indian region by *Trochochaeta orissae* (Fauvel) (= *Disoma orissae* Fauvel, 1932) and by *Poecilochaetus serpens* Allen, the larval forms of which were described by Ganapati and Radhakrishna (1958) as those of *Poecilochaetus* sp. from plankton off Waltair coast and by Banse (1959) based on collections of larval fragments and a complete larva of 29 setigers from Mandapam (Gulf of Mannar). The larval forms of *Poecilochaetus* are known for retaining their pelagic habits until late stage in development unlike the larvae of other sedentary polychaetes. Thorson (1946) remarks that in spite of the fact that adult specimens of *Poecilochaetus serpens* have never been recorded from the Sound, the larvae are common in summer plankton and he considers them as 'drift larvae' originating from parents which live in water areas far from the Sound. The record of the adult from the Gulf of Mannar shows that the larvae described from Waltair and Gulf of Mannar might have been from the adults from the nearby areas.

In the present paper *Trochochaeta watsoni* (Fauvel) is reported for the first time from Indian region. The description of only the anterior portion of *T. watsoni* (Fauvel) is available and it is supplemented with a discussion on its similarities with *T. multisetosum* (Oersted) and *T. orissae* (Fauvel) which have got close resemblance with this species. The description of an anterior portion of 56 setigers of an adult specimen of *P. serpens* Allen is also given here since the adult of this species is so far not reported from the Indian region.

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Trochochaeta watsoni (Fauvel) 1916 (Fig. 1)

Disoma watsoni Fauvel, 1916, P. 1, fig. 1, a-i.

Trochochaeta watsoni Pettibone, 1963, P. 315-316, fig. 83, h-k.

Material: Two complete specimens, off Azhikode (15 miles North of Ernakulam along south west coast of India) at 15-30 fathoms depth; 11-1-1968.

First specimen, length 6.5 mm. Width 0.9 mm. (thorax); 0.3 mm. (abdomen).
Second specimen, length 3.25 mm. Width 0.5 mm. (thorax); 0.25 mm. (abdomen).

Description: This species was originally described from a single anterior fragment of 9 segments from off Nova Scotia in 1332 metres. Pettibone (1963) supplemented this description from two anterior fragments, the largest of 32 segments from off Massachusetts in 906 fathoms blue mud (*Albatross* station 2076).

The present specimens, 6.5 and 3.25 mm. long, have 42 and 26 setigerous segments respectively. Body wormiform, divisible into a dorsoventrally flattened thoracic region and a cylindrical abdominal region. Prostomium fusiform, slightly notched with the crest extending slightly beyond first setiger; four eyes, two dorsal and two lateral. Occipital antenna not distinct in the present specimens (with or without occipital antenna—Pettibone 1963, p. 315). Only one right tentacular palp in the larger specimen (Fig. 1, A), a scar in the left side at the base of prostomium and notopodia of first segment. Postsetal lobes of notopodia and neuropodia of the first two segments lanceolate, projecting anteriorly and the neurosetae long, slender, fan-shaped ending in capillary tips directed beyond prostomium. Capillary notosetae shorter and slender. On setiger 2, neuro setae include four transparent arched acicular spines ending in round tips (as in *T. multisetosum*) with alternating arched strong setae tapering to fine tips. Fauvel (1916) has given this and Pettibone (1963) points out that none of these seem to be specialised as acicular spines. Mouth large and ventral, the anterior margin of the second segment forming the lower lip.

Fan-shaped slender capillary notosetae in the 3rd setiger. The neurosetae include 4-6 stout curved acicular spines (3-4 in the present specimen) with black or dark brown shades (Fig. 1, F.). The post-setal lobes elongated and ovoid and not serrated as in *T. multisetosum*. In setiger 4, the notosetae are long thin capillary, the neurosetae shorter, slightly stouter tapering to fine tips. The post-setal lobes oval.

The rest of the thoracic segments, setigers, 5-9 have strongly limbate neurosetae with curved tapering fine tips; dark brown to black as the acicular spines of setiger 3. The limbate curved margin striated (Fig. 1, H.). Capillary neurosetae long, thin and doubly curved, distinct in the smaller specimen. The notosetae, straight or slightly curved, capillary, appear like fan-shaped bundles. No spinous appearance. In the doubly curved neurosetae also the spinous appearance is not much clear. Post-setal lobes of the thoracic setigers ovoid.

Notopodia absent from setiger 10 onwards. The neuropodial setae are transitional. Conical neuropodia with 3-4 acicular setae having fine curved tips and in the posterior region 1-3 slender acicular setae and fine hairy capillary setae. Digitiform neuropodial post-setal lobe with subpodial undulating thin flanges ex-

tending posteriorly to the next setiger (Fig. 1, C). The posterior region continues to the achaetous segments and end with pygidium having fleshy conical lobes (Fig. 1, L).

Colour: Thorax fleshy orange. Abdomen white in spirit.

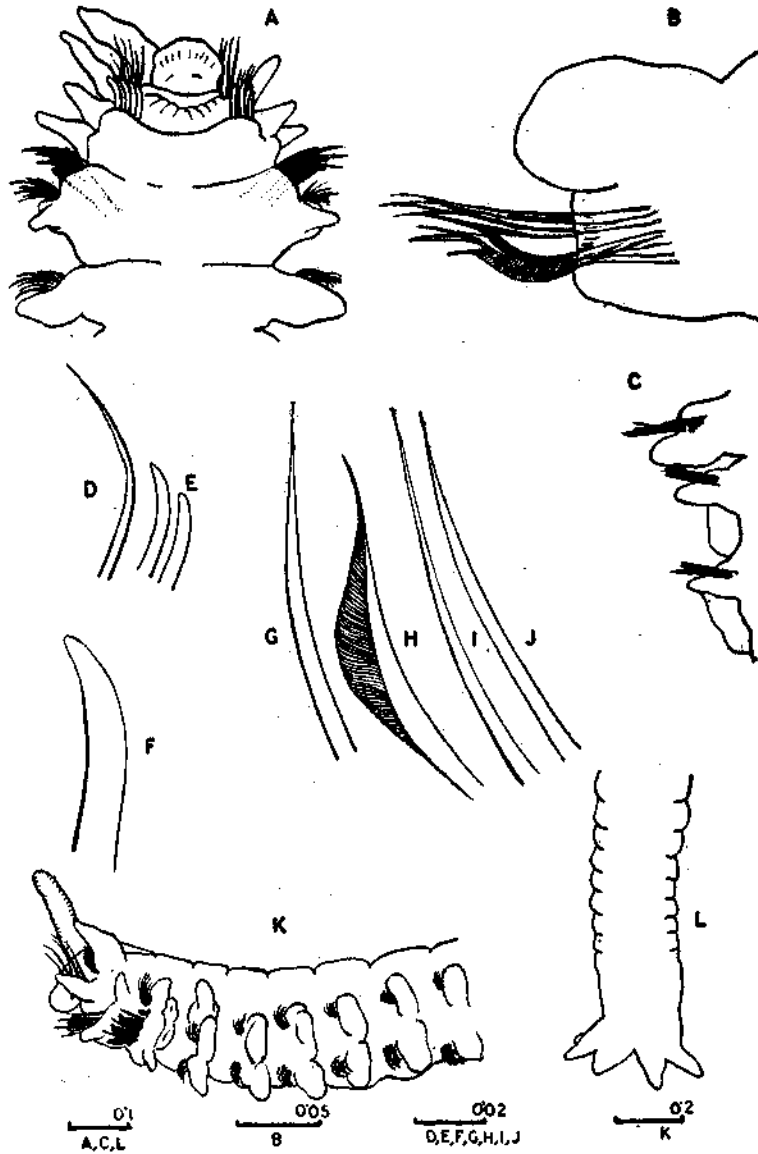


FIG. 1. *Trochochaeta watsoni* (Fauvel)—A. Anterior region, ventral view; B. Sixth parapodium dorsal view, notopodial setae not shown; C. Tenth, eleventh and twelfth parapodium of left side; D. and E. setae of second setiger; F. Acicular setae from third setiger; G to J. Neuropodial setae of sixth setiger; K. anterior region lateral view; L. Pygidium. (Scale in mm).

Habitat : Live in 15-30 fathoms depth, in dark grey mud along with tubes of sabellariid worms.

Distribution : Off Nova Scotia to off Massachusetts in 740 to 906 fathoms. Indian Ocean.

Remarks : *Trochochaeta watsoni* resembles *T. multisetosum* (Oersted) in the presence of acicular neuropodial spines in the second and third setigerous segments, in the subpodal undulating thin flanges extending posteriorly at the anterior abdominal region and in the pygidium having fleshy conical lobes. But it differs from *T. multisetosum* in the absence of serrated post-setal lobes of notopodia and neuropodia in the thoracic region and in the presence of strongly limbate acicular neurosetae with strong lamination in the limbate margin.

Apart from Fauvel's description of *T. orissae* from off Puri, Orissa coast, Kirkegaard (1959) reported three specimens of *T. orissae* from the Atlantic coast (Liberia, Nigeria, Gold Coast) and he mentions that those specimens agree with the characters and figures of *T. orissae* as given by Fauvel (1932). The present specimens resemble this species in having four prostomial eyes and the globular or oval post-setal lobes in the thoracic region but differ in the absence of the small erect median tapering prostomial tentacle. The lateral eyes are more prominent than the dorsal pair of eyes in *T. watsoni*. The doubly curved limbate bristles and the ventral papillae of the posterior region found in *T. orissae* are absent in *T. watsoni*. The nature of the posterior end of *T. orissae* (Fauvel) is however not known for comparison. The strongly limbate acicular neuroseta with strong lamination in the limbate region (G. Fauvel, 1916 Fig. 1) is characteristic (Fig. 1, H) of *T. watsoni*.

Poecilochaetus serpens Allen, 1904 (Fig. 2)

- Poecilochaetus serpens* Fauvel, 1927, p. 67, fig. 23, a-m. (Synonymy) Thorson, 1941, p. 101 ;
 Ganapati and Radhakrishna, 1958, p. 223, pl. 6, fig. 55-56 ;
 Banse, 1959, p. 170 ;
 Hannerz, 1961, p. 12, pl. 4, fig. 4 a-b ;
 Day, 1961, p. 497 ;
 Day, 1963, p. 365.

Material : A single anterior fragment of 56 segments of adult worm. Pamban (Gulf of Mannar). 21-2-1968. Intertidal.

Description : Body long, slender, almost cylindrical with slight dorsoventral flattening. Segments smooth. The anterior fragment of the worm measures 27 mm with width 1 mm.

Prostomium rounded, with an unpaired antero ventral conical short 'antenna'. Two pairs of eyes, the anterior lateral pair larger and more conspicuous than the dorsal pair. A well developed nuchal organ with three lobes (Fig. 2, A), elongated

in the form of antenna, arises at the posterior margin of the prostomium, the lateral lobe reaching up to the third setiger and the median to the fourth (Fauvel describes that the two lateral attains up to the 4th setiger and the median still longer—



FIG. 2. *Poecilochaetus serpens* Allen—A. Anterior region dorsal view; B. Parapodium from ninth setiger; C. Acicular setae from second setiger; D. and E. Tip of spinose and plumose setae from ninth setiger; F. Spine like seta with distal tuft from fiftieth setiger; G. Sixth parapodium in anterior view; H. Twenty-fifth parapodium in anterior view.

may be in the present specimen shorter due to preservation). Two very long filiform grooved palps, 7 to 8 mm (incomplete) in length.

The 1st setiger well developed, projects anteriorly on either side of the prostomium with rudimentary dorsal cirrus and with a very conspicuous ventral cirrus and very long and smooth setal fascicles projecting forward to form a cephalic cage (Fig. 2, A).

From 2nd to 6th setiger, dorsal and ventral cirri fusiform with smooth simple capillary bristles and few notopodial spinous setae. In the second and third setiger four transparent strong, curved, falcate neuropodial spines with rounded tips are present.

From 7th to 13th setiger, the dorsal and ventral cirri flask shaped; the bases thickened and the slender neck terminating in a knob. The notopodia and neuropodia similar with long capillary setae and few spinous setae. From segments 14 onward the cirri are conical with same type of bristles (Fig. 2, H.) and from the 17th segment the smooth capillary bristles are replaced by plumose bristles up to the 56th segment. Since the posterior portion is not available, details regarding the large heavy spines that replace the dorsal notopodial setae in the posterior region are not known. Coelomic free eggs visible behind the 20th setiger to the posterior-most segment. Clark (1952) reports that fully adult worms have been recorded only at Plymouth and at Clare Island, off the west coast of Ireland.

Colour : Greenish purple with transverse dark purple dots when examined under high power.

Habitat : In fine sand, mixed with silt by the side of intertidal channel exposed during low tide.

Distribution : English Channel, Irish Sea, Skagerrak Azores, Canary Island, Mediterranean, South Africa (off South Coast), Indian seas (Gulf of Mannar, Waltair).

Remarks : Day (1961) recorded four fragments of *P. serpens*, the largest fragments having 30 setigers from 34.36S./22.05E. in 95 metres. He mentions that his specimens 'show very clearly that the anterior "antenna" arises not from the prostomium, but from the dorsal lip below it', agreeing with the descriptions and figures of Allen (1904). In the present specimen also it appears as arising from the dorsal lip.

Ganapati and Radhakrishna (1958) reported that the *Poecilochaetus* larvae are common throughout the year off Waltair coast but in January and February the numbers will be very few and the earliest stage observed had 22 setigerous segments. Banse (1959) described that the two larvae (complete specimen with 29 setigers) he collected in April and the larval fragments from the same place in September are of same age and that the adult features of the larva of 29 setigers from Mandapam are definitely more developed than those in the 34 setiger stage of Hannerz (1956) from Sweden and that this can be the difference in the rate of growth in the tropical conditions. Day (1963) reported a juvenile of this species from South African region. While recording the adult of *P. serpens* from Norfolk, Hammond (1966) comments that this species was observed only as large larvae in

the summer plankton from July to October. Out of the five species known of this genus, only the larval stages of *P. serpens* are reported from Indian region and the present account of the adult specimen is the first from this area.

SUMMARY

Trochochaeta watsoni (Fauvel, 1916) is reported for the first time from the Indian region. The nature of the posterior region of this species which is hitherto not known is supplemented with a full description.

A detailed description of the anterior portion of the adult specimen of *Poecilochaetus serpens* Allen, which has not been reported from the Indian region and the larvae of which only are known from the east coast of India, is given.

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