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On a tube dwelling valviferan isopod, *Cleantioides rotundata* (Crustacea: Isopoda: Hologhathidae) from Tokyo Bay, central Japan*

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東京湾で発見された棲管生息性ツブラホソヘラムシ（等脚目）*

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キーワード：ツブラホソヘラムシ，再記載，ホソヘラムシ科，等脚目，東京湾，棲管

東京湾の葛西臨海水族園前の人工なぎさにおける地曳網による生物調査の際，ヨシなどの管状の植物片を棲管として利用しているホソヘラムシ類が多数発見され，ツブラホソヘラムシ*Cleantioides rotundata*（Kussakin, 1982）と同定された．しかし，本種には今まで図示や記載がされていなかった幾つかの形質があり，また東京湾の標本には原記載といくつかの差異が見いだされたので，改めて東京湾産の個体の再記載を行った．あわせて富山市科学博物館所蔵の*Cleantioides*属の標本を調査したところ*Cleantioides planicauda*（Benedict，1899）に同定されていた標本のうち，3シリーズが本種であることが判明したので報告する．

During a biological survey using beach sein in the artificial beach, in front of Tokyo Sea Life Park (Kasai Rinkai Suizokuen), the second author had happened to find not a few individuals of a tube-dwelling isopod and he observed that all the individuals bears each tube. Then he collected a certain number of specimens and fixed in formalin and then transferred into alcohol. The specimens were sent to the first author for identification. As a result of closer examination of him, they proved to be a *Cleantioides rotundata* (Kussakin, 1982). As this species, hitherto, some features and figures have not given and we observed a few of differences from the original description. Therefore, we redescribed some important features all the appendages based on Tokyo Bay specimens. On this occasion, the first and third authors examined some specimens deposited at Toyama Science Museum and three new localities added to Japanese fauna.

*Contributions from Toyama Science Museum, No. 510

Order Isopoda Latreille, 1817

Suborder Valvifera Sars, 1882

Family Hologнathidae Thomson, 1904

***Cleantioides rotundata* (Kussakin, 1982)**

(Japanese name: Tsubura-hoso-heramushi)

Cleantis planicauda Gurjanova, 1936. pp.170-172.

Zenobiana rotundata Kussakin, 1982. pp.97-100, figs714-72. (Original description).

Cleantioides rotundata: Poore and Lew Ton, 1990. p.59; Kwon and Kim: 1992, p.89.

Material examined: 3♂♂ (9.6-16.5 mm in body length) and 22♀♀ (3.0-16.8 mm in body length) Nishi-nagisa, front Bach of Tokyo Sea Life Park, Rinkai-cho, Edogawa-ku, Tokyo, 6 June, 2016., coll. Ryosuke Mimori; 3♂♂ (11.0-13.3mm in body length) and 1♀ (5.5 mm in body length), from same place, 3, Aug. 2016, coll. Ryosuke Mimori; 2♂♂ (9.6-11.3mm in body length) and 4♀♀ (3.0-12.5 mm in body length) from same place, coll. Ryosuke Mimori. The specimens examined will be deposited at Tokyo Sea Life Park and Toyama Science Museum (TOYA Cr- 23746～23752).

Description: Body cylindrical, approximately 5.2 times longer than the greatest width a long as wide, dorsal view, cephalon width approximately 1.3 times its length. Anterior margin emarginated at midpoint; posterior margin convex. Eyes situated near antero-lateral angle of cephalon, each eye composed of about 40 ommatidea. Coxal plates on pereonites 2-4 small and hardly visible dorsally. Coxal plates visible dorsally on pereonites 5-7 but visible from dorsal view. Pleonites with 4 segments (anterior 3 complete ones and the incomplete fourth). Pleotelson, occupying 20% of body length. Plane of pleotelson lacing any tubercles, parallel-sided with rounded posterior apex; dorsal side of distal half with slightly oblique plane with shallow depression. Tip of pleotelson rounded. Penes (Fig. 1K) paired and slightly decreasing toward the tip; each one 4 times as long as long as wide.

Antennule (Fig. 1C) short, not extending beyond of the distal end of the second peduncular segment, and composed of 3 peduncular segment and a small flagellum with 5-6 aesthetascs at the tip

Antenna (Fig. 1D) reaching to compose of 5 peduncular segments and a single clavate flagellar segment.

Frontal lamina and clypeus (Fig. 1E.) trapezoid; labrum elliptical, with a pair of relatively long setae on lower margin. Mandible (Fig. 1F and G) lacking palp; incisor with 3 cusps; incisiva lacinia with 3 teeth, chitinized in left one; processus pine row of about 8 dentate spines; molar process stout. Maxillula (Fig. 1H): mesial endite with 3 stout plumose setae apically; lateral endite with 11 plumose spines including 3 saw-like ones. Maxilla (Fig. 1I): mesial endite with 11-16 plumose setae; middle endite with 11-16 setae, 8-9 plumose setae: laterals; endite with 8-9 plumose setae. Maxilliped (Fig. 1J): endite with 2-3 coupling hooks on lateral margin and 10-11 plumose setae distally including plumose seta; palp 5-segmented; second segment trapezoid; third segment wide, with 10 setae on inner margin; fourth segment slender, with 10 setae and a strong seta at outer distal angle; terminal segment small, with 4 setae at terminal segment short.

Pereopod 1 (Fig. 2A): basis with many short setae on both margins; ischium with on many setae on outer margin; merus with 2-3 setae on posterodistal and laterodistal spines on mesial surface; carpus triangular, with 10-11 spines on posterior margin; propodus expanded, with 5-6 longer and more than 12 shorter spines on inner margin, 12-13 clusters of spines on lateral surface and many short setae on outer margin.

Pereopod 2 (Fig. 2B): basis with a series of setae on outer margin; ischium with 8-9 short setae on inner margin; merus almost square, with a seta on inner margin and 2 setae on outer margin; carpus square, with a seta on inner margin; propodus twice longer than carpus, with several short setae on inner margin and 2 short setae at outer distal angle.

Pereopod 3 (Fig. 2C): basis with several outer margin sparsely; ischium with several short setae on inner margin; merus with many setae on outer margin and a sensory seta at outer distal angle; carpus rectangular, with 2 setae on inner margin, with not a few setae on outer margin; propodus a little longer than merus, with many setae on both margins.

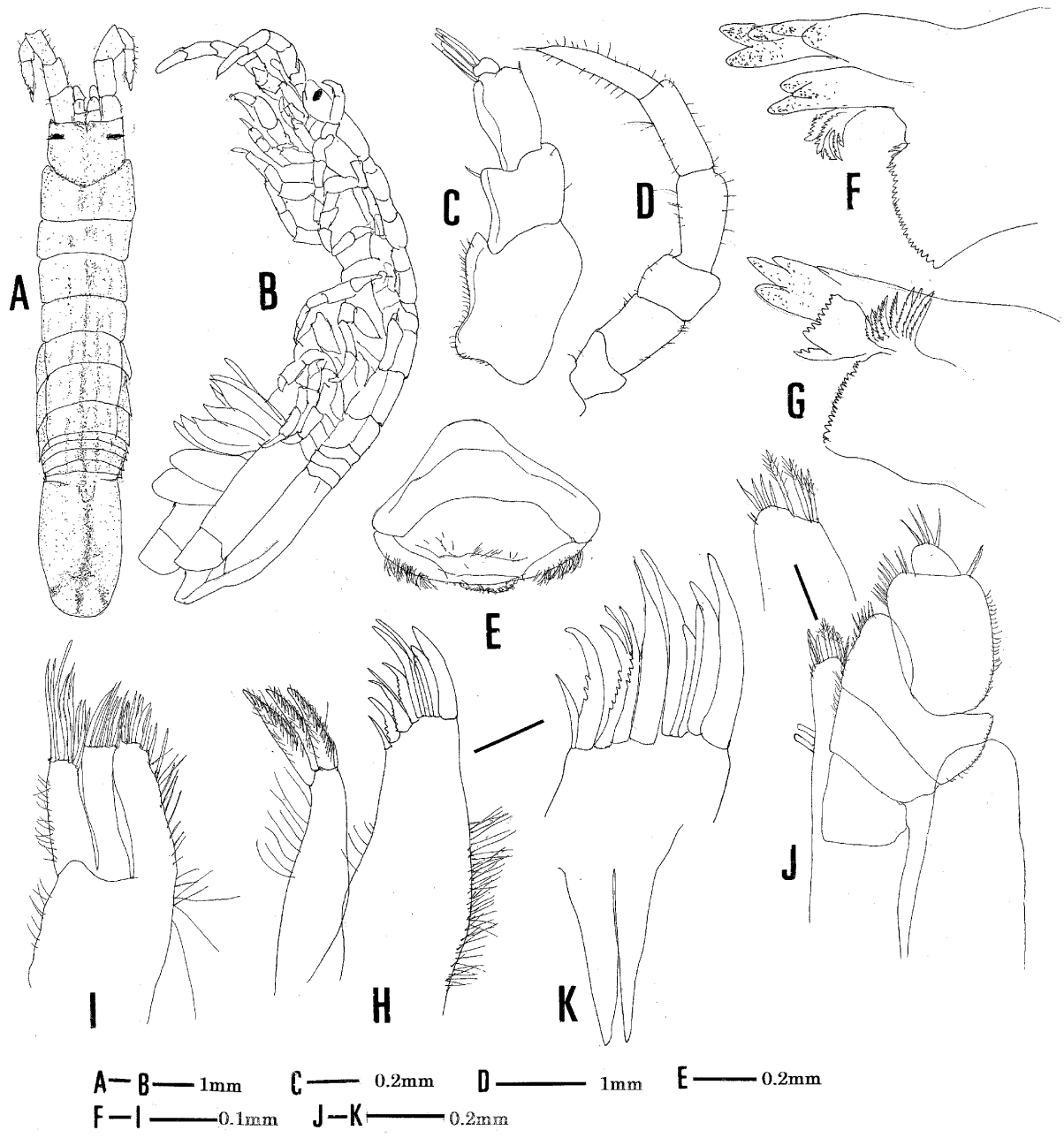

Fig. 1 ***Cleantioides rotundata*** **(Kussakin, 1982)**

A: Dorsal view, B: Lateral view, C: Antennule, D: Antenna, E: Clypeus, frontal lamina and labrum, F: Left mandible; G: Right mandible, H: Maxillula, I: Maxilla; J: Maxilliped; K: Penes. (All: Male, 16.5 mm in body length)

Pereopod 4 (Fig. 2D and E) short and reduced, non-ambulatory: basis with many fine setae on outer margin but 4 relatively strong setae on outer margin in some specimens; ischium with a seta at distal angle; merus with many setae (only 3 setae in some specimen) and one seta tout spine on antero-distal margin; carpus with many setae on inner margin; propodus with 8 spines on posterior margin; dactylus reduced to a single compact unguis.

Pereopod 5 (Fig. 2F)a little longer than pereopod 4 :basis, with many short setae on basal half of outer margin; ischium a little shorter than basis; merus, with 4 setae on inner margin and many setae on outer margin; carpus with 3 setae and many setae on outer margin; propodus, with many setae on outer margin.

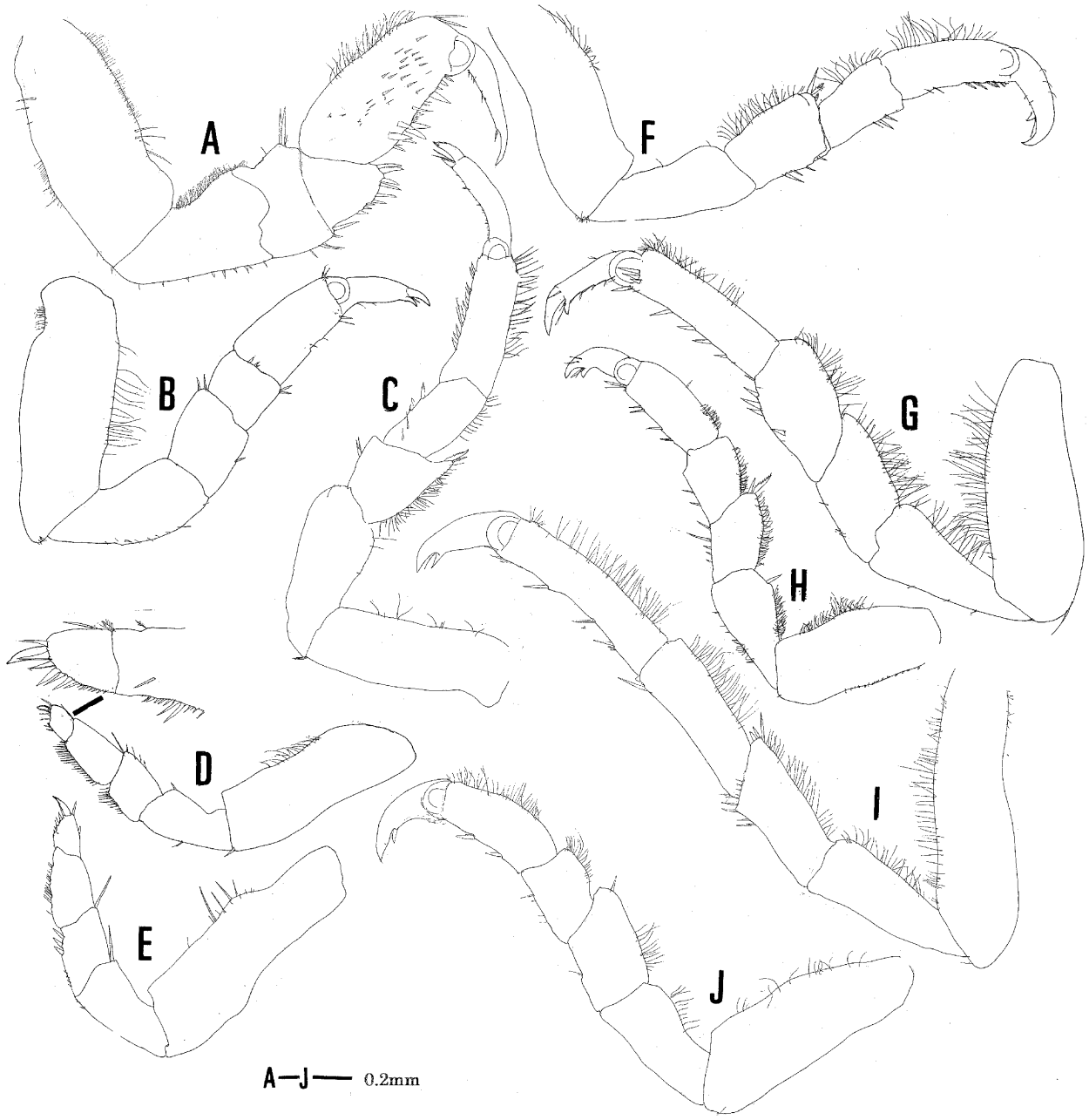

Fig. 2 ***Cleantioides rotundata*** **(Kussakin, 1982)**
A-C: Pereopods 1-3, 4, D: Pereopod 4 in male, E: Pereopod 4 in female, F: Pleopod 5, G: Pereopod 6 in male, H: Pereopod 6 in female, I: Pereopod 7 in male J: Pereopod 7 in female (A-D, F, G, I: male, 16.5 mm in body length), E, H, J: female, 9.0 mm in body length).

Pereopod 6 (Fig. 2G and H) a little longer than pereopod 5: basis with relatively long setae on outer margin in female; ischium with many setae on outer margin; merus with many setae on outer margin; carpus with 4 stout setae on inner margin and many setae on outer margin; propodus with 5 setae on inner margin and many setae in distal outer margin. Relative length of propodus in female specimen (9.0mm in body length) is shorter than a male specimen (11.6 mm in body length).

Pereopod 7 (Fig. 2I and J) as long as pereopod 6: basis, with many setae on outer margin; ischiumm 0.7 times as long as basis; merus with setae on distal half of inner margin and many setae on outer margin; carpus relatively with a seta on distal margin and many setae on outer margin; propodus with 4-5 setae one on inner margin;

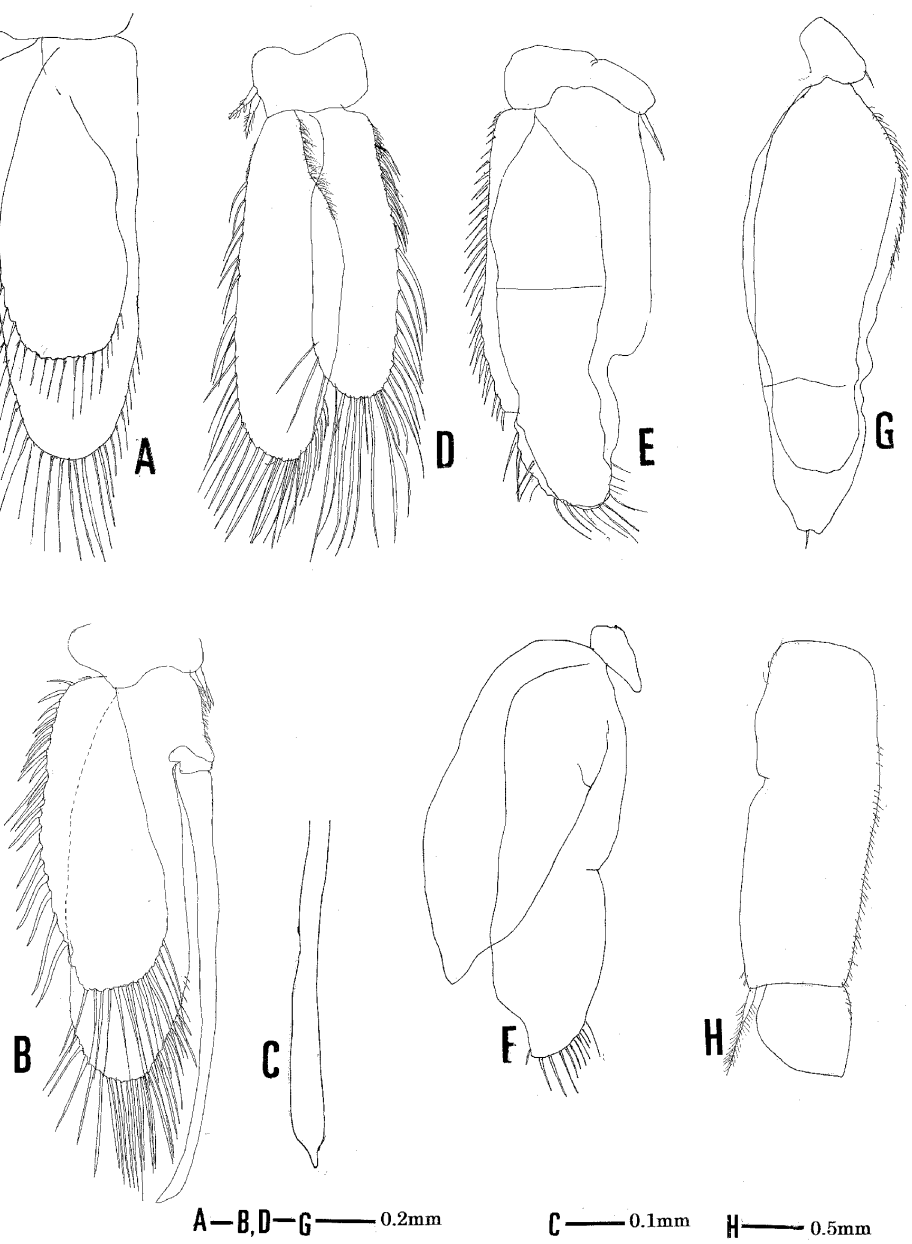

Fig. 3 ***Cleantioides rotundata*** **(Kussakin, 1982)**

A: Pleopod 1, B: Pleopod 2 in male, C: Tip of appendix masculina of another male, D: Pleopod 2 in female, E: Pleopod 3, F: Pleopod 4, G: Pleopod 5, H: Uropod (A-B, E-F: male, 16.5 mm in body length, C: male, 11.8 mm in body length, D: female, 9.0 mm in body length)

propodus and some segments in female shorter and less setose. Relative length of carpus and merus in a female specimen (9.0mm in body length) is shorter than a male specimen (11.6 mm in body length).

Pleopod 1 (Fig. 3A): sympod tipped with a seta; endopod little smaller than exopod, with 16-17 setae around the margin; exopod elliptical, with 42-43 setae around the margin.

Pleopod 2 of male (Fig. 3B and C): sympod tipped with a seta; both rami subequal in length; endopod with approximately 42 setae around the margin; exopod lanceolate, with 10-12 setae around the margin; appendix masculina pointed extend beyond the tip of both rami. Pleopod 2 in female (Fig. 3D): sympod with tipped 2 setae endopod with 33-35 setae around the margin; exopod elliptical, with about 38 setae around the margin.

Pleopod 3 (Fig. 3E): sympod tipped with a seta; sympod tipped with a seta; both rami subequal in length; endopod with about 40 setae around the margin: exopod without setae.

Pleopod 4 (Fig. 3F): sympod tipped with a seta; both rami subequal in length; endopod with a dozen setae around the margin; exopod without setae.

Pleopod 5 (Fig. 3G): sympod without seta: both rami subequal in length and 3.5 times as long as wide, exopod with a dozen short setae at the tip; endopod without seta.

Uropod (Fig. 3H) uniramous: basis 3.0 times as long as wide, with a seta at inner distal angle; endopod lanceolate quarter of a circle, inner side straight and outer side round.

Female. In addition to sexual characters, the last two pair of pereopods a little shorter than those of male.

Habitat and ecology: The present specimens were collected from tidal flats of sandy beach with silts; 0-100cm, the tubes which the animals were dwelling are reeds and some are perhaps twigs of cherry trees. All the individuals were found together with in it (Fig. 4 and 5).

On 6 June, 2016, the second author collected a certain amount of individuals and we examined length composition. As a result (Fig. 6), the percentage of males was only about 6%: male is apparently fewer than female and no male individuals whose body length is less the 9mm was not observed. Gravid females occurred

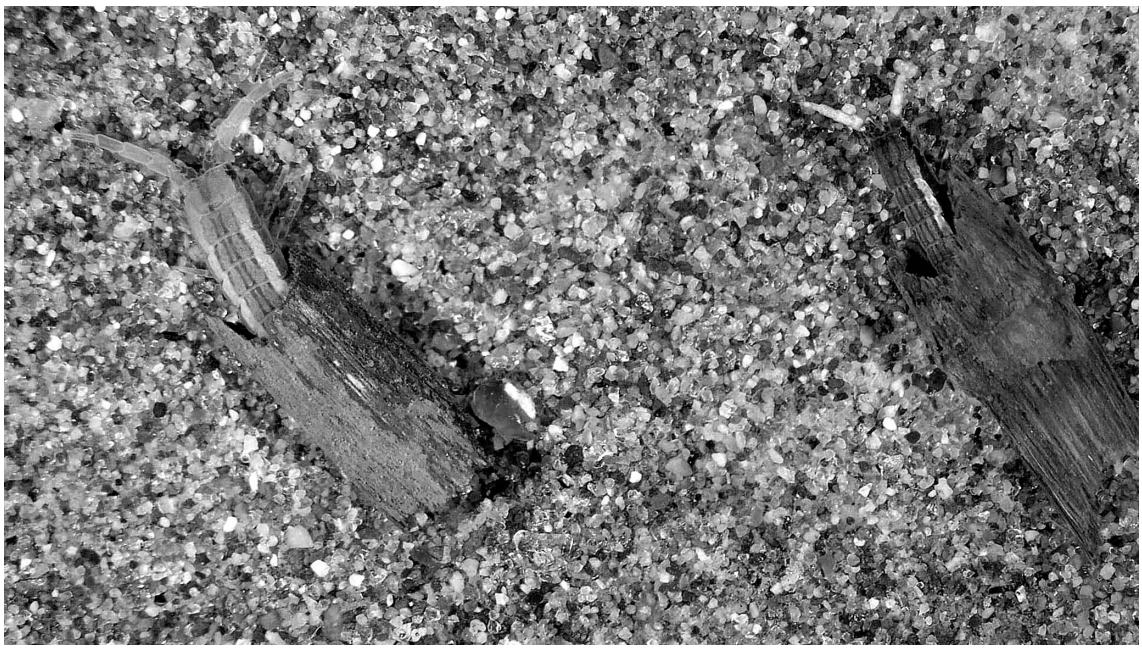

Fig. 4 Living condition of *Cleantioides rotundata* (Kussakin, 1982). Both individuals are in each tube (taken by Mimori).

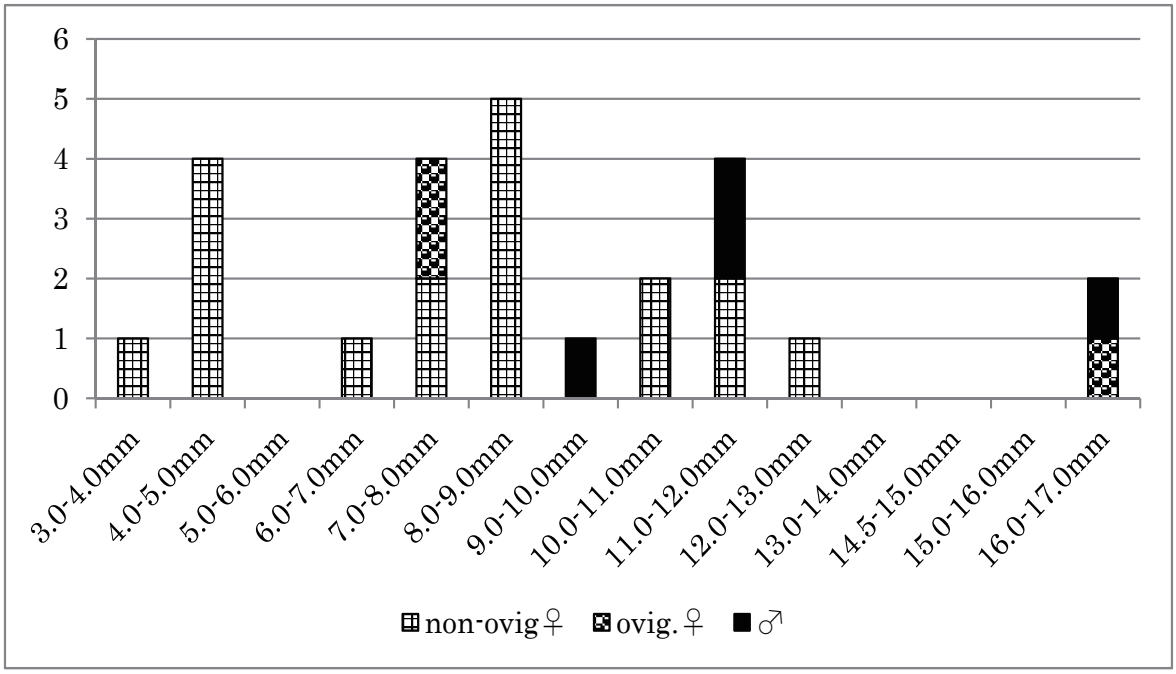

Fig. 5 Frequency of body length of *Cleantioides rotundata* collected on 6 June, 2016.

in three different body size classes. This will show these specials lay eggs at least three times.

Remarks: The present specimens differ from the original description and other descriptions: (1) longer penes, (2) less numerous coupling hooks on maxilliped in the Tokyo Bay specimens from, whereas 1 in ordinal description), (3) presence of longer setae on outer margin of propodus of pereopod 7, (4) relatively short of female sixth and seventh pereopods, especially in merus, carpus and propodus and (5) shorter flagellar segment of antennule.

Since Kensley and Kaufman (1978) established genus *Cleantioides,* fourteen species have been known as valid (Schotte, Kensley, and Shilling) and in Japan, five species *C.planicauda* (Benedict, 1899), *C. japonica* (Richardson, 1912), *C. emarginata* Kwon and Kim, 1992, *C. poorei* Kwon and Kim, 1992 and *C. rotundata* (Kussakin, 1882) have been recorded in Japan. But we are afraid not a few specimens have been misidentified as *C. planicauda,* because the reaming four species other than *C. planicauda* have been not so well recognized in general. Therefore, on this occasion, Nunomura and Nambu reexamined some specimens of *Cleantioides* deposited at Toyama Science Museum. As a result, some specimens proved to be *Cleantioides rotundata,* formerly regarded as *Cleantioides planicauda.* The followings should be corrected:1 ♂ (Cr 22765), Iwasehama, Toyama-shi, Toyama, 29, Aug. 1988, coll. Noboru Nunomura; 1♂(unregistered), off Sekigahama, Niigata-shi, Niigata, coll. Japan Sea National Fisheries Research Institute; 4♀♀(Cr 10320, 10175～10177), 8m in depth off Hamakurosaki, Toyama-shi, Toyama, 8, July, 1990. coll. Nozomu Miyamoto.

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