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DESCRIPTION OF A NEW POLYCHAETE
THORACOPHELIA YASUDAI N. SP.¹⁾

BY

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(With 4 Text-figures)

The genus *Thoracophelia* was proposed by EHLERS in 1897 for a sedentary polychaete species, *T. furcifera*, found in Punta-Arenas, Magellan's Str., South America. The genus was characterised among the Opheliidae in having three distinct divisions of the body, but its detailed diagnosis has not yet been given, because no specimen of the polychaete has been found since. Recently I had the good fortune to examine many living specimens belonging to the genus. The Japanese species is different from the South American in the possession of remarkable pectinate gills and is undoubtedly new to science.

Before proceeding further I wish to tender my cordial thanks to Prof. Tohru UCHIDA for his constant guidance and also to Prof. P. FAUVEL of Angers, France, for his valuable advice and kindness in sending me important literature. I must also express my gratitude to Mr. S. YASUDA, of the Daishoji Middle School, for placing specimens at my disposal.

Thoracophelia yasudai n. sp.²⁾

The body is 27-43 mm long and 3 mm wide at its widest part. The entire body is markedly divided into 3 regions; the anterior

1) Contribution No. 79 from the Zoological Institute, Faculty of Science, Hokkaido Imperial University.

2) The species is named in honour of Mr. S. YASUDA.

(cephalic) inflated, the middle (thoracic) rounded and the posterior (abdominal) region with a deep ventral groove. The anterior region,

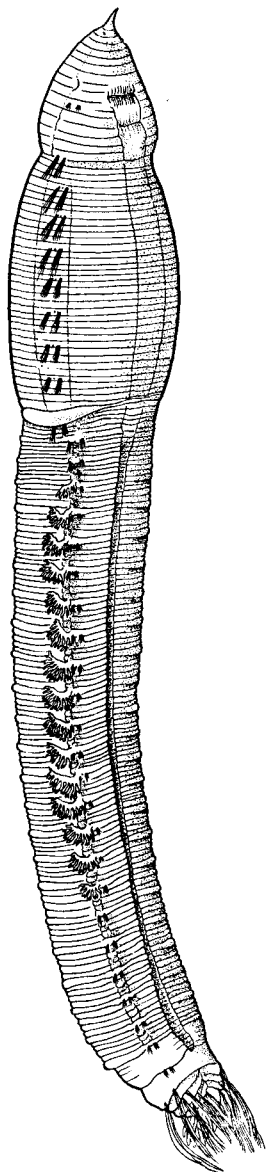


Fig. 1. *Thoracophelia yasudai*
n. sp. Lateral view. $\times 2.6$.

of about 1/10 the total body length, is plump, spindle-shaped, and clearly demarcated from the middle portion by a deep muscular constriction. Its dorsal surface is marked with 15 transverse annulations. The prostomium consists of a rather prominent cone resembling that of *Ophelia* and is divided into 5 annuli. On its dorsal surface is present a pair of tiny eyes situated at the base of the prostomium. The peristomium bearing the mouth, nuchal organs and the first setae-tufts, consists of 5 annuli. The mouth has prominent anterior and posterior lips. Two grooves run from the base of the prostomium backwards along the lateral edges of the mouth, which are connected with the lateral edges of the ventral groove. Just behind the mouth there is a shallow transverse furrow. A pair of the nuchal organs are situated on the 7th-8th annuli as depressions on the peristomium. The setae-tufts are first found at the 10th annulus. From the eyes faint lateral furrows run backwards to the end of the middle region, covering the sensory organ, and just along the dorsal side of the row of setae-tufts in the middle region. The middle region, of about twice the length of the anterior one, is inflated on both

lateral sides, arched above, and flattened ventrally. There are 8 setigerous segments, each of which is composed of 5 annuli. The slit-like sensory pits are situated between the notopodials and neuropodials from the 3rd to the 9th setigerous segments (7 pairs in all). Prominent spindle-shaped lateral ridges protrude from the last segment of the middle region (10th setigerous segment). The annulus having these lateral ridges is the last one in the segment and is provided with two bundles of setae on the posterior side of the

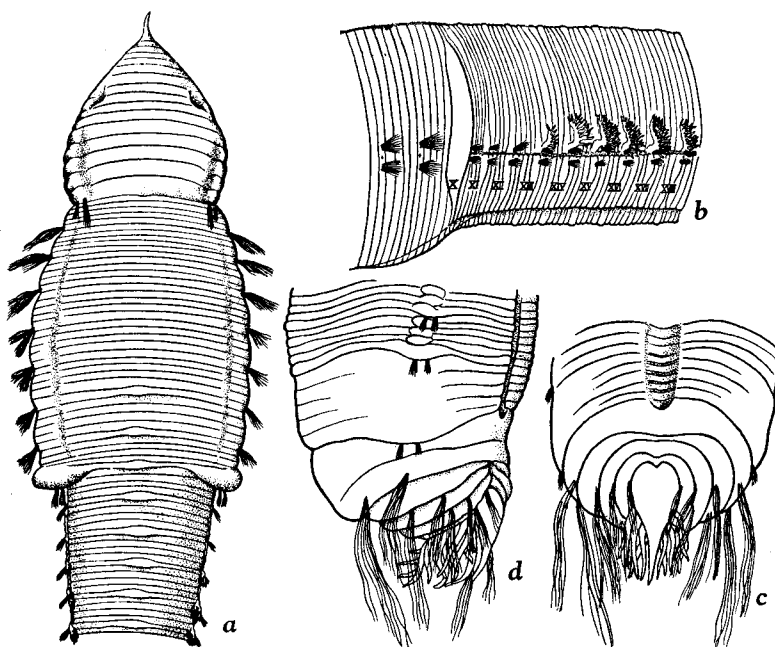


Fig. 2. *Thoracophelia yasudai* n. sp. a. Anterior portion, dorsal view. $\times 4.5$. b. Left aspect of segments, VIII to XVIII. $\times 6$. c. Posterior end, ventral view. $\times 7.5$. d. The same, lateral view. $\times 7.5$.

ridges. On account of these lateral ridges the middle region is clearly marked off from the posterior portion. The last annuli of segments VII-XXXIII have transverse fusiform elevations due to folded muscles, which are arranged in a row in the carina of the dorsal surface. The posterior region, about half the breadth and 3 times the length of the middle portion, tapers gradually to the

middle length and then again becomes wider. The region is composed of 28 setigerous segments, each of which is annulated into 5 rings except the posterior 5 segments, which have no distinct annulation. The first two of the 5 terminal segments are markedly elongate, each attaining a length of about 1.5 times that of the branchiate segments. The 3 posterior segments are nearly equal to the 35th segment in length. On the line corresponding to the rows of setae-tufts there run shallow lateral grooves which are interrupted

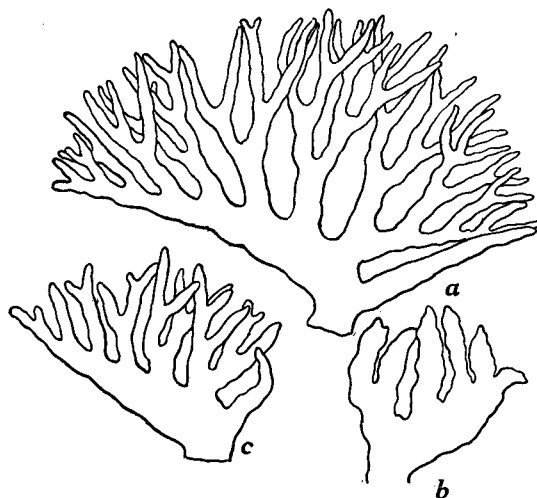


Fig. 3. *Thoracophelia yasudai* n. sp. a. Gill from segment XX. b. First gill from segment XIII. c. Last gill from segment XXVII. All $\times 38$.

by ovoidal muscular masses present between the setae bundles. A deep longitudinal groove runs along the ventral surface of the body from the 11th to the 35th setigerous segment. The groove is shallow in the anterior portion, but gradually deepens towards the middle portion, whence it again becomes shallow. The anus lies posterior and is surrounded by a circlet of 16-19 anal cirri, of which a median ventral

triangular-shaped one is much longer than the others. The 7-9 cirri arising from the lateral sides of the last achaetous segment are arranged in two rows, measuring 0.7-0.14 mm in length in the specimen 40 mm long. The gills supply the most characteristic feature of this species. Most of them are richly ramified and pectinate like those of *Eunice*. These gills are divided into 2 main stems: a dorsal branched one and a ventral unbranched one. The dorsal stem is wrinkled, finger-shaped, flattened, and bears 6-8 branches, which are

again divided dichotomously several times, as shown in Fig. 3. There are 15 pairs of gills from the 13th to the 27th setigerous segment. These are situated immediately on the dorsal side of the notopodial tubercles and are nearly equal in length throughout, with the exception of the first and last pairs, which are very much smaller than the others. Notopodial and neuropodial setae-tufts, which occur in the last annulus of each segment, are small. The setae of both fascicles are of the same character: all very slender, flexible and thread-like, and the neuropodials are always shorter than the notopodials. Both the neuropodials and notopodials are rudimentary on the first segment, of $\frac{1}{4}$ the length of the following segment and bearing about 5 setae. The setae-tufts on segment II are found more dorsally than the posterior ones. Setae from segments II-V measure 1.5-2.3 mm and are counted 11-15 on each tuft. In segments VI-X the setae become shorter and even the longest one does not extend beyond 1.4 mm. In segment X setae arise from the lower surface of the lateral ridges as mentioned above, while in segment XXXV both noto- and neuropodial setae are greatly elongated, greatly exceeding the length of the anal cirri. In segments XXXVI to the last the setae are well developed and shorter in the posterior segments. The setae-tufts of these terminal segments gradually shift towards the ventral side in the more posterior ones. In the living state the body colour is generally reddish and the dorsal surface of an iridescent light violet.

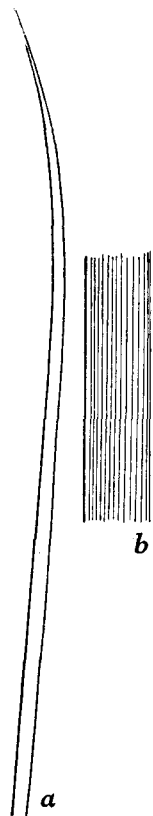


Fig. 4. *Thoracophelia yasudai* n. sp. a. Thread-like seta from segment VIII. $\times 120$. b. Enlarged view of a part of the same. $\times 960$.

Gills flesh colour and cirri white. The intestine is dark blue and contains small pebbles. Several specimens were collected by Mr. S. YASUDA for the first time in 1933 at Kanaiwa, Ishikawa Pref. and many individuals containing ripen genital products were obtained by the writer in April, 1934 in the same district. The worms live abundantly buried in sandy bottoms about 10–20 cm in vertical depth between the tide marks. Twenty to thirty individuals could be easily captured by one digging. When stimulated, the worm is liable to coil the body sluggishly like Diplopoda.

Remarks: The present species has the following characteristics of the genus *Thoracophelia*: 1) 3 distinct regions of the body, 2) 15 annulations in the anterior cephalic region, 3) occurrence of the first gill on the 13th setigerous segment, 4) presence of the prominent lateral ridges of the last segment of the middle portion, 5) presence of 38 setigerous segments, 2 in the cephalic, 8 in the thoracic and 28 in the abdominal region. The new species is distinctly separated from *T. furcifera* in the following points: 1) shape and number of gills, 2) existence of eyes, nuchal organs and sensory pits, 3) number of lateral anal cirri. In the family Opheliidae only the two following species, *Travisia arborifera* and *Euzonus arcticus* are known as provided with gills richly ramified. Though the former species is clearly different, the latter is noticeable in having some features common with the new form. *Euzonus arcticus* was first briefly described by GRUBE in 1868 on specimens from the White Sea. GRUBE characterised this species by pectinate gills richly ramified and by the entire absence of setae. In 1912 AUGENER redescribed and figured the same species on specimens used by GRUBE. According to AUGENER's description, *E. arcticus* agrees with the present form in having the same form of gills, in the character of the pygidium, in the occurrence of the ventral groove and also in the number of the posterior abranchiolate segments. But the new form differs from *Euzonus* in the smaller number of gills, the presence of the prominent lateral ridges and the body distinctly divided into 3 regions. The genus *Euzonus* having been described on a few ill-

preserved specimens, its diagnosis seems to be somewhat insufficient. Such being the case, it is impossible to ascertain in detail the relationship between the new species and *Euzonus*. Since the difference of the gill form seems to be not enough for a separate genus, it seems more advisable at present to refer the new species to the genus *Thoracophelia* with the following diagnosis.

Thoracophelia EHLERS emend.

Opheliidae with three distinct body regions. Ventral groove confined to the posterior half of the body. Segments divided into annuli. Branchiae from the 13th setigerous segment, bifid or branched. With a median and several lateral anal cirri. Prominent lateral ridges in the posterior end of the middle region of the body.

Key to species of *Thoracophelia*

- 1) 20 pairs of bifid gills, 10 lateral anal cirri. *furcifera*
- 2) 15 pairs of dichotomously branched gills, 15-18 lateral anal cirri. *yasudai* n. sp.

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