

New marine gastrotrichs of the family Thaumastodermatidae (Gastrotricha: Macrodasysida) from Shirahama, Japan

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Abstract.—Three new species belonging to the family Thaumastodermatidae are described on the basis of the specimens collected from the Pacific coast around the Seto Marine Biological Laboratory, Shirahama, Wakayama, Japan. *Tetranchyroderma schizocirratum*, new species, bears pestle organs, dorsal cuticular armature made up of tetrancres only, and three pairs of dorsolateral tubes, the last of which is shaped as cirrata with the distal part branched. *Thaumastoderma clandestinum*, new species, is clearly differentiated from its congeners by the character combination of six pairs of dorsal cirrata, a pair of simple spatulate tentacles, paired ventral adhesive tubes on the anterior region of the copulatory organ and accessory cirrata of last dorsal cirrata. *Platydasys itoi*, new species, is most allied to *P. phacellatus* Clausen in having the ventrolateral cirri group in the form of tuft, but it is distinguished from the latter by the lack of lateral tubes and a different number of ventrolateral cirri and adhesive tubes.

Marine gastrotrichs are still poorly known in Japan. Saito (1937) first reported two marine species, *Aspidiophorus marinus* Remane, 1926 and a new species *Tetranchyroderma dendricum* Saito, 1937 from Hiroshima. In an investigation of the meiofauna around Kasado Island in the Seto Inland Sea, Sudzuki (1976) listed several gastrotrich taxa, including *A. marinus* and a few undetermined species belonging to the genera *Cephalodasys*, *Macrodasys*, and *Xenotrichula*, together with the description of *Paradasys nipponensis* Sudzuki, 1976 (there is little doubt that this species has to be ranked species inquirenda, considering the rather inadequate description and illustration, seemingly on the basis of juvenile specimens). Later, Sudzuki (1979) added several marine gastrotrich taxa to the interstitial biota of the Ryukyu Islands, including *Heteroxenotrichula affinis* (Remane, 1934), *H. pygmaea* (Remane, 1934), *Aspidiophorus* sp. and *Chaetonotus* sp. The late

Dr. Tatsunori Ito, who extensively studied marine meiofauna, mentioned and photographed several genera of gastrotrichs (Ito 1985) that had been mostly collected around the Seto Marine Biological Laboratory (SMBL).

The family Thaumastodermatidae is a representative taxon constituting the most diversified natural group of marine gastrotrichs, and 85 species in eight genera are currently recognized. However, in the west Pacific, the taxonomic study on this family is rather scanty, and only five species have been recorded, namely *Tetranchyroderma dendricum* Saito, 1937 from Japan, and *T. gracilium* Chang, Lee & Clausen, 1998, *Thaumastoderma coronarium* Chang, Lee & Clausen, 1998, *Th. appendiculatum* Chang, Lee & Clausen, 1998 and *Th. copiophorum* Chang, Lee & Clausen, 1998 from South Korea (Chang et al. 1998a, 1998b).

This paper deals with the description of three new thaumastodermatid gastrotrichs,

one each belonging to the genera *Tetranchyroderma*, *Thaumastoderma*, and *Platydasys*, on the basis of specimens obtained from the coast around SMBL at the mouth of Tanabe Bay, southwestern Honshu, Japan.

Materials and Methods

Material was collected from the intertidal and shallow sublittoral zones around the Seto Marine Biological Laboratory, Shirahama, Wakayama, Japan (35°41'30"N, 135°20'30"E). Samplings were made either by scooping the top few centimeters of bottom sediment by skin diving or by using Eckmann-Berge grab samplers (20 cm by 20 cm). In the laboratory, gastrotrichs were extracted by the relaxation-decantation method (Ruppert 1988). The extracted specimens were fixed in 5% buffered formalin or Bouin's fluid and transferred to a 5% solution of glycerin in 95% ethyl alcohol, which was allowed to evaporate over 1–3 days, leaving the specimens in pure glycerin.

Specimens were drawn and measured in glycerin on H-S slide (Shirayama et al. 1993), a recent variation of Cobb slide, and also observed and photographed with a differential interference contrast microscope with Nomarski optics. Minute morphological characters like sensory hairs and inner genital organs were examined and video-recorded from living specimens using a CCD camera. Figures were made with the aid of a camera lucida.

Material for scanning electron microscopy (SEM) was prefixed overnight at 4° with 2.5% glutaraldehyde in a 0.1 M phosphate buffer, followed by postfixation with 1% cold osmium tetroxide in the same buffer for 1.5–2 hr. After dehydration through a graded ethanol series (50–100% at 10% intervals) for 30 minutes each, materials were critical point dried, coated with gold-palladium in a high vacuum evaporator, and examined with a Hitachi S-520 scanning electron microscope operated at 15–20 KV.

Terminology used in the description follows Ruppert (1991) and Clausen (1991). Abbreviations used in the text are as follows: Lt, total length, from anterior tip of head to posterior tip of caudum, or pedicles including adhesive tubes; U, percentage unit of Lt, used for the location (U-) from anterior to posterior, or for the relative length (-U); PhJIn, junction between pharynx and intestine; cirrata 1–5, first to fifth pair of dorsolateral cuticular tubes with a granular content; TbA, anterior adhesive tubes; TbD, dorsal adhesive tubes; TbDL, dorsolateral adhesive tubes; TbP, posterior adhesive tubes; TbV, ventral adhesive tubes; TbVL, ventrolateral adhesive tubes.

Systematics

Family Thaumastodermatidae

Remane, 1926

Subfamily Thaumastodermatinae

Ruppert, 1978

Genus *Tetranchyroderma* Remane, 1926

Tetranchyroderma schizocirratum,
new species

Figs. 1, 2

Material examined.—Fourteen individuals (1 juvenile), subtidal sands (3–5 m depth), northern beach of SMBL, 15 Jan 1997, H. S. Rho & C. Y. Chang. Holotype (National Museum of Natural History, Smithsonian Institution: USNM 1002489) and 1 paratype (USNM 1002490) mounted in glycerin on H-S slide. Two paratypes in glycerin are deposited in SMBL (Type nos. 403, 404), and other paratypes (10 specimens mounted on H-S slide) are retained in the collection of the first author at the Department of Biology, Taegu University.

Additional material examined.—Three individuals, at the same locality as above, 25 Jul 1997, R. Asai; 13 individuals, at the same locality as above, 16–20 Sep 2000, S. Kubota & J. M. Lee; 5 individuals, subtidal sands (4.8–11.2 m depth, with grab) of Tanabe Bay, north of SMBL, 19 Sep 2000, S. Kubota & J. M. Lee.

Diagnosis.—*Tetranchyroderma* with ob-

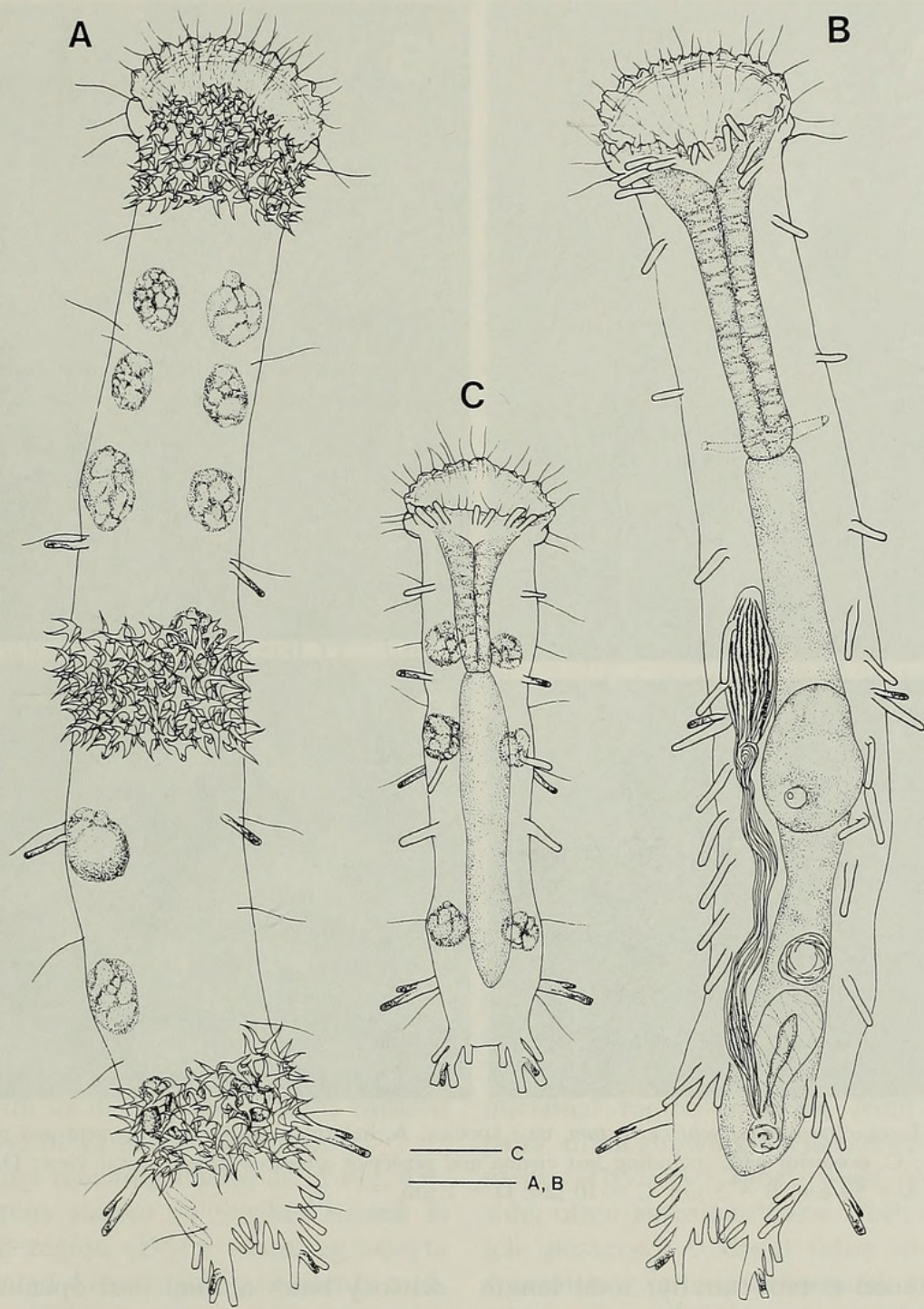


Fig. 1. *Tetranchyroderma schizocirratum*, new species: A, habitus, dorsal view; B, habitus, ventral view; C, habitus, juvenile, ventral view. Scale bars = 20 μ m.

long and slender body; head gently convex with anterior bulgy margin; without cephalic tentacles; bearing a pair of pestle organs; cuticular armature of tetrancres only; 3 pairs of TbDL of cirrata type, first one just posterior to PhJIn, second one at middle intestinal region and third pair robust with cleft end, at posterior edge of body; 5

TbA forming an arc at each side; 8–15 pairs of TbVL, consisting of 2 in pharyngeal region and 6–13 in mid-trunk region; TbV as paired feet each consisting of 2–3 tubes; TbP of 10–11 tubes per side, comprising pedicles each with 3 distal tubes, 5 lateral and 2–3 medial ones.

Description of holotype.—Body elon-

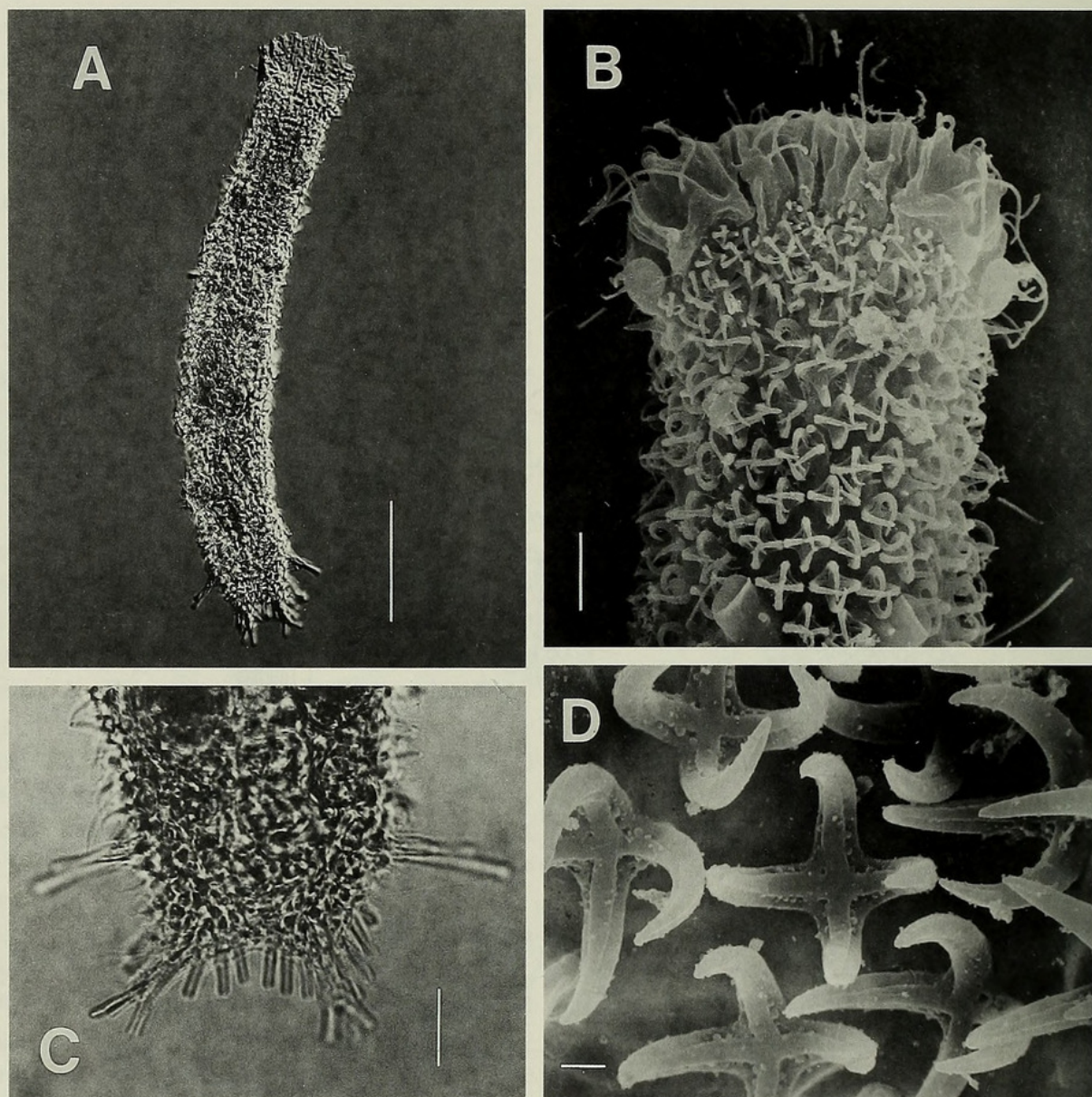


Fig. 2. *Tetranchyroderma schizocirratum*, new species: A, habitus, dorsal view; B, head and neck region, dorsal view; C, posterior part, including last cirrata and posterior adhesive tubes, dorsal view; D, tetrancres. Scale bars: A = 50 μm ; B = 5 μm ; C = 10 μm ; D = 1 μm .

gate, flattened dorsoventrally; total length about 280.3 μm , including posterior adhesive tubes; both sides nearly parallel, weakly constricted at neck region and slightly swollen at mid-trunk region (U59), with maximum width 38.8 μm (13.9U), narrowed at the base of bilobed caudum; widths of head, neck, PhJIn, trunk, and caudal base 42.8 μm , 30.9 μm , 34.7 μm , 38.8 μm , and 23.7 μm at U05, U20, U32, U59, and U93, respectively.

Head (Figs. 1, 2B) protruding slightly anteriorly with bulgy border, adorned with

sensory hairs around oral opening; dorsal sensory hairs scattered on oral hood just in front of foremost row of cuticular armature; other hairs irregularly situated laterally or dorsolaterally (U16–U93). No cephalic tentacles or cirri present. Paired pestle organs situated at U08, suboval and pointed anterolaterally, each accompanied by a sensory bristle. Eyespot lacking.

Cuticular armature (Fig. 2B, D) furnished with tetrancres only, arranged in 15–18 columns at mid-trunk region, each with up to 50–54 tetrancres; size of tetrancres variable,

5.2–5.5 μm between opposite tines at head portion (U05), 7.9–11.2 μm at mid-trunk region (U52), and 6.5–8.3 μm near caudum, respectively. Epidermal glands number 5–6 per side, situated from middle of pharyngeal region near cirrata 3, mixed in size (16.4–17.1 by 8.6–13.8 μm) with generally oval shape.

Adhesive tubes: 5 TbA of 1 medial and 4 per side forming a ventrolateral arc, each 5.9–8.6 μm long; 11 TbVL per side, comprising 2 in pharyngeal region (8.6 μm and 7.2 μm long, each at U13 and U27) and 9 in mid-trunk region (9.9–13.8 μm , more or less evenly spaced from U39 to U70), the sixth one with a cirratum issuing together at U50; TbV as 2 symmetrical feet each consisting of 3 tubes, with their lengths increasing laterally (9.2, 10.5 and 13.2 μm); adhesive tubes of the TbP series in number of 10–11 per side, comprising pedicles each furnished with 3 distal tubes (including a thin cirratum-type tube dorsally inserted between the other two), 5 lateral and 2–3 medial ones. Three pairs of TbDL of cirratum-type: first one 10.5 μm (3.8U) long, issuing just behind PhJIn (U41), second one a little shorter than the preceding one, 9.9 μm (3.5U) at mid-intestinal region (U62), and last one (Figs. 1A, 2C) robust and about two times longer than cirrata 2, 19.7 μm (7.0U) with its distal portion cleft, situated at the level of genital pore (U88).

Testis not reaching PhJIn, as in Fig. 1B; vas deferens shown as weakly folded at mid-trunk region (U51). Maturing oocyte oval, situated dorsally just posterior to mid-trunk. Copulatory organ pyriform, anterior portion broad and hind part narrow (36.2 by 13.3 μm) located at U74–U87; seminal receptacle circular, 11.2 μm in diameter, anterior to copulatory organ.

Ecology.—Found among fine sands in subtidal bottoms (3–5 m depth), frequently together with *Thaumastoderma clandestinum*.

Juvenile.—One juvenile (Fig. 1C) showed several morphological differences from adults, including body rather stumpy

and widest at head region (Lt 133.6 μm , width 32.2 μm , width to length ratio 24.1%, vs. 13.8% in holotypic adult); TbA of only 3 pairs, in a transverse row, 5.3–5.9 μm long; only 4 pairs of TbVL, first one located at mid-pharyngeal region (U21), second one as granular tube just behind PhJIn (U35), and the other two in mid-trunk region (U47 and U58); TbV not detected; 5 TbP on each side: each pedicle bearing two distal tubes with one cirratum-type tube pointed dorsally, flanking only 1 lateral tube and 1 medial tube; and only 2 pairs of TbDL present, posterior one branched at the middle of cirratum.

Measurements and variability.—Body lengths of 13 adult type specimens in glycerin ranged from 205.2 μm to 280.3 μm (\bar{X} = 236.6 \pm 64.1 μm), maximum widths 32–48 μm (14–23U). Lengths of cirrata 1 (TbDL) 9.0–11.8 μm (3.8–5.3U), cirrata 2 6.4–9.9 μm (2.9–3.5U), and cirrata 3 15.1–19.7 μm (6.7–8.7U). Relative mean length ratio of cirrata 1–3 measured 4.5:3.4:7.5.

The arrangement and numbers of adhesive tubes showed some variability. TbA: one paratype had 4 pairs, 10 specimens, including holotype, 5 pairs, and two individuals 5 tubes on one side and 6 on the other side. TbVL: the numbers were consistent as 2 pairs in pharyngeal region but variable in intestinal region (varying from 6 to 13 pairs, often showing asymmetrical arrangement). TbV: 2–5 tubes were present per side, often asymmetrically. TbP: each pedicle possessed 3 distal tubes in all adult specimens examined; the number of lateral tubes and medial tubes was variable, ranging 4–5 and 2–3 per side, respectively, sometimes with asymmetrical arrangement.

No particular difference in the number and arrangement of dorsal cirrata was detected, except for one specimen that had an additional cirratum between cirrata 2 and 3 on left side only; cirrata 3 were usually cleft or branched as suggested by the specific name, which is the key feature of this new species; this feature was shown invariably, except for two specimens in a total of 33

specimens examined; one specimen had a three-lobed cirratum while another specimen had a unbranched one; however, both bear the branched cirratum on the other side.

Etymology.—The specific name, *schizocirratum*, is derived from the Greek *schizo*, meaning “cleave, split, divide or branch” and refers to the cleft cirrata 3, the diagnostic character of this new species.

Remarks.—Forty-six species are currently recognized in the genus *Tetranchyroderma*. Of them, *T. schizocirratum* should be allied with four species which have a pestle organ and at the same time are armed with tetrancres only: *T. massiliense* Swedmark, 1956, *T. sanctaecaterinae* Todaro, Balsamo & Tongiorgi, 1992, *T. aphenothigmum* Hummon, Todaro, Tongiorgi & Balsamo, 1998, and *T. gracilium* Chang, Lee & Clausen, 1998. *Tetranchyroderma schizocirratum* is differentiated from them by the numbers of TbD or TbDL in having three such pairs, while the above four species have two, one, nine and two pairs, respectively and especially by the peculiar shape of the last one (cirrata 3). In addition, *T. schizocirratum* shows some other discrepancies with the species above as follows: *T. massiliense* is discernible from *T. schizocirratum* in bearing extended pedicles without flanking TbP, as well as by the longitudinal TbA arrangement (Swedmark 1956).

Tetranchyroderma sanctaecaterinae is discernible from the *T. schizocirratum* by its characteristic arrangement of TbVL or TbV (Todaro et al. 1992). *Tetranchyroderma aphenothigmum* is peculiar in having a pair of long tentacles on the oral hood; moreover, it is differentiated from the other species of the above group by its meager pedicles (Hummon et al. 1998). *Tetranchyroderma gracilium* has a similar arrangement of TbP as does *T. schizocirratum*, but the former shows a clear difference in its strikingly narrow body shape and in the elongate and evenly broad copulatory organ (Chang et al. 1998b).

Tetranchyroderma boreale Clausen,

2000 resembles *T. schizocirratum* in general appearance but is differentiated from it by lacking the pestle organs, by smaller caudal lobes, and by its TbP which lack a cirratum (Clausen 2000).

Tetranchyroderma dendricum Saito, 1937 recorded from Japan bears an armature furnished with tetrancres only, but it supposedly lacks the pestle organ according to the illustration in the original description (Saito 1937). Furthermore, it clearly differs from *T. schizocirratum* by the number of TbDL, the shape of pedicles and the absence of medial TbP.

Genus *Thaumastoderma* Remane, 1926

Thaumastoderma clandestinum,

new species

Figs. 3, 4

Material examined.—Eleven individuals, subtidal sands (3–5 m depth), northern beach of SMBL, 17 Sep 2000, S. Kubota & J. M. Lee. Holotype (USNM 1002491) and 1 paratype (USNM 1002492) mounted in glycerin on H–S slide. Two paratypes mounted in glycerin are deposited in SMBL (Type nos. 405, 406), and other paratypes (four specimens mounted in glycerin, and three on aluminum stubs for SEM observation) are housed in the Department of Biology, Taegu University.

Additional material examined.—Fifteen individuals, subtidal sands (4.8–11.2 m depth, grab sampling) in Tanabe Bay, north of SMBL, 19 Sep 2000, S. Kubota & J. M. Lee; 11 individuals, subtidal sands (3–5 m depth), northern beach of SMBL, 21 Jan 1997, H. S. Rho.

Diagnosis.—*Thaumastoderma* with simple spatulate tentacles; adhesive tubes composed of 4 pairs of TbA, 10–19 TbVL per side of which first 2 tubes in pharyngeal region, 1 pair of TbV in posterior intestinal region and 6–8 TbP per side; 6 pairs of dorsal cirrata (TbD), of which second and third pairs reduced to vestigial, and sixth one having an accessory cirratum.

Description of the holotype.—Body

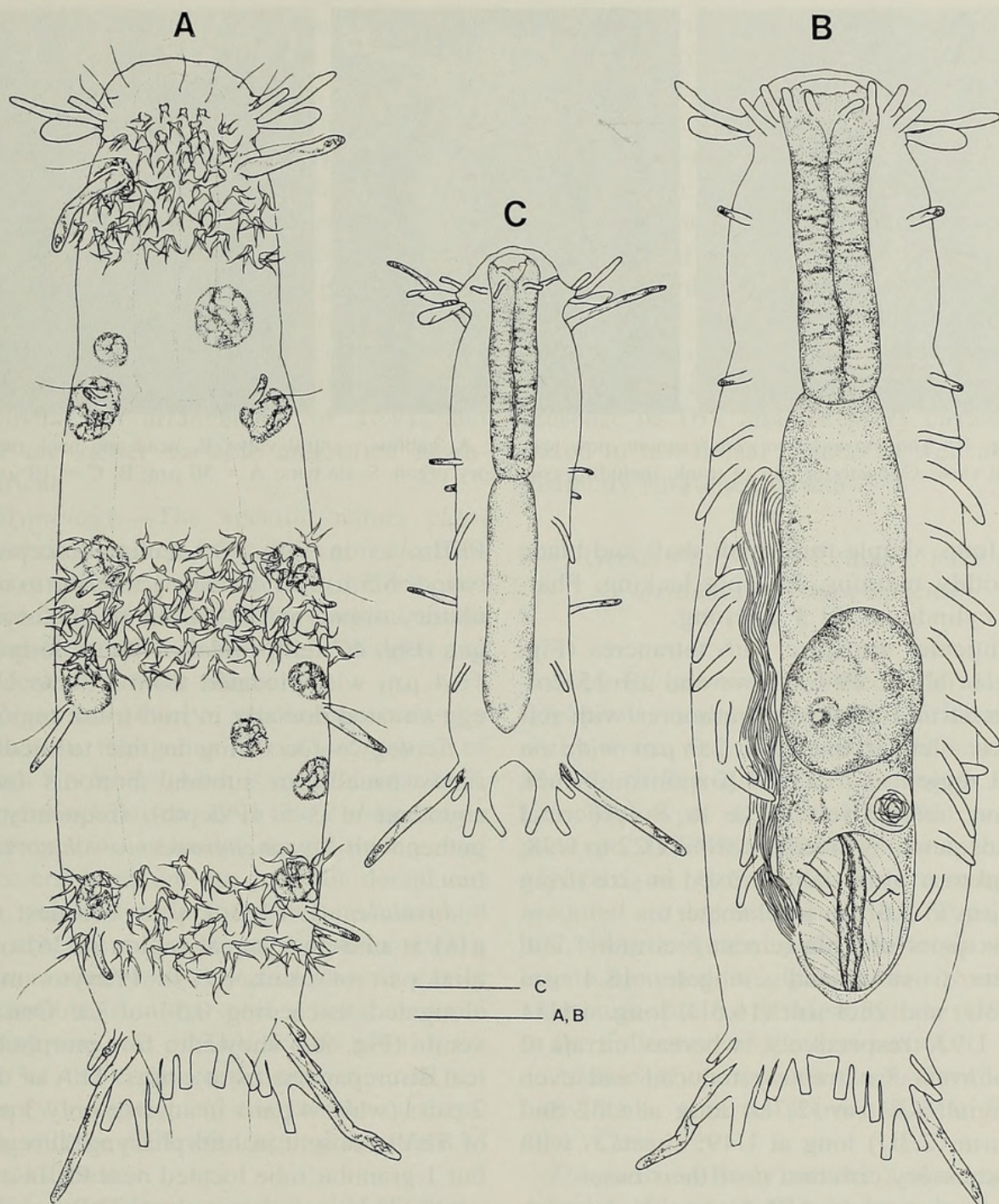


Fig. 3. *Thaumastoderma clandestinum*, new species: A, habitus, dorsal view; B, habitus, ventral view; C, habitus, juvenile, ventral view. Scale bars = 20 μm .

(Figs. 3, 4A) small and stumpy, Lt 171.1 μm , and a little constricted at U30 just anterior to PhJIn. Posterior border slightly incurved. Widths of head, PhJIn, trunk, and caudal base 27 μm , 36.2 μm , 44.7 μm , and 28.3 μm at U06, U32, U61, and U91, respectively.

Anterior margin of head (Figs. 3, 4B) convex, with 1 pair of papillae each bearing

a sensory hair just ahead of anterior tentacle, and 5–7 short sensory hairs; other hairs long, issuing near base of dorsal cirrata. Oral opening subcircular, ca. 10.5 μm in diameter, and a little protruding with bulgy distal margin.

Anterior tentacles slim, 7.9 μm long, situated at U06; rod-shaped lateral tentacles 15.1 μm long at U06; spatulate tentacles 9.9

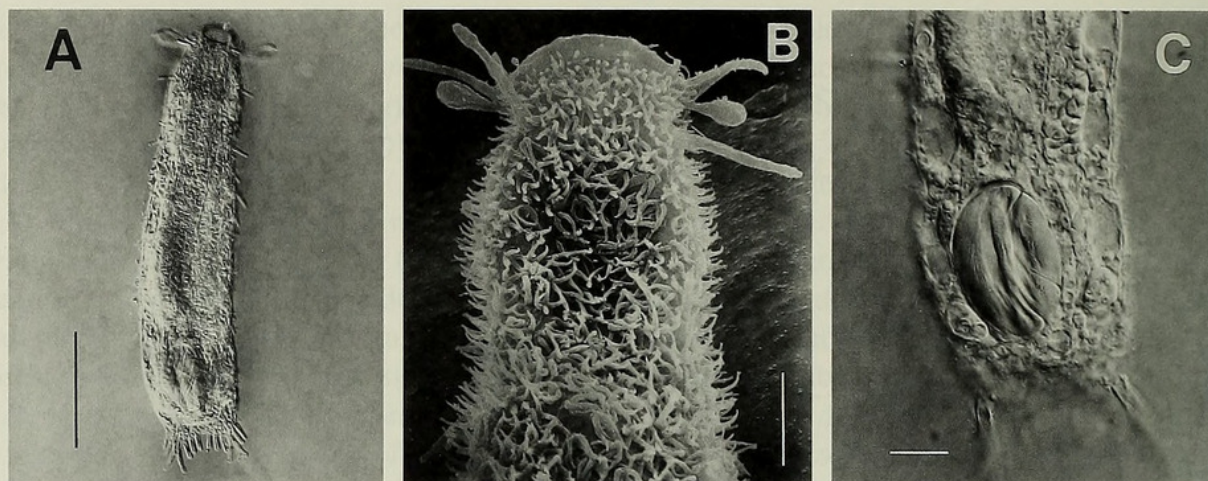


Fig. 4. *Thaumastoderma clandestinum*, new species: A, habitus, ventral view; B, head and neck region, dorsal view; C, posterior part of trunk, including copulatory organ. Scale bars: A = 50 μm ; B, C = 10 μm .

μm long, simple-form with shaft and blade smoothly merging. Eyespot lacking. Pharynx cylindrical, 51.3 μm long.

Cuticular armature with tetrancres (Fig. 3A), in about 29–34 rows and 13–15 columns at mid-trunk region; an cres with relatively slender tines, ca. 2.0 μm wide on head region and ca. 5.9 μm on mid-trunk region, respectively. Five to 8 epidermal glands per side, scattered from U22 to U78, round to oval in shape, mixed in size (from 5.9 μm to 8.6 μm in diameter).

Six pairs of TbD (cirrata): cirrata 1 and cirrata 6 stout and elongate, 18.4 μm (10.8U) and 28.3 μm (16.5U) long at U11 and U92, respectively, whereas cirrata 2 and cirrata 3 extremely reduced and even vestigial, 4.8 μm (2.7U) long at U32 and 3.9 μm (2.3U) long at U49; cirrata 6 with an accessory cirratum near their bases.

Adhesive tubes: 4 TbA per side, forming a transverse row posterior to mouth at U04; TbVL of 12 pairs, including 2 small cirrata-like ones (5.3 μm) in pharyngeal region situated at U14 and U28, respectively and 10 in trunk region from U33 to U74, mixed in size from 7.9 μm to 13.2 μm ; 1 pair of TbV 5.9 μm long, situated at level of last TbVL (U75); pedicles (Fig. 3A) 14.5 μm (8.5U) long, each furnished with 2 distal tubes, flanked by 2 tubes laterally (5.9–7.2 μm long) and 3 tubes medially (7.9 μm long).

Testis single on right side, not reaching

PhJIn, as in Fig. 3B; seminal receptacle round, 8.5 μm in diameter, anterior to copulatory organ, at U64–U70; copulatory organ (Fig. 4C) ellipsoidal, 24.6 μm long and 16.4 μm wide, located from U70 to U87; egg situated dorsally in mid-trunk region.

Ecology.—Occurring in fine to medium sands usually in subtidal bottoms (most abundant at 3–5 m depth), frequently together with *Tetranchyroderma schizocirratum*.

Juvenile.—Lt 111.8 μm , broadest (24 μm) at mid-pharyngeal region (U26) or at hind part of trunk (U79). Pharynx much elongated, exceeding 0.33 of Lt. One juvenile (Fig. 3C) showed a few morphological discrepancies from adults: TbA of only 2 pairs (while 4 pairs in adults); only 3 pairs of TbVL: absent in mid-pharyngeal region, but 1 granular tube located near PhJIn as in adult; TbV not detected; 4 TbP on each side: pedicle is nearly similar in shape with that of adults, except not flanked by medial tubes, and only 4 pairs of dorsal cirrata present, last one each accompanied by a just-sprouting accessory cirratum.

Measurements and variability.—Body lengths of eight specimens mounted ranged from 163.2 to 189.5 μm (\bar{X} = 177.5 \pm 15.3 μm), and maximum widths 42.8–46.1 μm (19.4–26.2U). The relative lengths of cirrata 1 to total body length 10.8–16.1U, cirrata 4 6.9–9.7U, cirrata 5 5.4–8.9U, and

cirrata 6 16.5–24.0U (mean ratios 13.8:8.0:6.8:21.4).

Eight of 11 type specimens, including the holotype, have the spatulate tentacles with shaft and blade smoothly merging (*heideri*-type), while three specimens have the distal part abruptly swollen (*mediterraneum*-type) (cf. Clausen 1965). All specimens examined consistently have vestigial cirrata 2 and cirrata 3, an accessory cirratum near the base of last cirrata, and a pair of TbV at the level of last TbVL. On the other hand, the numbers and arrangement of TbVL and TbP are rather variable and often asymmetrical.

Etymology.—The specific name, *clandestinum*, is taken from the Latin *clandestinus*, which means “secret, hidden and concealed.” It alludes to the vestigial cirrata 2 and cirrata 3 that are often “hidden and concealed” among tetrancres.

Remarks.—Twelve species are currently known in the genus *Thaumastoderma* of which *T. clandestinum* is most similar to *T. truncatum* Clausen, 1991 and *T. bifurcatum* Clausen, 1991 in having the following character combination: six pairs of dorsal cirrata, paired simple spatulate tentacles, and the absence of eyespots (Clausen 1991). *Thaumastoderma clandestinum* is easily discernible from the species listed above in having one pair of TbV in the anterior region of the copulatory organ, a small accessory cirratum near the last dorsal cirratum, and the different length proportions of dorsal cirrata.

Thaumastoderma appendiculatum Chang, Lee & Clausen, 1998 appears very close to *T. clandestinum* in sharing two characteristics, i.e., the presence of accessory cirrata annexed to dorsal cirrata and paired simple spatulate tentacle (Chang et al. 1998a). However, *T. appendiculatum* shows clear discrepancies by having five pairs of dorsal cirrata and the different size arrangement of dorsal cirrata as well as in the TbP array. *Thaumastoderma clandestinum* also shares the simple spatulate tentacle with *T. heideri* Remane, 1926 and *T. mediterraneum* Re-

mane, 1927 but is discernible from them by the presence of accessory cirri beside cirrata 6, the presence of one pair of TbV, and the size proportions of dorsal cirrata.

Thaumastoderma clandestinum is likely related to an as yet undescribed species, which was found from the Cheju Island and southern coast of Korea, considering the character combination of six pairs of dorsal cirri, simple spatulate tentacles and the morphology of TbP array. However, *T. clandestinum* is distinguished from it by the presence of TbV and accessory cirrata annexed to last dorsal cirrata, as well as the distinctly shortened cirrata 2–5.

Genus *Platydasys* Remane, 1927

Platydasys itoi, new species

Figs. 5, 6

Material examined.—Fifteen individuals, tide pools at the upper part of intertidal rocky shore, near Engetsudo Islet, south of SMBL, 18 Sep 2000, C. Y. Chang & J. M. Lee. Holotype (USNM 1002493) and 1 paratype (USNM 1002494) mounted in glycerin on H-S slide. Two paratypes mounted are deposited in SMBL (Type nos. 407, 408), and other paratypes (eight specimens mounted in glycerin, and three on aluminum stub for SEM study) are retained in the collection of the first author.

Additional material examined.—Eleven individuals, same as above, 15 Mar 1998, C. Y. Chang.

Diagnosis.—Body slender and elongate; dorsal surface covered with numerous conical papillae; anterodistal margin convex, with 6 terminal adhesive tubules; posterior ventrolateral cirri group in the form of tuft; lack of lateral tube; TbA including a medial row with 16 tubes and a pair of lateroventral rows each with 7–8 long tubes; TbVL consisting of 7 pairs in distal pharyngeal region and about 90 per side, densely inserted in a column along the trunk; TbP comprising 10 medial tubes, poorly developed pedicles and 17–19 tubes lateral to each of these.

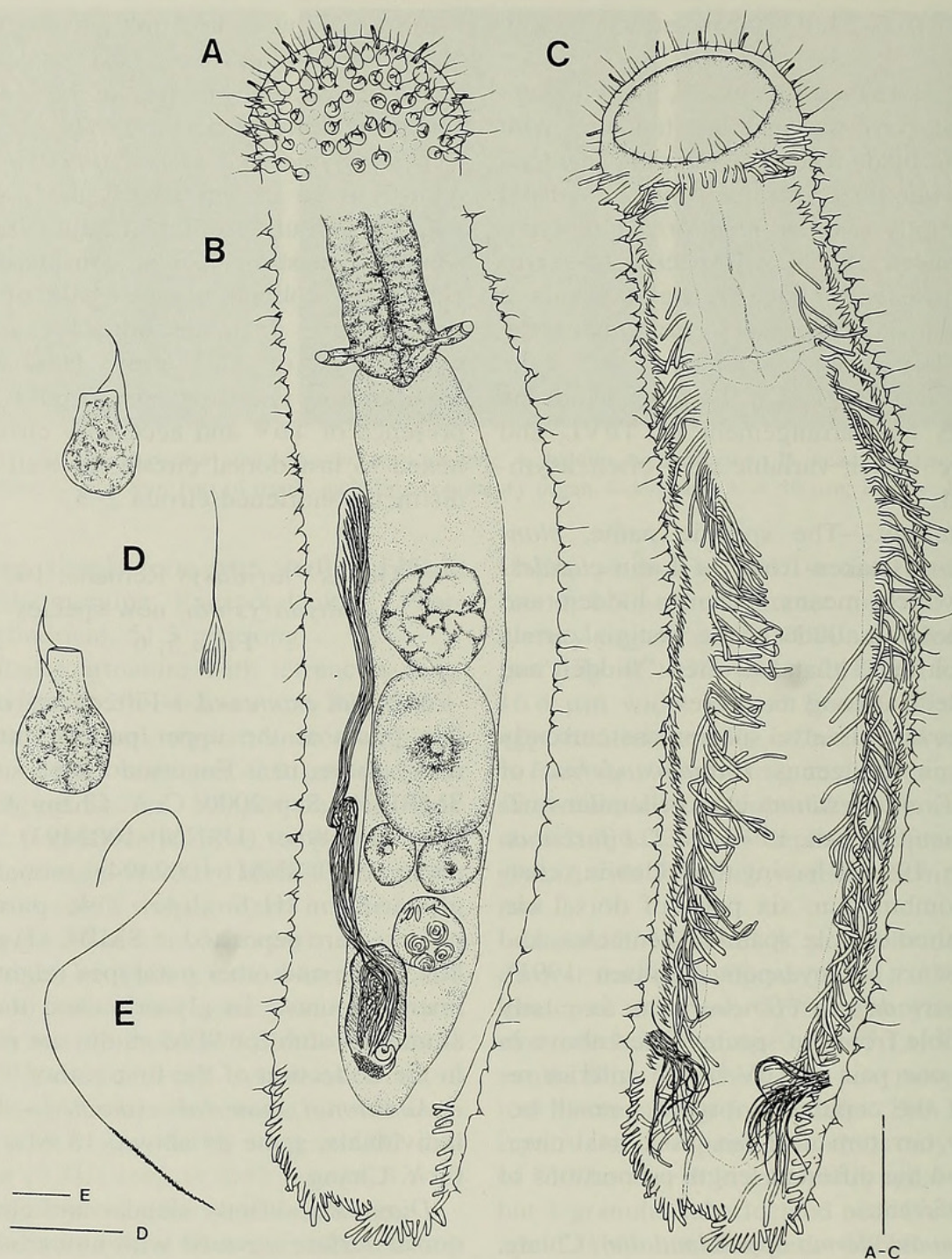


Fig. 5. *Platydasyis itoi*, new species: A, head, dorsal view showing papillary armature; B, remainder after head, ventral view showing internal organs; C, habitus, ventral view; D, dorsal papillae; E, spermatozoon. Scale bars: A–C = 50 μm ; D, E = 10 μm .

Description of holotype.—Body (Figs. 5C, 6A) slender and elongate, 503.3 μm long; both sides nearly parallel in trunk region and weakly narrowing in pharyngeal region, with maximum width of 102.0 μm (20.3U) in mid-trunk region (U46); body dorsoventrally flattened. Pharynx rather

short compared with other congeners, 144.1 μm in length, and PhJIn at U28.6. Widths of head, neck, PhJIn, trunk, and caudal base 85.5 μm , 78.9 μm , 94.1 μm , 102.0 μm , and 49.3 μm at U07, U19, U29, U46, and U95, respectively.

Anterodistal margin of head (Figs. 5A, C,

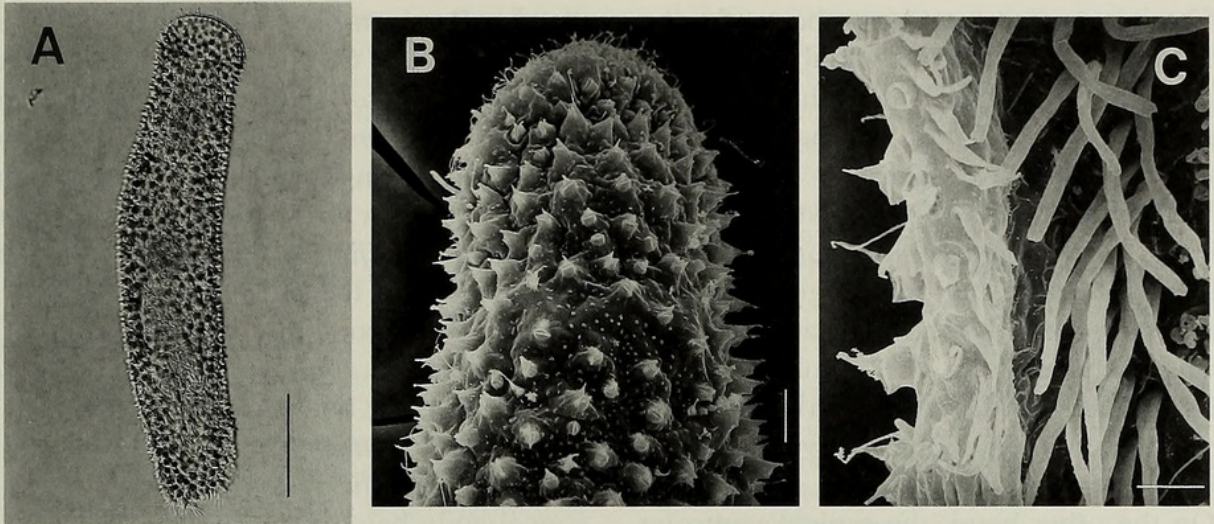


Fig. 6. *Platydasys itoi*, new species: A, habitus, dorsal view; B, head and neck region, dorsal view; C, lateroventral adhesive tubes and spiny processes. Scale bars: A = 100 μm ; B = 10 μm ; C = 5 μm .

6B) convex, with 6 terminal adhesive tubules; sensory hairs scattered, issuing on both dorsal and ventral margins of head. Oral opening wide, 69.1 μm in diameter, and sub-terminal.

Dorsal surface covered with numerous conical papillae (Fig. 5D); two morphotypes of dorsal papillae are distinguishable, one is complex and pyriform in shape, bearing an obliquely-carved cone at its distal part with fine, spiny end (about 5.9–8.6 μm in diameter, 15.7–17.8 μm in height), whereas the other with simple, conical, papillary shape (4.1–5.3 μm high), each bearing a long hair, situated mainly along margin but sparsely scattered on the dorsal surface. Dorsal glands small (3.9–5.3 μm in diameter) and tinged orange to bright brown, scattered all over the dorsal surface among papillae.

Adhesive tubes: TbA comprising a transverse row with 16 medial tubes and paired oblique ventrolateral rows each with 7–8 long tubes (about 7.2 μm), as in Fig. 5C. TbL not detected. TbVL numerous; 7 pairs (16.4–22.4 μm long) locating beside distal part of pharynx (starting from U19); about 90 per side densely arranged longitudinally in trunk region, their lengths somewhat uniform, about 32.9–38.2 μm long. TbP comprising 11 medial tubes between two poorly developed pedicles each carrying 2 distal

tubes (13.2 μm long), and flanked laterally by 17–19 tubes.

Paired ventrolateral tuft of long motile cirri present posteriorly at the level of copulatory organ (U85), each tuft consisting of about 10 cirri, and ranging from 51.3 to 57.9 μm in length, as in Fig. 5C.

Lateral margin of ventral side densely fringed with a longitudinal column of posteriorly curved spiny processes (Fig. 6C), extending from behind TbA to lateral TbP.

Testis single on right side (from a dorsal view), reaching to U35, far behind PhJIn, as in Fig. 5B; vas deferens not straight but somewhat twisted or folded at U64, and connected to copulatory organ; copulatory organ oblong (55.9 by 24.3 μm), locating U75–U86, surrounded by musculature; seminal receptacle circular (29.6 μm in diameter), containing numerous motile spermatozoa. Spermatozoon (Fig. 5E) ca. 126 μm long, with proximal quarter spiraled. Four eggs of different sizes in mid-intestinal region, maturing anteriorly.

Ecology.—Found abundantly among coarse shell gravel in tide pools at the upper part of intertidal rocky shores.

Measurements and variability.—Body lengths of 15 adult type specimens in glycerin ranged from 372.6 μm to 503.3 μm (\bar{X} = 447.1 \pm 64.5 μm), maximum widths 83.9–112.1 μm (20.3–24.3U).

The arrangement and numbers of adhesive tubes showed some variability among individuals. Anterodistal adhesive tubes numbered 6–7. Total numbers of TbA ranged from 28 to 32. The numbers of TbVL were relatively consistent as 7–8 pairs in pharyngeal region but quite variable in intestinal region (ranging from 80 to 95 pairs usually showing asymmetrical arrangement). Lateral TbP numbered 16–19 pairs frequently with asymmetrical arrangement, and the medial ones between pedicles 8–12.

On the other hand, the typical ventrolateral cirri group in the form of tuft was invariably observed in all adult specimens examined, while the lateral adhesive tubes were unexceptionally lacking.

Two juveniles were examined and showed a few morphological discrepancies from adults: the typical ventrolateral cirri group in the form of tuft was absent; one specimen had only 6 TbA and the other possessed 13; TbVL consisted of 9–10 pairs in one and 20–27 in the other; pedicles were not distinctive in the juveniles, and one individual had total 10 TbP while the other 17 tubes.

Etymology.—The specific name honors the late Dr. Tatsunori Ito in recognition of his contribution to the study on the meiofauna of Japan.

Remarks.—The genus *Platydasys* comprises 10 species, of which *P. itoi* is most similar to *P. phacellatus* Clausen, 1965, *P. mastigurus* Clausen, 1965, and *P. pacificus* Schmidt, 1974 in sharing the character combination of the lack of eyespots and the presence of paired ventrolateral cirri groups (Clausen 1965, Schmidt 1974). Especially, *P. itoi* is most closely allied to *P. phacellatus* in having the ventrolateral cirri group “in the form of tuft.” However, it is distinguished from the latter by the slender body, lack of lateral tubes, the number of ventrolateral cirri, and the number of adhesive tubes. *Platydasys itoi* is also different from *P. mastigurus* in the arrangement of the ventrolateral cirri group (as a longitudinal

row in *P. mastigurus*), the lack of lateral tubes, and the number of adhesive tubes. Moreover, *P. itoi* shares the lack of lateral tubes with *P. pacificus* but has discrepancies in the arrangement of the ventrolateral cirri group (as a cirri group separately gathered in *P. pacificus*), the number of adhesive tubes, and the presence of feet.

Ito (1985) contains a photograph of a *Platydasys* sp. (Photo. II, 3) collected around SMBL, but it is unlikely that it is identical to *P. itoi*. Although the picture is not clear and the specimen was shrunk, it conceivably belongs to *Thaumastoderma* or *Tetranchyroderma*, considering its long dorsolateral cirrata on the laterodistal part of trunk.

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