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Citation	北海道帝國大學理學部紀要, 3(4), 233-246
Issue Date	1934-12
Doc URL	http://hdl.handle.net/2115/26971
Type	bulletin (article)
File Information	3(4)_P233-246.pdf



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SOME TUBICOLOUS ANNELIDS FROM HOKKAIDO¹⁾

BY

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(With 11 Text-figures)

The following account of sabelliform polychaetes is based upon specimens obtained from several localities in Hokkaido. The material consists of six species; most of them are common circum-polar forms but two of them are probably new to science. It is a pleasant duty to thank Prof. Dr. Tohru UCHIDA for his kind guidance during the course of this work.

List of species:

Sabellidae

Potamilla myriops MARENZELLER
Chone teres BUSH
Fabricia sp.

Serpulidae

Hydroides ezoensis n. sp.
Spirorbis (Dexiospira) nipponicus n. sp.
Spirorbis (Dexiospira) spirillum (LINNÉ)

Potamilla myriops MARENZELLER

(Figs. 1 & 2)

Potamilla myriops: MARENZELLER, 1884, p. 211, Pl. III, fig. 2.—FAUVEL, 1932, p. 59.

Pseudopotamilla myriops: BUSH, 1904, p. 173.

Potamilla polyophthalmos: (in part) JOHANSSON, 1927, p. 148.

Body 60–100 mm long, consisting of 110–140 setigerous segments. Branchial filaments 45–50 on each side, perfectly separated. Pinnæ

1) Contribution No. 81 from the Zoological Institute, Faculty of Science, Hokkaido Imperial University.

numerous and closely set. Branchial bases stout and not rolled inwards. The anterior dorsal margin forms two notched wings, while the ventral is slightly involuted. Eyes, dark red in colour, 4–12 in number (usually 5–6), arranged in a row on the outer surface of the stem. The dorsal portion of the peristomial collar becomes lower and is divided by median elevated processes into two lateral parts.

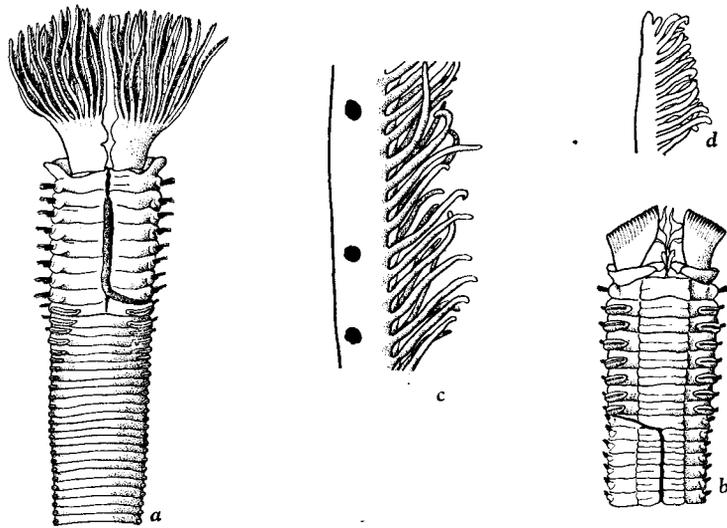


Fig. 1. *Potamilla myriops* MARENZELLER: *a*, anterior segments, dorsal view; *b*, the same, ventral view, branchiae cut off at the base. All $\times 35$; *c*, enlarged portion of branchial shaft. $\times 30$; *d*, distal end of the same. $\times 30$.

The margin of the collar is universally smooth and extends roundly upwards on the lateral sides. On the ventral side are found two low median triangular ends, each separated by a shallow incision. The thorax in all specimens examined by me consists of 8 setigerous segments. The 8 ventral glandular plates are all transversely oblong and indistinctly divided into 2 equal transverse halves. The abdominal somites are also uniannulate, with the posterior ones much narrowed. The ventral plates are thick in the abdominal region and bear on the median line a deep faecal groove which is well marked both in the thorax and abdomen, and runs obliquely from the dorsal

to the ventral side across the right side of the last thoracic and the first abdominal segments. The collar setae are all curved, acute, narrowly double-winged. Other thoracic fascicles are composed of a small dorsal group of capillary setae similar to those just described



Fig. 2. *Potamilla myriops* MARENZELLER: a, collar seta; b, c, thoracic seta; d, abdominal seta; e, thoracic spatulate seta from fifth segment. All $\times 260$; f, pennoned seta from thoracic tori. $\times 350$; g, avicular uncinus from fourth segment. $\times 260$.

and of a large number of paddle-shaped or broad bladed spatulate setae situated just ventrally. Abdominal setae are asymmetrically double-winged capillary setae, the widest portion of the shaft being

bent and relatively narrow. Accompanying those capillary setae there occur often straight, slender hair-like setae (3-4 in number in one fascicle). All setae are distinctly striated. Thoracic tori having pennoned or pick-shaped setae in the anterior avicular uncini in the posterior rank. Abdominal tori containing only avicular uncini, smaller than those of the thoracic ones. Coloration of the body variable. Gill-filaments usually deep brown violet with scattered white flecks. Anterior body region dark brown. Tubes rather thick, tough, often covered thickly with fine sand, and found fixed to stones.

Habitat: Akkeshi, Muroran and Oshoro.

Distribution: Dairen, Manchuria (FAUVEL) and Japan (MARENZELLER).

Remarks: Compared with the MARENZELLER's description the specimens taken from Hokkaido are much smaller in the number of eyes and bear always 8 setigerous segments on the thorax. The species differs from *P. polyophthalmos* GRUBE in having a large number of gill-filaments and in the shape of the collar.

Chone teres BUSH

(Figs. 3 & 4)

Chone teres: BUSH, 1904, p. 215, Pl. 30, fig. 1, Pl. 37, figs. 16-23.

Body short and comparatively stout. Body length including branchiae in the largest specimen measuring 40 mm; trunk 9 mm, branchiae 5 mm, body width 3.5 mm. In a specimen, 16 mm long, the branchiae are proportionally much longer, equalling the trunk in length. There are 45-51 setigerous segments, 8 thoracic and 37-43 abdominal. The segments are distinctly biannulate on the ventral surface, while the annulation is not so prominent on the dorsal surface, especially on the thoracic region. Excepting the outer gills, in 10-11 pairs, there is an inner ring of unbranched gills different in length, and in individuals variable in number. The gill-

filaments are connected one to another for the greater part of their length by a delicate web-like membrane which is about two-thirds as high as the filaments. The collar, high and prominent, about 2 times as high as the first segment, is entire and somewhat high on the ventral side and is inflated on the dorsal. The lip-membrane has two small triangular processes on the ventral side. The first setigerous segment, which is narrow, bears only dorsal bundles consisting of a row of long narrowly winged setae, and a row of short slender setae with a narrow margin striated. The second setigerous segment bears a row of glands, which is distinct in living material by the presence of a white transversal band. The groove is obvious in the dorsal and ventral surfaces and runs from the dorsal to the ventral on the right side of the body across the eighth and ninth (first abdominal) segments, thus leading to the pygidium. The dorsal bundles of the thoracic segments, situated between two small lappet-like processes, contain three kinds of setae: the upper setae being slender and with narrowly striated wings, the middle spatulate and tapering to a point, and lower tapered bayonet-shaped and in a sparse row as shown in *Chone filicaudata*. In the ventral parapodium are found stout crochets with a fairly long shaft slightly widened below the neck and longitudinally striated. In the abdominal segments the dorsal bundles bear capillary setae only. They are long, slender and with narrow wings. The uncini bear 5-6

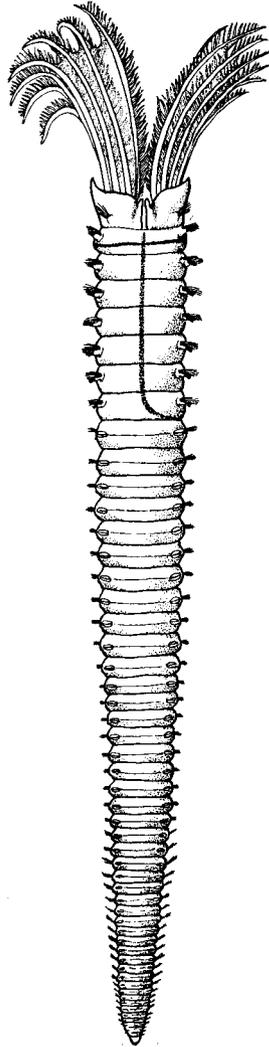


Fig. 3. *Chone teres* BUSH:
Dorsal view. $\times 5$.

rows of teeth in the side view. Specimens with matured genital products were found in April and May in Akkeshi. They are abundantly found in mud, concealing themselves in delicate, soft muddy tubes.

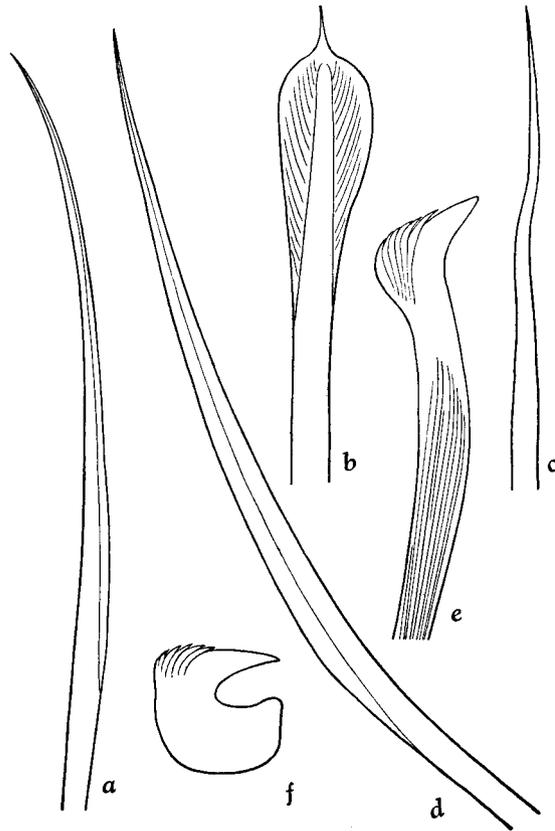


Fig. 4. *Chone teres* BUSH: a, collar seta; b, thoracic seta from sixth segment; c, bayonet-shaped seta with spatulate setae; d, abdominal seta; e, thoracic uncinus from sixth segment; f, abdominal uncinus. All $\times 400$.

Habitat: Akkeshi and Muroran.

Distribution: Alaska (BUSH)

Remarks: I have referred the Japanese specimens to the species with some doubt, though they differ from BUSH's examples obtained from Dutch Harbor, Unalaska Island in having smaller number of

abdominal segments and the more delicate muddy tube, but both of them have common features in the character of the collar, branchiae and the setae. The species is distinguished from *Chone gracilis* by its much shorter branchiae.

Fabricia sp.

Single incomplete specimen was collected between tubes of *Hydroides ezoensis*. Branchial filaments, completely separated, 3 in number on each side. Thorax consisting of 8 setigerous segments. First setigerous segment bearing only hair-like setae. Two cephalic eyes. Other characters unknown in details.

Habitat: Akkeshi.

Hydroides ezoensis n. sp.

(Figs. 5, 6 & 7)

The largest specimen measures approximately 43 mm long; branchiae 6 mm, thorax 7 mm, and abdomen 30 mm. Setigerous thoracic segments 7 in number, abdominal 90 to 115. Branchiae in 18–20 pairs, the ventral ones being slightly spirally coiled. The shaft of the branchiae bears numerous pinnae and tapers to a slender filamentous end which is often coiled inwards. The dorsal collar is divided into two large flaring lobes by the dorsal fissure, and is bounded laterally by deep incisions present just behind the collar

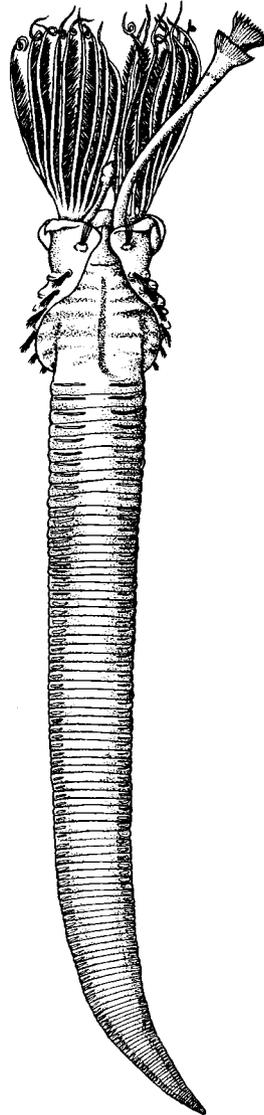


Fig. 5. *Hydroides ezoensis* n. sp.: Dorsal view. $\times 5$.

setae. The lateral portions of the collar undulate on the margin but are not in the least notched or produced into ventral lobes. Functional operculum funnel-shaped. The upper spinose circle of the operculum has 32-34 processes. Accessory spines, short, stiff and 5-6 in number, are arranged in one series on the inner surface of the processes. A single triangular process, arising from the centre of the crown, furnished with several minute spines on its surface. The lower spinose circle bears 51-55 triangular-shaped processes. The functional operculum is generally found to the right side, and a rudimentary one to the left, but in some cases this arrangement is

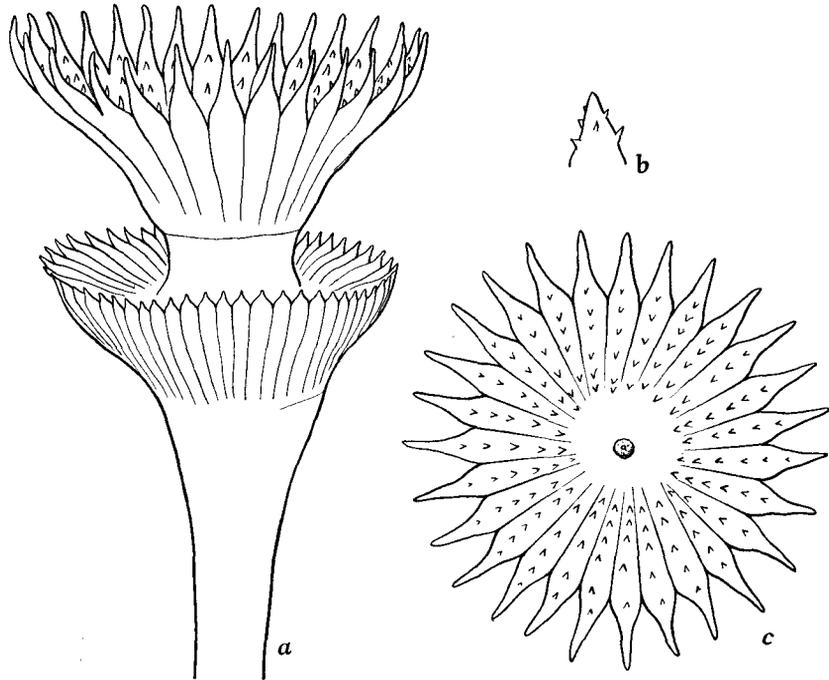


Fig. 6. *Hydroides ezoensis* n. sp. : a, profile view of operculum ; b, single median spine ; c, distal aspect of upper spinose circle. All $\times 25$.

reversed. Thoracic region broad and depressed. The thoracic membrane is prominent with a curved margin gradually diverging caudally. Abdomen slender and elongated, tapering posteriorly and ending in a minute pygidium. Thoracic parapodia having dorsal

setigerous tubercles and ventral lappet-like tori. Collar fascicles small and directed forwards, while the remaining fascicles are much larger and directed dorsally or laterally. The collar setae, bayonet-shaped, with two conical processes at the base of the blade, are accompanied with long slender capillary setae. The thoracic fascicles bear slender capillary setae with one bordered wing striated. The thoracic uncini are very numerous and closely set. They have 6-7 acute curved teeth. The abdominal setae are all of one kind, trumpet-shaped with serrations on their upper margin. The uncini of the abdomen are subequal as well as those of the thorax, bearing 6 teeth on a side margin. Besides, there are found slender filiform, hair-like setae together with dorsal trumpet-shaped setae on the caudal region. Coloration of the body variable. The gill-filaments, darker at the basal portion, are generally violet with orange bands. The opercular shaft is yellowish green with dark violet spots. Thoracal region light greenish orange, posterior abdominal portion yellowish orange. Tube white, thick, massive and coiled more or less irregularly.

Habitat: Akkeshi, Muroran and Oshoro.

Remarks: The present species is closely allied to *H. norvegica* in having the operculum bearing sharp processes with several accessory spines, but it differs markedly from the latter in the large number of its processes in the upper crown, and, moreover, the accessory spines of the new form are always arranged not in two rows as in *H. norvegica* but

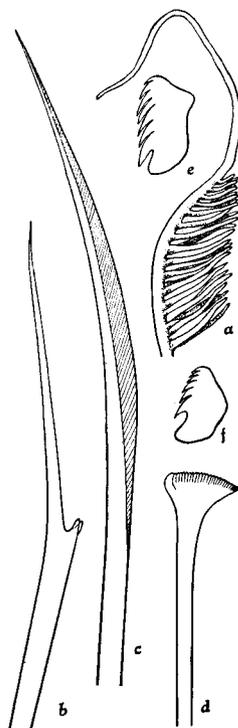


Fig. 7. *Hydroides ezoensis* n.sp.: a, tip of branchia; b, collar seta. $\times 100$; c, thoracic seta. $\times 500$; d, abdominal seta. $\times 100$; e, thoracic uncinus; f, abdominal uncinus. All $\times 500$.

in one row. The lower spines, also, are more numerous than those of *norvegica*. The caudal filiform setae seem to be an unimportant characteristic of this species. Between the tube masses various animals were found living together, e.g. Bryozoa (*Schizoporella*), Kamptozoa (*Barentsia*), Sipunculoidea (*Physcosoma*), Polychaeta (*Phyllodoce*, *Nicomache* and *Fabricia*).

***Spirorbis (Dexiospira) nipponicus* n. sp.**

(Figs. 8, 9, 10 & 11)

Body consisting of 16–18 setigerous segments, of which the first three belong to the thorax. Gills in two lobes, each divided into 3 filaments which again ramify into 7–8 short branches. No eyes

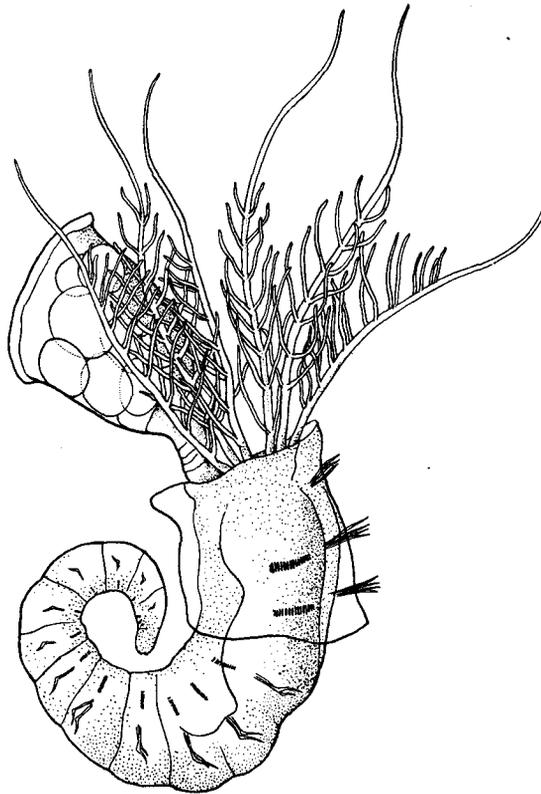


Fig. 8. *Spirorbis nipponicus* n. sp.: Lateral view. $\times 65$.

can be detected. The operculum, which is a brood-pouch, is of cylindrical shape, dotted on the outer surface and brown at the distal part which is spherically concaved. The basal calcareous plate is cup-formed, as shown in Fig. 10. The peduncle is short, stout and annulated. The collar fascicle bears moderately bent setae each with a minutely serrated blade and a few slender capillary setae. The second and third thoracic setae are subequal to the collar setae but are more slightly curved. All those thoracic dorsal setae are destitute of fin-like extensions. The abdominal setae are all of one kind, geniculated and denticulated along the falciform blade margin. On the thorax, uncini are found just ventral to the dorsal

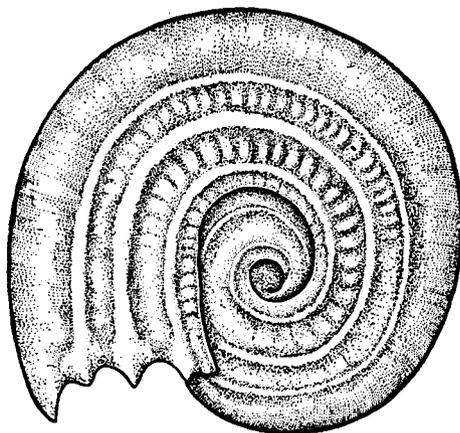


Fig. 9. *Spirorbis nipponicus* n. sp.:
Tube. $\times 35$.

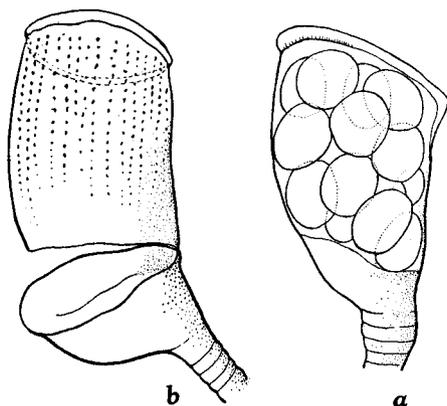


Fig. 10. *Spirorbis nipponicus* n. sp.:
a, operculum with embryos; *b*, the
same with empty cylinder separated from basal plate. All $\times 90$.

fascicle, taking the form shown in Fig. 11, *d*, *e*. They are furnished with numerous fine marginal teeth arranged in 4-5 transverse rows. It is a remarkable character that the uncini are markedly terminated into trifurcated processes and do not end in a simple prolonged process as is usual in the genus. Though the abdominal uncini are similar in form to the thoracic, they are smaller

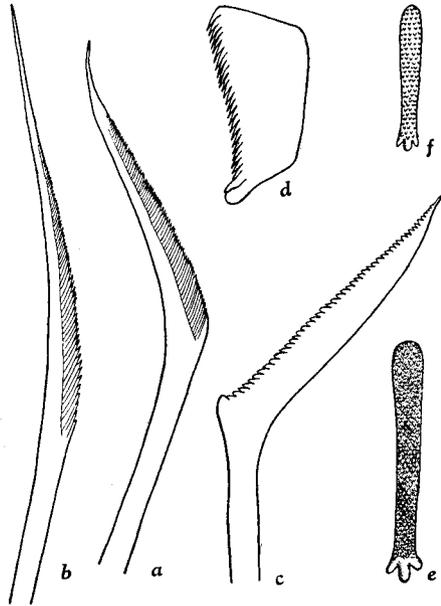


Fig. 11. *Spirorbis nipponicus* n.sp.:
 a, collar seta; b, seta from second
 setigerous segment; c, abdominal
 seta; d, lateral view of thoracic
 uncinus; e, the same, front view;
 f, abdominal uncinus, front view.
 All $\times 700$.

than the latter. Tori not distinct. Tube, 1.5–2.3 mm in diameter, dextral, keeled, shaped like a coiled disc. The outer surface is ornamented with 3 unequal distinct carinae, the interspaces being traversed by shallow furrows and the mouth of the tube deeply engraved. They were found fixed on sea-weeds. Incubation takes place in the operculum.

Habitat: Akkeshi and Muroan.

Remarks: The present species is similar in the shape of its tube to *Spirorbis foraminosus*, but differs in having trifurcated uncini and no longitudinally grated plate in the operculum. The

species also differs from *S. corrugatus* in the number of gill-filaments and in the shape of the operculum and the uncini.

Spirorbis (Dexiospira) spirillum (LINNÉ)

Spirorbis (Dexiospira) spirillum: OKUDA, 1934, Vol. 14, No. 4. For other synonyms, see FAUVEL, 1927, p. 392.

Three thoracic setigerous segments. Operculum, roughly cone-shaped, having a thin calcareous plate, with slight basal processes. Eyes two in number. Gill-filaments, double-lobed, 6 in number. Collar setae geniculate with a short fin-like extension, accompanied by a few slender capillary setae. Second and third segments

furnished with a long winged seta and numerous ventral uncini with 12–25 minute teeth in the side view. Abdominal setae geniculated and striated along the falciform blade. Small abdominal uncini, shorter than the thoracic, somewhat triangular in shape. Tube, ca 1.5–2 mm in diameter, white, smooth, flattened and dextral. Incubation takes place in the tube.

Habitat: Akkeshi, Muroran and Oshoro.

Distribution: North Sea; Atlantic; Arctic; Mediterranean; northern Pacific.

Remarks: The species is extremely cosmopolitan. In the littoral region it is found on sea-algae, bryozoa, worm-tubes and shells. The tubes are often found attached to the body surface of pycnogonids, *Lecythorhynchus hilgendorfi*.

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