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Leptosomatides brevicaudatus n. sp. and a Redescription of *Leptosomatides marinae* Platonova, 1967 (Enoplida: Leptosomatidae)[1]

Kenji Kito[2] and W. Duane Hope[3]

Abstract: The free-living marine nematodes *Leptosomatides brevicaudatus* n. sp. and *L. marinae* were described and redescribed, respectively, from material collected in the northwest Pacific. *Leptosomatides brevicaudatus* n. sp. from Simushir Island differs from *L. marinae* in the ratio c′ (body length divided by tail length measured on the chord) and the length of the spicules. *Leptosomatides marinae* is redescribed from light microscopy (LM) observations of the type specimens and LM and scanning electron microscopy (SEM) observations of specimens from Hokkaido, Japan. It appears to be impossible to distinguish among some species of *Leptosomatides* because they are either insufficiently described or known only from females. Secondary sexual characters of males are essential for purposes of identification.

Key words: Leptosomatides brevicaudatus, Leptosomatides marinae, marine nematode, nematode, new species, SEM observation, subventral supplement, taxonomy.

A small population of large-bodied marine nematodes of the genus *Leptosomatides* Filipjev, 1918 was found on the Pacific coast of Hokkaido, Japan. The nematodes most closely resemble *Leptosomatides marinae* Platonova, 1976, whose known distribution is the northwest Pacific (Belogurov and Fadeeva, 1985; Platonova, 1976, 1978, 1981) and East Siberian Sea (Platonova and Kulangieva, 1995) (Fig. 1). The genus *Leptosomatides* was recently revised by Bongers (1984) with 14 nominal species, and *L. marinae* was redescribed. Also, after examining the type specimens of *L. acutipapillosus* Platonova, 1976 and *L. brevisetosus* Platonova, 1976, Bongers (1984) followed the opinion of Platonova by designating both species as junior subjective synonyms of *L. marinae*. However, identification of our specimens was uncertain because the original description of *L. marinae* was inadequate and Bongers (1984) redescription and synonymizations introduced diagnostic inconsistencies. To resolve this difficulty, we examined the specimens from Hokkaido, which is close to the type locality Iturup Island, with light microscopy (LM) and scanning electron microscopy (SEM) and compared them with paratype specimens of *L. marinae* and *L. brevisetosus*.

Materials and Methods

The nematodes were collected on 23 August 1992 from sponges, *Halichondria* sp., growing on rocks in the littoral zone near the Akkeshi Marine Biological Station of Hokkaido University in Akkeshi Bay, Hokkaido, Japan (Fig. 2). The specimens were fixed in 4% formalin in seawater and examined with LM and SEM. For LM, 5 males and 5 females were mounted in anhydrous glycerin between two coverslips on Cobb aluminum frames, H-S slides, or photographic slide mounts (Abé et al., 1993). Two males and 1 female were dissected for examination of the ventromedian supplement, spicules and gubernaculum, and the vulval region. Five males and 2 females selected for SEM were examined by the method described in Hope (1982).

Three male and 2 female paratypes of *L. marinae* collected at the type locality were compared with the Japanese specimens. They were mounted in glycerin-jelly on glass slides. Three paratype females of *L. marinae* and 3 paratype males of *L. brevisetosus* used in the redescription of *L. marinae* by

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[1] Supported in part by a grant for the first author from the Smithsonian Institution.
[2] Department of Biology, School of Medicine, Sapporo Medical University, Sapporo 060-8556, Japan.
[3] Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, DC, 20560.
E-mail: kito@sapmed.ac.jp
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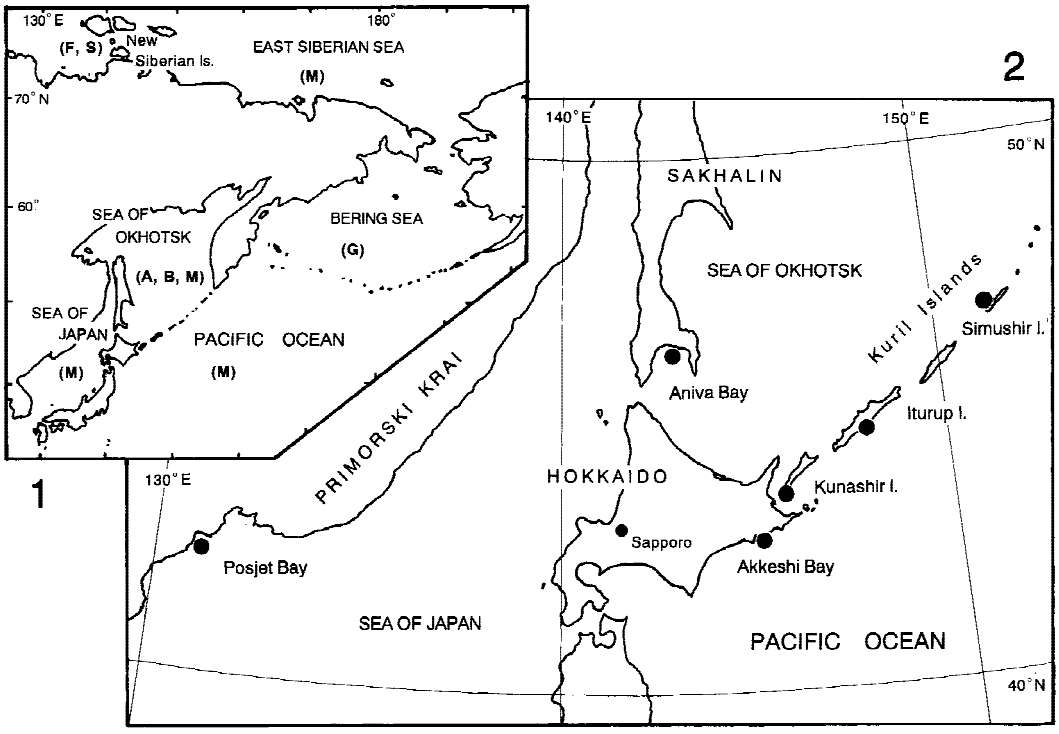


FIGS. 1, 2. *Leptosomatides* spp. collected in the vicinity of Japan and eastern part of Russia. 1) Distribution of the leptosomatid species previously reported: A = *L. acutipapillosus,* B = *L. brevisetosus,* F = *L. filiformis,* G = *L. grebnickii,* M = *L. marinae,* S = *L. steineri.* 2) Localities where leptosomatid specimens are known in the vicinity of Hokkaido.

Bongers (1984) were also examined. These specimens were remounted in glycerin on aluminum slide frames.

Morphometric data were obtained from camera lucida drawings. Data regarding bilaterally paired structures are generally given as ''right;left'' except for same figure or as a combined range in the text and tables. If paratypes were flattened, corrected body diameters were calculated using the second formula in Geraert (1961). In this study tail length on chord (t′) was measured as a distance from anus (cloaca) to tail tip and de Man's c was replaced by c′.

Besides standard abbreviations, the following are used in this paper: abd = body diameter at level of the cloacal (anal) opening; cbd = corresponding body diameter; mbd = maximum body diameter; SA/t′ = spicule length measured on arc divided by t′; SC/t′ = spicule length measured on chord divided by t′; t = tail length; V = position of vulva as a percentage of the body length from the anterior body end. The term papilla is used as defined by Bongers (1984).

SYSTEMATICS

Family Leptosomatidae Filipjev, 1918
Leptosomatides marinae Platonova, 1976
(Figs. 3–29, Tables 1–3)

Description (emended)

Leptosomatides marinae Platonova, 1976: 70, 77–79, Fig. 29; Platonova, 1978: 498, Fig. 2-1; 1981: 60, Fig. 4 (morphological study on head); Bongers, 1984: 24–25, Figs. 3-C,4-A,B, Appendix (partim; text, figures, and measurements for females only); Belogurov and Fadeeva, 1985: 184–185, Fig. 1 (morphological study on head); Platonova and Kulangieva, 1995: 175.

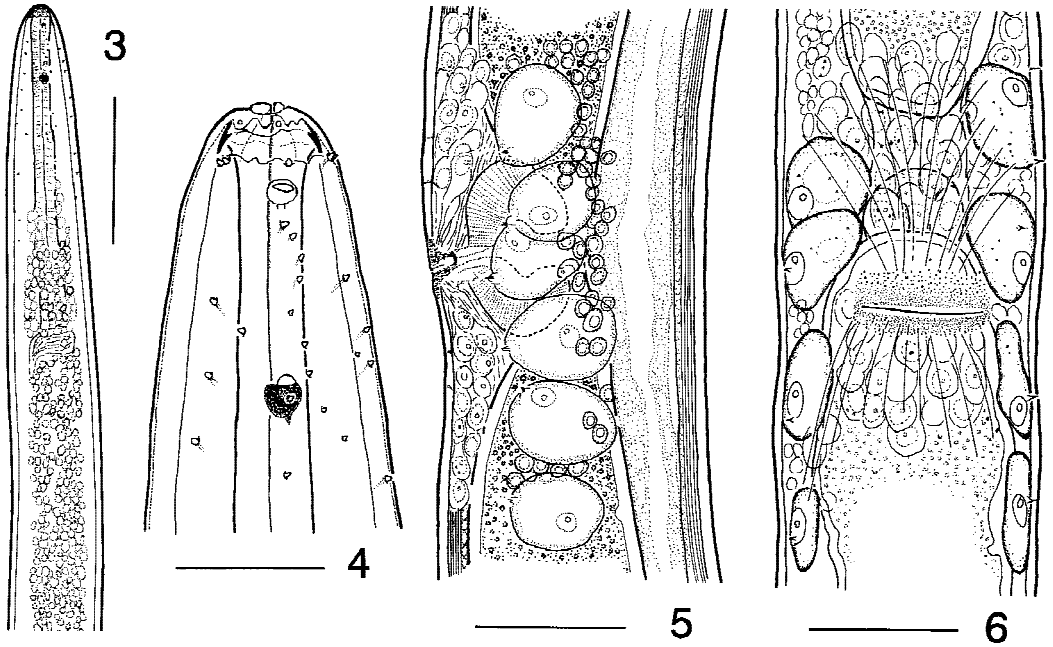
Leptosomatides acutipapillosus Platonova, 1976: 70, 75–76, Fig. 27 (op. Platonova in Bongers, 1984: 25).

Leptosomatides brevisetosus Platonova, 1976: 70, 76–77, Fig. 28 (op. Platonova in Bongers, 1984: 25).

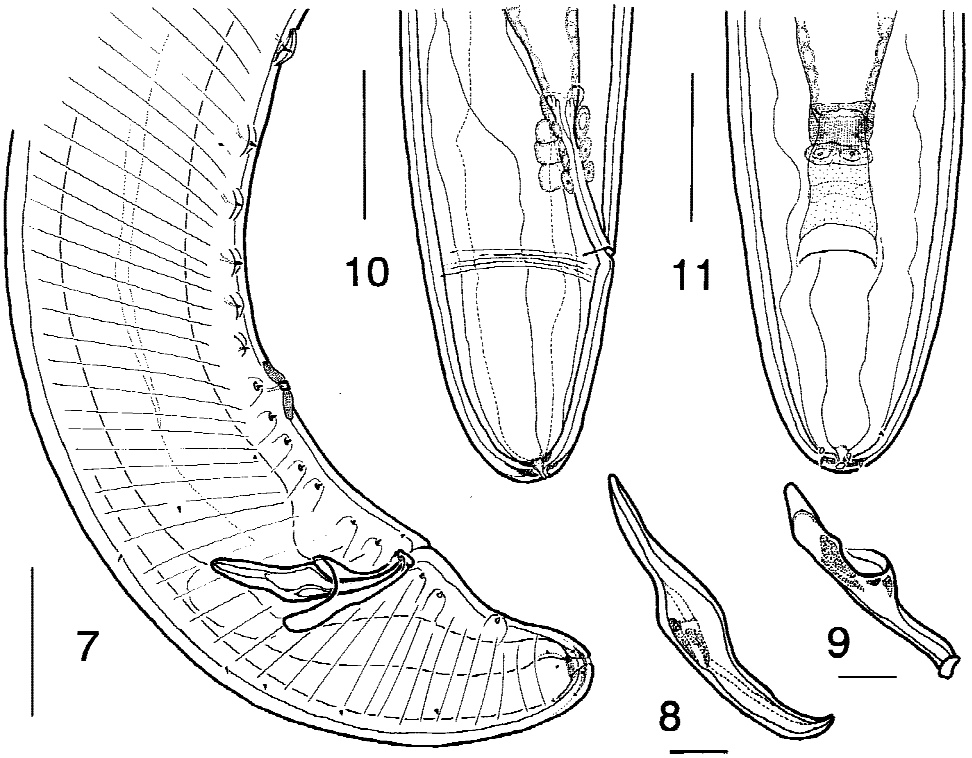
nec. *Leptosomatides marinae:* Bongers, 1984: 13–14, 24–25, Figs. 3A-B, Appendix (partim; text, figures, and measurements for males only. See description of *Leptosomatides brevicaudatus* n. sp. below.)

Males (n = 5): Body 12.0–14.1 mm long, gradually tapering to anterior extremity (Fig. 3), abruptly tapering from level of cloaca to blunt end of curved tail (Fig. 7). Diameter of body at level of cephalic sensilla 47–49 µm, at nerve ring 108–119 µm, at posterior end of esophagus 126–149 µm, at midbody 159–176 µm, at level between midbody and cloacal vent (mbd) 164–183, and at level of cloacal vent (abd) 131–141 µm. Transverse striae observed with SEM in cephalic (Figs. 12–14) and caudal regions. Somatic papilliform sensilla observed in submedian position (Figs. 12,13,16,18). Orthometanemes and type I and II loxometanemes present in lateral chord; type II loxometanemes scarce.

Head end (Figs. 4,12–13) rounded, with 6 + 10 sensilla. Inner labial sensilla papilliform. Distance from head end to circle of outer labial and cephalic sensilla 18–22 µm; outer labial and cephalic sensilla papilliform, 3.2–3.8 µm long. Cervical sensilla papilliform, about 3 µm long (Figs. 3,4,13). Cephalic capsule tapered anteriorly, margin crenate posteriorly, 11–15 µm long. Distance from head end to amphidal aperture 19–30 µm; fovea circular to transversely oval, 7.6–10.9 µm wide; external aperture transversely elliptical, 5.1–7.0 µm wide. Distance from head end to ocellar lens 83–106 µm or 1.1–1.3 cbd; diameter of lens and pigment spots 6.2–7.6 and 12–17 µm, respectively. Oral aperture triradiate, embraced by one dorsal and two subventral inner (microlabia) and outer (mandibular ridges) elements (see Hope, 1982) (Figs. 12,14). Dorsal microlabium narrower than subventral microlabium (Fig. 14). Mandibular ridges without odontia. Esophagus 1.7–2.0 mm long, slightly clavate; width of esophagus at anterior margin of nerve ring 28–33 µm and



FIGS. 3–6. *Leptosomatides marinae.* 3, 4) Male (ZIHU 1243). 3) Anterior region, left lateral view. 4) Head, left lateral view. 5, 6) Female (5, ZIHU 1252; 6, ZIHU 1253). 5) Vulval region, left lateral view. 6) Vulval region, ventral view. Scale = 200 µm in Fig. 3, 50 µm in Fig. 4, 100 µm in Figs. 5, 6.

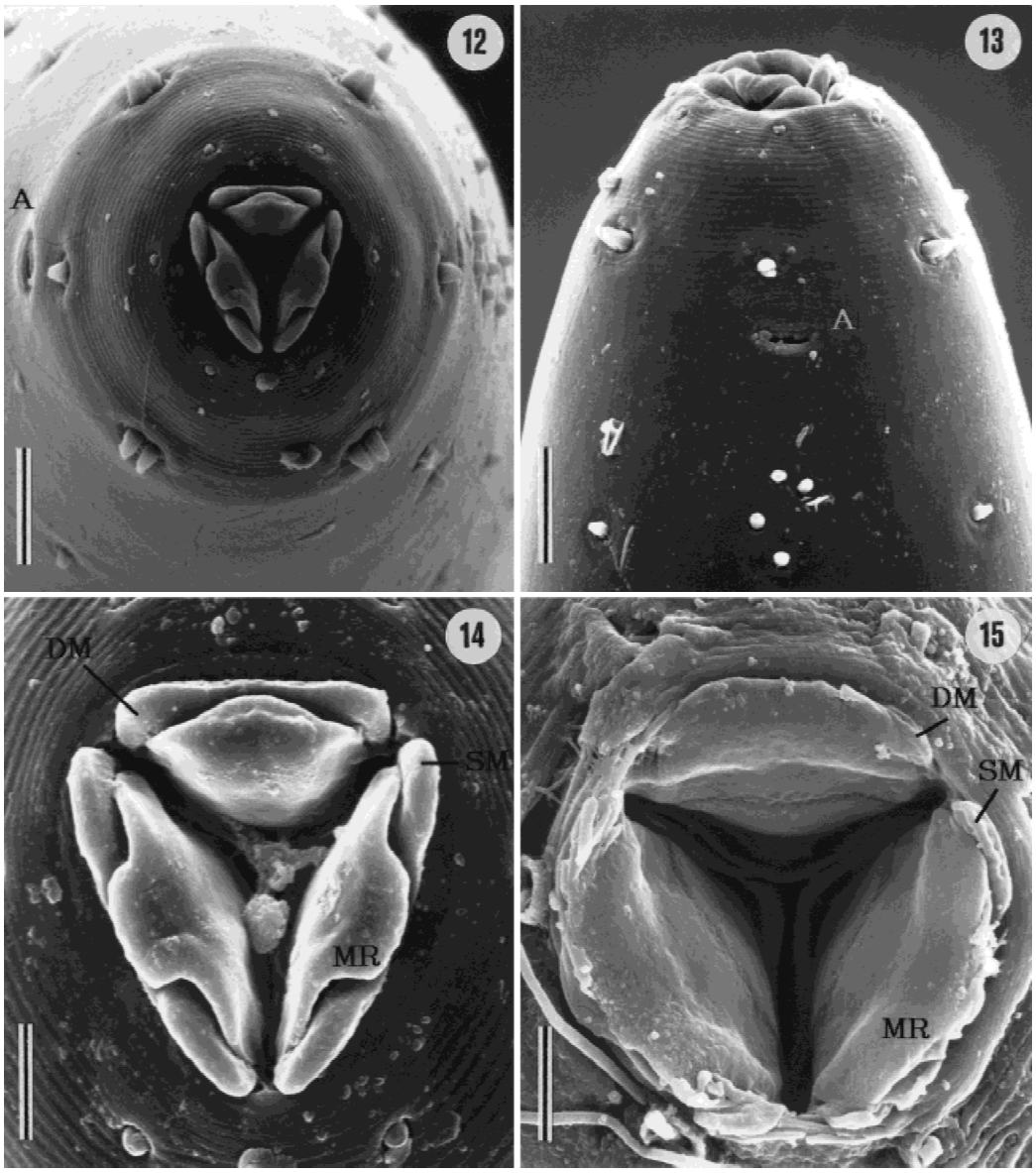


FIGS. 7–11. *Leptosomatides marinae.* 7–9) Male (7, ZIHU 1243; 8, 9, ZIHU 1245). 7) Posterior region, right lateral view. 8) Spicule, right. 9) Gubernaculum, right. 10, 11) Female (10, ZIHU 1252; 11, ZIHU 1253). 10) Tail, right lateral view. 11) Tail, ventral view. Scale = 100 μm in Figs. 7, 10, 11; 20 μm in Figs. 8, 9.

55–68 μm at posterior end of esophagus. Distance from head end to nerve ring 434–482 μm or 24.1–26.1% of esophageal length. Renette cell and pore not observed.

Reproductive system diorchic; testes opposed with anterior testis on right and posterior on left of gut in two males, and both testes on left in three males. Spicules (Figs. 7,8) paired, robust; proximal third straight, midregion dorsoventrally expanded, distal third curved and tapered to tip. Spicules (right; left) 134–142;129–142 μm long on arc, 128–134;122–136 μm long on chord, or 0.9–1.1 (on arc) and 0.9–1.0 (on chord) abd. Spicule length in relation to tail length: SA/t′ = 0.9–1.1, SC/t′ = 0.9–1.0. Gubernaculum with right and left corpora joined medially by cuticularized bridge across posterior margin of spicula; each corpus comprised of parallel anterior and posterior ribs, fused together dorsally to form flattened cuneus; cuneus enveloped by insertions of protractor and retractor muscles; anterior rib of corpus with anteriorly directed, triangular crus hooked mesad to embrace adjacent spicule; distal end of corpus with lateral bulge 8–15 μm by 5–8 μm (Figs. 7,9,28). Length of gubernaculum from ventral end to dorsal edge of cuneus, 81–102;80–104 μm or 60–74% of spicule length on arc.

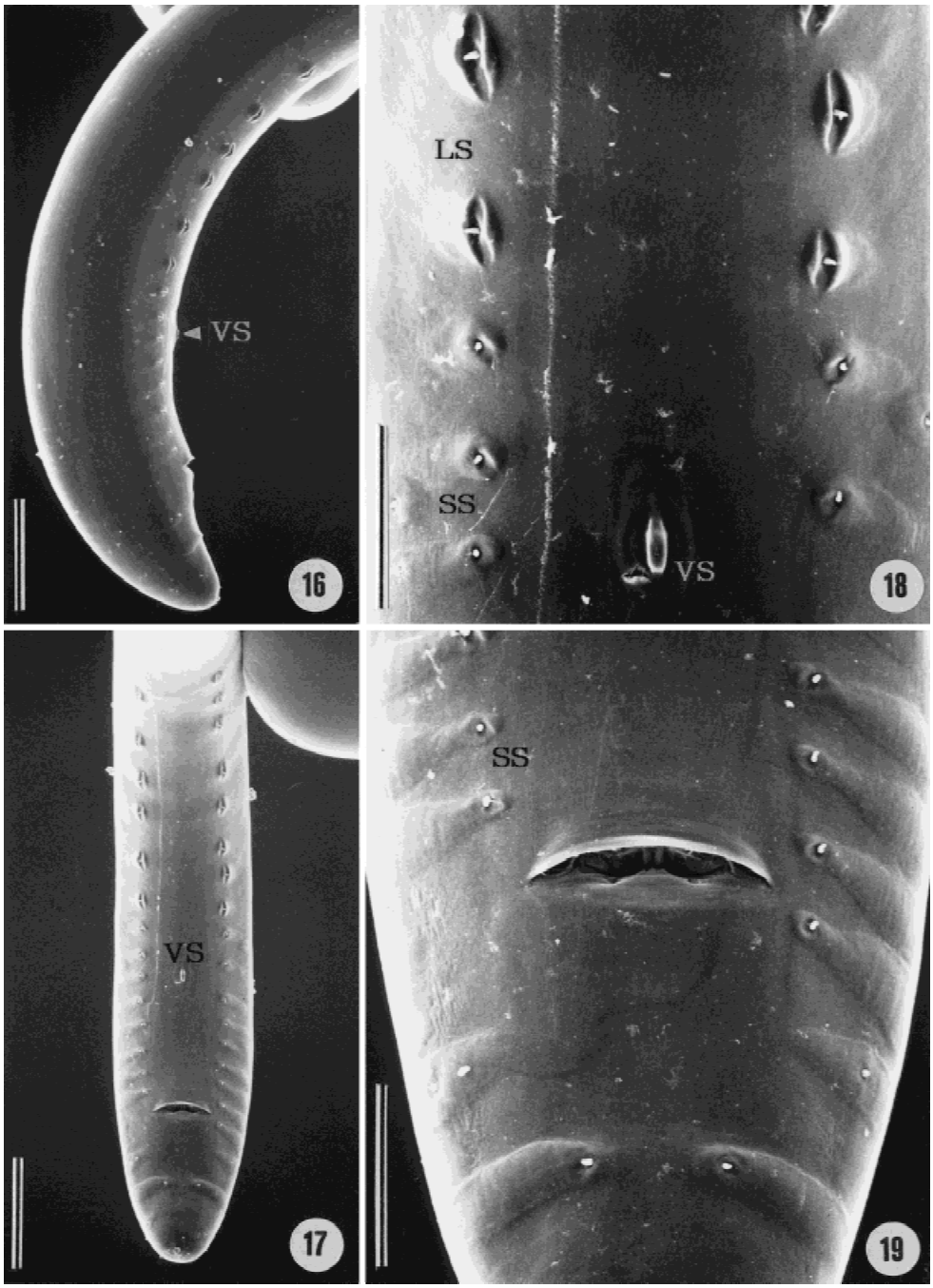
Ventromedian supplement (Figs. 7,17–18,20–22,28) raised, 8–10 μm long, with cylindrical sensory process in shallow depression; sensory process with central pore; distance from center of supplement to cloacal opening 108–161 μm or 0.8–1.2 abd. Ventromedian supplement provided with anterior and posterior alae of fine, intracuticular punctations (Fig. 22); anterior and posterior alae 17–22 and 15–18 μm long, respectively. Subventral supplements (Figs. 16–19) arranged in 16–20 pairs in two longitudinal rows; pairs sometimes irregular in arrangement and missing a supplement; 7–10 supplements anterior to ventromedian



FIGS. 12–15. *Leptosomatides marinae* male (12–14, ZIHU 1250; 15, ZIHU 1248. SEM photographs.) 12) Head, en face view. 13) Head, left lateral view. 14) Labial region, en face view; stoma closed. 15) Labial region, en face view; stoma open. Scale = 10 µm in Figs. 12, 13; 4 µm in Figs. 14, 15. Abbreviations: A = amphidal aperture, DM = dorsal microlabium, SM = subventral microlabium, MR = mandibular ridge.

supplement, 6–8 between ventromedian supplement and cloacal vent, 1–3 on tail. Anterior 5–9 supplements well-developed, each bearing single seta between two longitudinal, crescent-like elevations of cuticle; posterior supplements small, round, provided with papilla or short seta. Distance from cloacal vent to anteriormost subventral supplement 2.3–3.7 abd or 2.4–4.2% of body length (Fig. 7). Posteriomost supplements converging toward ventromedian plane, 30–53% of tail length on chord from cloaca (Figs. 17,19).

Tail short, conical, with taper mostly on dorsal side, length 143–161 µm or 1.0–1.2 abd; t′ = 131–149 µm. Papillae and (or) minute setae present on tail, especially near tail terminus. Caudal gland cells three, cell



FIGS. 16–19. *Leptosomatides marinae* male (ZIHU 1247), SEM photographs. 16) Posterior region, right lateral view. 17) Posterior region, ventral view. 18) Subventral cloacal supplements and ventromedian precloacal supplement, ventral view. 19) Cloacal vent and subventral cloacal supplements on the tail, ventral view. Scale = 100 µm in Figs. 16, 17; 40 µm in Figs. 18, 19. Abbreviations: LS = large subventral supplements, SS = small subventral supplement, VS = ventromedian supplement.

bodies extending anterior to cloaca; distance from anterior margin of anteriormost cell to tail tip 8.3–14.2% of body length. Cuticle of tail terminus with crescent-shaped lamella around spinneret.

Females (n = 5): Similar to males in general

characteristics. Body 12.2–15.3 mm long, posterior portion weakly curved. Diameter of body at level of cephalic sensilla 47–52 µm, at level of nerve ring 118–126 µm, at posterior end of esophagus 153–168 µm, at level of vulva 178–198 µm, and at level of anal opening 127–138 µm. Maximum body diameter near vulva 188–215 µm.

Distance from head end to cephalic sensilla 18–22 µm; cephalic sensilla 2.9–3.8 µm long. Cephalic capsule 13–14 µm long. Distance from head end to amphidal aperture 20–30 µm; fovea 7.6–8.9 µm wide, external aperture 4.9–7.0 µm wide. Distance from head end to ocellar lens 92–118 µm or 1.1–1.4 cbd; diameter of lens and pigment spots 6.4–7.6 and 11–16 µm, respectively. Esophagus 1.7–2.1 mm long. Distance from head end to nerve ring 449–511 µm or 24.0–26.4% of esophageal length.

Reproductive system amphidelphic; ovaries opposed, antidromous and both left of gut. Vulva 8.3–9.9 mm from head end; distance from vulva to flexure of anterior and posterior ovaries 20.0–23.4% and 19.3–27.1% of body length, respectively. Vulva transversely slit-like, 82–88 µm wide (n = 2), anterior and posterior margins with crescent-shaped zone bearing intra-cuticular pillar-like granules (Figs. 23–25). Right and left lateral chords at level of vulva with 3–6 large glands, each gland with external aperture at tip of minute papilla (Figs. 5,6,26,27). Many small cell bodies located around vulva.

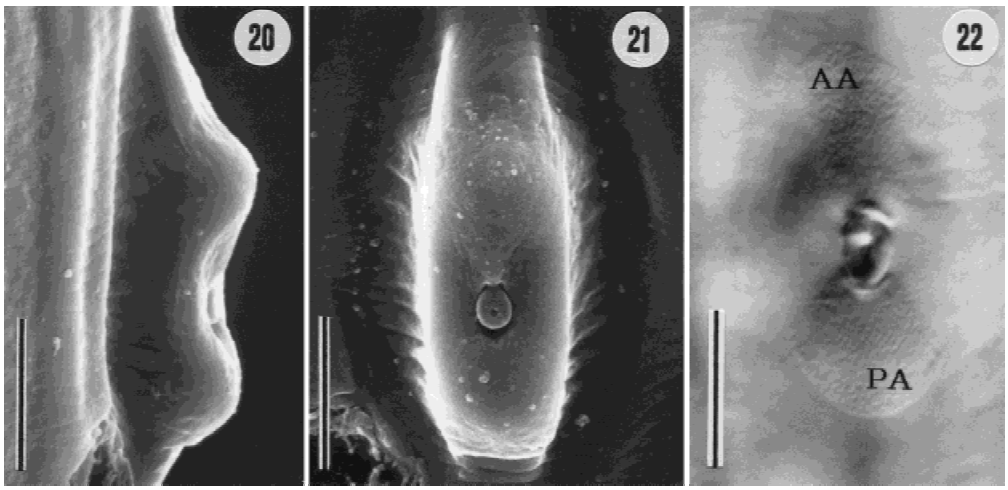
Tail short, bluntly conoid (Figs. 10,11); 146–153 µm long or 1.1–1.2 abd; t′ = 144–160 µm. Distance from anterior margin of anteriormost caudal gland cell to tail tip 5.6–13.5% of body length.

Distribution and habitats

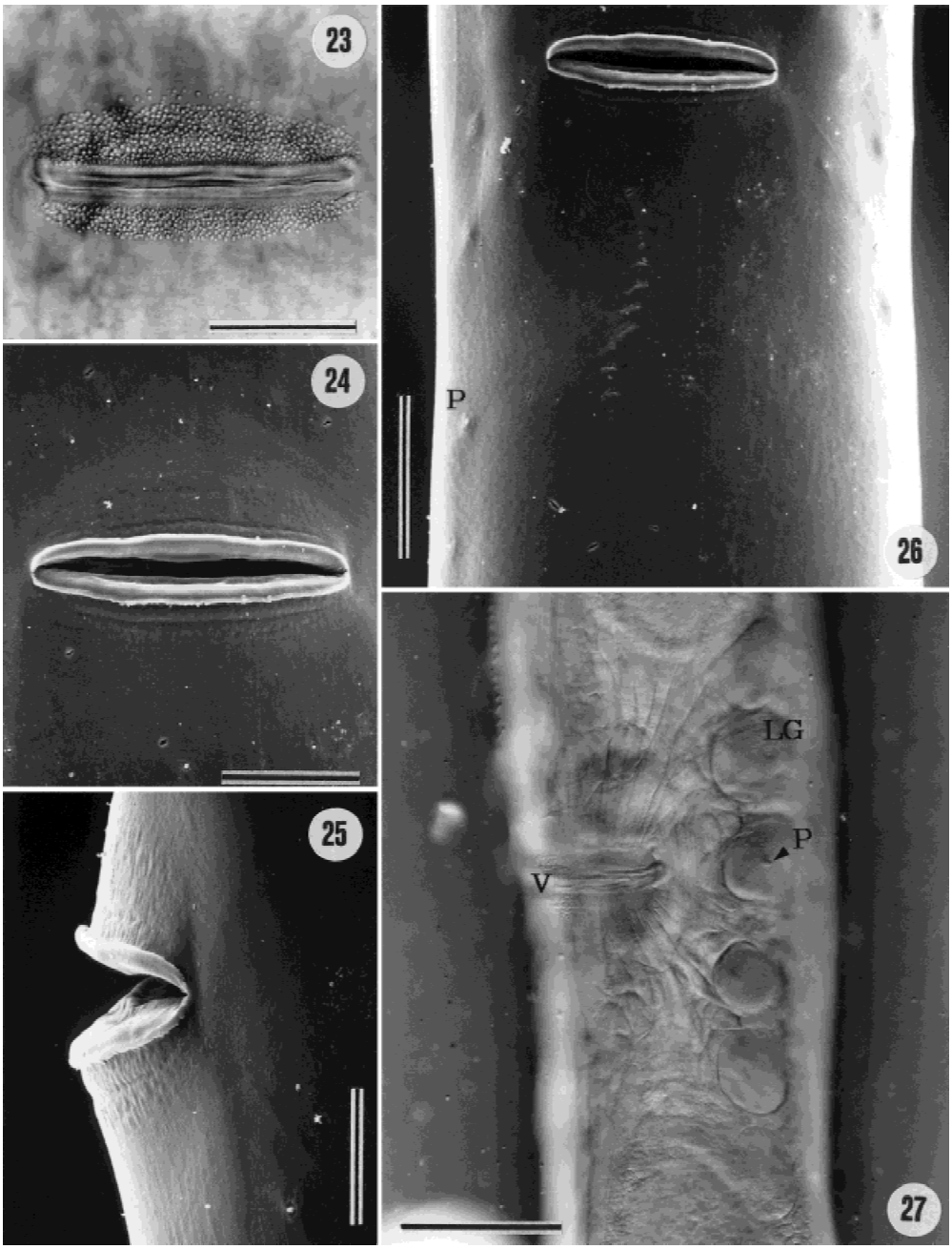
Western North Pacific: Iturup Island (Kasatka Bay; type locality), Kuril Islands, depth 4–5 m, sponge (Bongers, 1984; Platonova, 1976); Kunashir Island (Izmena Bay), Kuril Islands, depth 4–19 m, silty sand among algae and in sponge (Platonova, 1976); Hokkaido (Akkeshi Bay), littoral, sponge *Halichondria* sp. (present study). Sea of Okhotsk: no locality given, depth 25 m, muddy bottom (= *L. acutipapillosus*; Platonova, 1976); Sakhalin (Aniva Bay), littoral, sponge (Platonova, 1978). Sea of Japan: Primorski Krai (Posjet Bay), sponge *Halichondria panicea* and others (Belogurov and Fadeeva, 1985). East Siberian Sea: Chaunskaya Bay, depth 3 m, sand and shingle (Platonova and Kulangieva, 1995).

Specimens examined

Twelve males and 8 females, collected from Akkeshi Bay, Hokkaido (23-VIII-1992,



FIGS. 20–22. *Leptosomatides marinae* male (20, 21, ZIHU 1247; 22, ZIHU 1246). 20) SEM of ventromedian precloacal supplement, right lateral view. 21) SEM of ventromedian precloacal supplement, ventral view. 22) Ventromedian precloacal supplement with alae, ventral view. Scale = 4 µm in Figs. 20, 21; 20 µm in Fig. 22. Abbreviations: AA = anterior ala of ventromedian supplement, PA = posterior ala of ventromedian supplement.



Figs. 23–27. *Leptosomatides marinae*. Female (23, ZIHU 1255; 24–26, ZIHU 1257; 27, paratype with L = 15.6 mm on slide N 7887 M). 23) Vulva, ventral view. 24) SEM of vulva, ventral view. 25) SEM of vulva, left lateral view. 26) SEM of vulva and orifices of the lateral glands, ventral view. 27) Vulval region showing 6 lateral glands and their orifices, left ventrolateral view. Scales = 40, 30, 15, 50, and 100 μm in Figs. 23–27, respectively. Abbreviations: LG = lateral gland in vulval region, P = papilla associated with lateral gland, V = vulva.

coll. K. Kito). Slide nos. ZIHU 1242-1257, deposited in the Zoological Institute of Faculty of Sciences, Hokkaido University, Sapporo; the other specimens deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC, and the Nematology Department, Wageningen Agricultural University, Wageningen, The Neth-

erlands. Three paratype males and 2 paratype females, collected from Kasatka Bay, Iturup Island (6-VIII-1969, coll. Golikova). Slide nos. N7882M and N7887M deposited in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg. Three paratype females, collected from Kunashir Island (Izmena Bay, according to the geographic distribution of *L. marinae* in Platonova 1976; 13-VII-1969, coll. Golikova). Slide nos. USNM76111, WT2352, and V3932 deposited in the South Australian Museum, SA, Australia.

Diagnosis

Body length of male and female 10.0–18.6 mm and 12.0–17.6 mm, respectively; ratios c and c′ 62–124, 81–104 and 70–117, 77–104, respectively. Cephalic sensilla papilliform 3–4 µm long. Cephalic capsule 11–17 µm long. Diameter of amphidal fovea 7–11 µm; diameter of ocellar lens 6–9 µm. Spicules robust with expansion at mid-length; SA/t′ = 0.9–1.1, SC/t′ = 0.9–1.1. Gubernaculum with ventral bulges. Alae of ventromedian supplement finely punctate. Subventral supplements 16–26 in number with posteriormost subventral supplement situated nearest sagittal plane of tail. Lateral glands 2–6 in number on each side of vulva. Intracuticular granules numerous around vulva. t(t′) = 143–176 (131–159) µm for males and 133–171 (136–176) µm for females.

Remarks

The morphometric data for male specimens from Hokkaido and for the male paratypes agree in body length (12.0–14.1 vs. 12.8–13.1 mm), tail length (t′) (131–149 vs. 149–159 µm), c(75–90 vs. 74–78), c′(81–104 vs. 81–88), SA/t′ (0.9–1.1 vs. 1.0), and SC/t′ (0.9–1.0 for both populations) (see Table 1). The variation observed in the number of subventral supplements (16–20 vs. 21–26), in the size (129–142 vs. 144–147 µm on arc and 122–136 vs. 140–166 µm on chord) and shape of spicules, and in the size (8–15 µm

TABLE 1. Male morphometrics in *Leptosomatides marinae* and *L. brevicaudatus* n. sp.

	L. marinae					*L. brevicaudatus*
Variable	Hokkaido (*n* = 5; present study)	Iturup I.[a] (*n* = 3; present study)	Kuril Is.[b] (*n* = 6; Platonova, 1976)	Sakhalin[c] (*n* = 5; Platonova, 1978)	Kuril Is.[d] (*n* = 9; Platonova, 1976)	Simushir I.[e] (*n* = 3; present study)
Length (mm)	12.0–14.1	12.8–13.1	10.7–14.5	10.5–18.6	10.0–12.0	18.4–19.7
a	65.6–78.9	67.0–71.8[f]	75–94	57.3–85.4	73–92	63.5–68.4
b	6.6–7.2	6.9–7.2	6–7	5.6–9.4	6–7	6.8–7.7
c	74.5–90.4	73.9–77.5	73–80	65.0–124	62–84	150–156
c′	80.5–104	80.5–87.9	—[g]	—	—	166–186
Diameter of amphidal fovea (µm)	7.6–10.9	7.9–10.2	8.4	11[h]	8.1	7.6–8.9
Diameter of ocellar lens (µm)	6.2–7.6	7.0–7.6	6.0	—	5.8	7.0–8.3
SA/t′	0.9–1.1	1.0	—	—	1.1[h]	1.9–2.3
SC/t′	0.9–1.0	0.9–1.0	1.1[h]	—	1.1[h]	1.8–2.2
Number of subventral supplements	16–20	21–26	—	—	—	21–24
t (µm)	143–161	169–176	159	—	175	120–128
t′ (µm)	131–149	149–159	—	—	—	106–112

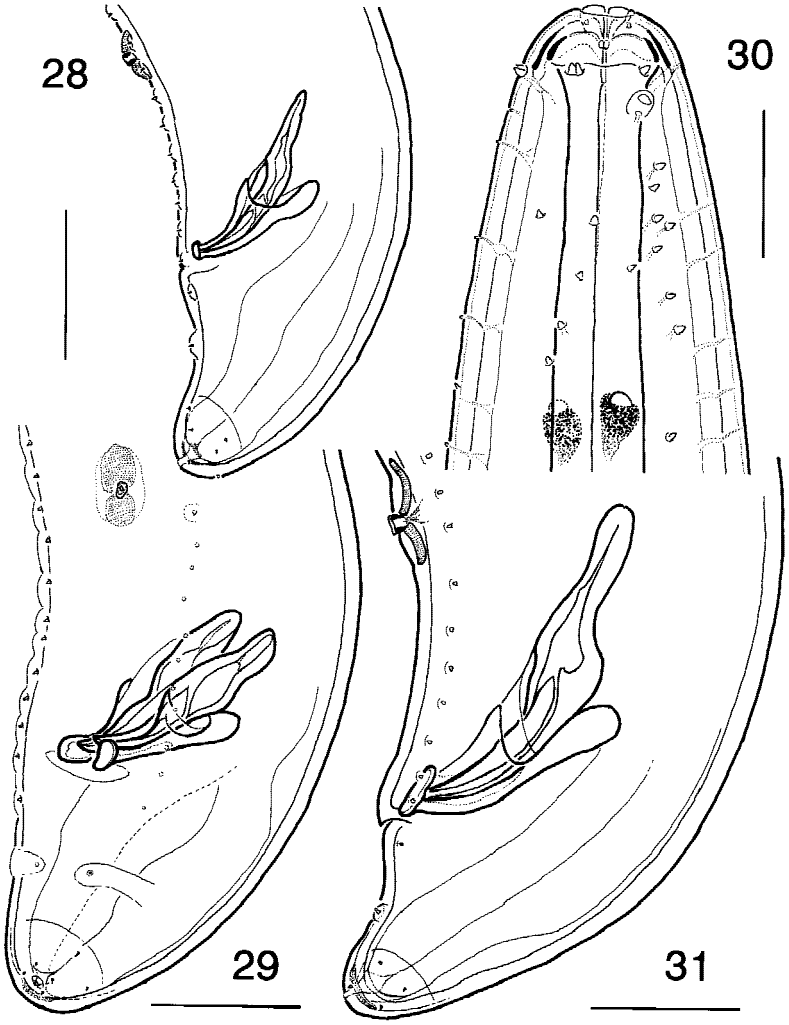
Characters: c′, body length divided by t′; SA/t′, spicule length measured on the arc divided by t′; SC/t′, spicule length measured on the chord divided by t′; t, tail length; t′, tail length on its chord length.

[a] Paratypes of *L. marinae*.
[b] Holotype and paratypes of *L. marinae*.
[c] Specimens as *L. marinae*.
[d] Holotype and paratypes of *L. brevisetosus* Platonova, 1976.
[e] Holotype and paratypes of *L. brevicaudatus* n. sp.
[f] Calculated from corrected body diameters with the second formula in Geraert (1961).
[g] Value questionable, not observable, unsuitable for measurements, or not reported.
[h] Calculated from the original figures.

by 5–8 μm vs. 18–22 μm by 14–23 μm) and shape of the lateral bulge at the distal end of the gubernaculum is so small that we conclude that the specimens from Hokkaido and Iturup are conspecific and in agreement with the original descriptions of *L. marinae* and *L. brevisetosus* (Platonova, 1976) (Figs. 7–9,28,29; Table 1). Our observations of type and newly collected specimens revealed that the caudal ventromedian supplement (see Platonova, 1976 and Bongers, 1984) is actually paired and one of the posteriormost subventral supplements.

From the foregoing observations of males we conclude that the specimens from Hokkaido are *L. marinae,* and we concur that *L. brevisetosus* is synonymous with it. Conversely, the male specimens from Simushir upon which Bongers (1984) based his redescription of *L. marinae* differ from that species in body length (18.4–19.7 mm), tail length t′ (106–112 μm), c′ (166–186), SA/t′ (1.9–2.3), and SC/t′ (1.8–2.2) (Table 1). The Simushir specimens differ from all other known species of *Leptosomatides* and, thus, represent a new species.

The females collected in Hokkaido also closely resemble the paratype specimens



Figs. 28, 29. *Leptosomatides marinae.* Male (28, ZIHU 1243; 29, paratype with L = 13.0 mm on slide N7882 M). 28) Posterior region, left lateral view. 29) Posterior region, left ventrolateral view. Scales = 100 μm. Figs. 30, 31. *Leptosomatides brevicaudatus* n. sp., holotype. 30) Head, right lateral view. 31) Posterior region, left lateral view. Scale = 50 μm in Fig. 30; 100 μm in Fig. 31.

from Kunashir and Iturup Islands, and their features generally accord with the original descriptions of *L. marinae, L. brevisetosus,* and *L. acutipapillosus* (Table 2). However, the identification of species of *Leptosomatides* from female specimens alone is unreliable. Whereas females of *L. marinae, L. arcticus* (Filipjev, 1916) Bongers, 1983, and *L. grebnickii* (Filipjev, 1916) Bongers, 1983 generally resemble one another, Bongers (1984) proposed that they could be identified by the diameter of the amphidal fovea, diameter and position of the ocellar lens, and the number of lateral glands in the vulval region (''lateral vulvar glands'' in Bongers (1984) is not used in this study because these glands do not open into the vulva). However, the present study shows that the ranges of those characters overlap among the three species reviewed by Bongers (1984) (Table 3). Consequently, it is not possible to distinguish among the three species from females only. In addition, males are unknown for *L. arcticus* and *L. grebnickii*. It is also uncertain whether the females from the East Siberian Sea (Platonova and Kulangieva, 1995) and those of *L. acutipapillosus* from the Sea of Okhotsk (see Platonova in Bongers, 1984) are actually *L. marinae*.

TABLE 3. Comparison of female characters among *Leptosomatides marinae* Platonova, 1976, *L. arcticus* (Filipjev, 1916), and *L. grebnickii* (Filipjev, 1916).

Variable	*L. marinae*	*L. arcticus*	*L. grebnickii*
Diameter of amphidal fovea (μm)	7–11	6–8	7–10
Diameter of ocellar lens (μm)	6–9	6–10	4–9
Ocellar lens from head end (cbd long)	1.0–1.4	0.9–1.3	0.8–1.4
Number of lateral glands in vulval region	2–6	5–7	2–4

Data taken from Bongers (1984), Filipjev (1916), Platonova (1967, 1976, 1978), and present study.

Males and females of *Leptosomatides marinae* also have been reported from Aniva Bay, Sakhalin (Platonova, 1978), and Posjet Bay, Primorsk Krai (Belogurov and Fadeeva, 1985). The specimens collected from the former locality seem to be *L. marinae,* judging from the measurements of body length, de Man's ratios, and position of vulva (Platonova, 1978). The identity of the specimens from Posjet Bay is particularly uncertain be-

TABLE 2. Female morphometrics in *Leptosomatides marinae.*

Variable	Hokkaido (*n* = 5; present study)	Kunashir I.[a] (*n* = 3; present study)	Iturup I.[a] (*n* = 2; present study)	Kuril Is.[a] (*n* = 8; Platonova, 1976)	Kuril Is.[b] (*n* = 23; Platonova, 1976)	Okhotsk Sea[c] (*n* = 3; Platonova, 1976)
Length (mm)	12.2–15.3	13.9–14.3	14.2–15.6	12.8–16.6	12.0–17.6	13.6–14.6
a	58.1–76.6	65.6–71.4	67.3–76.1[d]	75–93	56–80	65–68
b	7.2–7.4	7.5–7.8	7.1–8.2	6–8	6–8	7–9
c	83.6–100	101–105	89.3–91.2	88–117	70–100	84–91
c′	76.7–101	95.9–104	85.5–88.6	—[e]	—	—
V (%)	64.5–68.0	65.7–67.6	65.0–66.6	64–70	75–80	62–66
Amphid diameter (μm)	7.6–8.9	7.0–8.1	7.0–8.3	8.4	8.12	8.1
Lens diameter (μm)	6.4–7.6	6.4–7.6	6.4–8.9	6.0	5.8	7.0
Lateral glands near vulva	3–6	3–5	5–6	—	—	—
t (μm)	146–153	133–139	159–171	—	—	150
t′ (μm)	144–160	136–146	166–176	—	—	—

Characters: c′, body length divided by t′; V, position of vulva as a percentage of the body length from the anterior body end; lateral glands, number of large glands near vulva; t, tail length; t′, tail length on its chord length.

[a] Paratypes of *L. marinae.*

[b] Paratypes of *L. brevisetosus* Platonova, 1976.

[c] Holotype and paratype of *L. acutipapillosus* Platonova, 1976.

[d] Calculated using the corrected body diameter by the second formula in Geraert (1961).

[e] Value questionable, not observable, unsuitable for measurements, or not reported.

cause those specimens were the subject of a head morphology study (Belogurov and Fadeeva, 1985) before their specific identity was ascertained.

Leptosomatides brevicaudatus n. sp.
(Figs. 30,31, Tables 1,4)

Description

Leptosomatides marinae: Bongers (1984): 13–14, 24–25, Fig. 3A-B, Appendix (partim; text, figures, and measurements for males only).

Males (holotype; range in parentheses): Body 19.2 (18.4-19.7) mm long; anterior portion tapering gradually to rounded head end; posterior end curved strongly and tapering abruptly on dorsal side from level of cloaca to blunt caudal terminus; maximum body diameter near midbody. Metanemes indistinct, orthometanemes and type I loxometanemes present.

Head end rounded, with 6 + 10 sensilla (Fig. 30). Labial and cephalic sensilla papilliform; inner labial papillae small and indistinct. Outer labial sensilla and cephalic sensilla papilliform, longest papilla 3.8 (3.2-3.8) μm long. Cervical sensilla papilliform, about 3 μm long, most abundant in lateral row between amphids and ocelli. Cephalic capsule anteriorly inconspicuous, 13 (13-18) μm long, posterior margin with shallow undulations. Amphidal fovea round to longitudinally oval; external aperture transversely elliptical, 5.3 (5.3-5.7) μm wide (Fig. 30). Ocellar lens 1.4 cbd from head end; pigment spots 13 (11-13) μm wide (Fig. 30). Oral aperture narrow, embraced by one dorsal and two subventral microlabia. Mandibular ridges without odontia. Esophagus cylindrical, slightly clavate. Nerve ring 25.2% (22.4-25.2) of esophageal length from head end. Renette cell and pore not observed.

Reproductive system diorchic; testes opposed with anterior testis on right and posterior on left of gut (both on left in V3935;

TABLE 4. Morphometrics of *Leptosomatides brevicaudatus* n. sp.

Variable	Holotype (WT2353)	Paratypes (USNM76112)	Paratypes (V3935)
Length (mm)	19.2	18.4	19.7
a	64.9	68.4	63.5
b	7.7	6.8	6.8
c	150	153	156
c′	171	166	186
Head diameter (μm)	53	52	58
Cephalic sensilla from head end (μm)	23	28	29
Amphid from head end (μm)	29;29[a]	28;29	37;24
Diameter of amphidal fovea (μm)	7.6;8.9	—;—[b]	8.1;—
Ocellar lens from head end (μm)	130;133	118;113	123;117
Diameter of ocellar lens (μm)	8.3;7.0	7.5;7.4	8.3;—
Nerve ring from head end (μm)	629	616	649
Body diameter at nerve ring (μm)	151	157	156
Esophageal length (mm)	2.5	2.7	2.9
Body diameter at esophageal end (μm)	213	197	224
Maximum body diameter (μm)	296	269	310
Spicule length on arc (μm)	259;254	224;213	241;231
Spicule length on chord (μm)	238;235	210;204	231;211
Gubernaculum length (μm)	151;154	142;146	151;148
Number of subventral supplements	24;23	24;23	21;21
Ventromedian supplement from cloaca (μm)	208	171	186
Body diameter at cloaca	158	158	163
t (μm)	128	120	126
t′ (μm)	112	111	106

Characters: c′, body length divided by t′; t, tail length; t′, tail length on chord.
[a] Data of bilaterally paired structures given as "right;left."
[b] Not measured.

indistinct in USMN76112); anterior and posterior ends of testes at 33.9% (30.9-33.9) and 53.6% (53.6-61.9) of body length from head end, respectively. Spicules paired, robust, large, SA/t′ = 2.3 (1.9-2.3) and SC/t′ = 2.1 (1.8-2.2) (Fig. 31). Gubernaculum with bilaterally paired corpora, each corpus with dorsal cuneus and anteriorly directed crus; distal (ventral) end of corpus with conspicuous lateral bulge. Length of gubernaculum from distal end to dorsal margin of cuneus 58;61 (58-69)% of spicule length; distal lateral bulge of corpora 39; 38 (34-39) µm wide. Ventromedian supplement 13 (10-13) µm long in lateral view; anterior and posterior alae 28 (27-30) and 27 (23-27) µm long, respectively. Distance from ventromedian supplement to cloaca 1.3 (1.1-1.3) abd long. Subventral supplements 24;23 (21-24) paired in longitudinal rows; 12 (10-13) supplements anterior to level of ventromedian supplement, 9;8 (7-9) between ventromedian supplement and cloaca, and 3 (2-3) posterior to cloaca. Anterior 8 (8-15) supplements well-developed, small supplements near cloaca less distinct. Anteriormost subventral supplement 3.5 (2.6-3.7) abd or 2.9% (2.2-3.2) of body length anterior to cloaca, posteriormost 49;51% (49–52) of tail length on chord posterior to cloaca.

Tail short, bluntly conoid, tapering mostly on dorsal side; some papillae near tail terminus. Cuticle of tail terminus with crescent-shaped lamella around spinneret. Caudal gland cells three, cell bodies anterior to cloaca; anterior margin of anteriormost cell 7.4% of body length from tail tip.

Females: Unknown.

Type locality and habitat

Simushir Island (Kitobojnaya Bay), Kuril Islands, Sea of Okhotsk. Mud, sand, and rhizoids of *Laminaria* in the littoral zone.

Type specimens

Holotype male, collected on 9 August 1957. Slide no. WT2353, deposited in the Nematology Department, Wageningen Agricultural University, Wageningen, The Netherlands. Paratype males (n = 2) with same data as holotype. Slide no. USNM76112, deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC. Slide no. V3935, deposited in the South Australian Museum, SA, Australia.

Diagnosis

Body 18.4–19.7 mm long; Ratio c = 150–156, c′ = 166–186. Cephalic sensilla papilliform, 3–4 µm long; cephalic capsule 13–18 µm long; diameter of amphidal fovea 8–9 µm, diameter of ocellar lens 7–8 µm. Spicules robust, large; SA/t′ = 1.9–2.3, SC/t′ = 1.8–2.2; gubernaculum with large ventral bulges; ventromedian supplement alate; subventral supplements 21–24 on each side, posteriormost pair of supplements near mid-tail and close to sagittal plane. Tail short, conoid, t = 120–128 µm, t′ = 106–112 µm.

Relationships

Leptosomatides brevicaudatus n. sp. is similar to *L. marinae* in having an alate ventromedian supplement. They differ in that c′ = 166–186, SA/t′ (SC/t′) = 1.9–2.3 (1.8–2.2), and t′ = 106–112 in *L. brevicaudatus* n. sp., whereas c′ = 81–104, SA/t′ (SC/t′) = 0.9–1.1 (0.9–1.1), and t′ = 131–159 in *L. marinae* (see Table 1). The differences in these values are due to the shorter tail length and larger spicules in *L. brevicaudatus* n. sp.

Remarks

The three males described here as the type specimens of *L. brevicaudatus* n. sp. originally were included among the paratypes of *L. brevisetosus* by Platonova (1976). However, they were not used in the original description by Platonova (1976), judging from the published measurements of *L. brevisetosus* (L = 10-12 mm, c = 62-84) and their tail shape. After designating *L. brevisetosus* a junior synonym of *L. marinae,* Bongers (1984) included these same three males in his redescription of *L. marinae.* In general, the measurements given by Bongers (1984) agree with ours, except for esophageal lengths. We also interpret the caudal supplement arrangement differently. The compressed condition of the specimens due to the absence of a coverslip may have

contributed to the interpretation by Bongers (1984) that the last subventral supplement on the tail was a caudal ventromedian supplement. In fact, there is no caudal ventromedian supplement in *L. brevicaudatus* or *L. marinae,* what had been interpreted as such was one of a pair on the tail.

Discussion

Most of the earlier descriptions of species now placed in *Leptosomatides* are inadequate. Of the 14 nominal species now assigned to *Leptosomatides,* the original descriptions of six were based on female specimens only (Bongers, 1983, 1984). Whereas males have secondary sexual characters by which species may be more reliably characterized and identified, there are few such characters in females. Consequently, those species known originally from females only are in particular doubt. For example, *Leptosomatides grebnickii* (Filipjev, 1916) was originally described from a female. Subsequently, *Leptosomatides crassus* Platonova, 1967, *L. steineri* Filipjev, 1922 sensu Filipjev, 1946, and *Leptosomatum elongatum* Bastian, 1865 sensu Platonova, 1967 were synonymized with *L. grebnickii*—not because they share a unique character but because there were no detectable differences among the females (Bongers, 1984). With this synonymization the implicit distribution of *L. grebnickii* includes the Bering Islands in the Bering Sea, which is the type locality (Filipjev, 1916); the New Siberian Islands in the East Siberian Sea (Filipjev, 1946); the Kara Sea (Platonova, 1967); and Bol'shoy Aynov and Kol'ski Zaliv in the Barents Sea (Platonova, 1967). Thus, the distribution of *L. grebnickii* would seem to extend from the western Bering Sea to the eastern Barents Sea, but the reliability of that assumption is no greater than the identifications of females upon which it is based.

The western end of the distribution of *L. grebnickii* overlaps the distribution reported for *L. arcticus,* which includes the Barents Sea (Filipjev, 1916; Platonova, 1967) and Novaya Zemlya (Filipjev, 1927; Platonova, 1967). However, as noted previously, *L. arcticus* is also known only from descriptions of females, and our observations and measurements of type specimens reveal that characters previously claimed to be diagnostic in distinguishing *L. arcticus* from *L. grebnickii* are not reliable. This situation compromises an understanding of the distribution of either species.

This uncertainty is in contrast to the apparently much more limited distribution of *L. marinae,* in which almost all identifications have been based on both males and females. The distribution of *L. marinae* is limited to the Kuril Islands, which is its type locality (Platonova, 1976), Sea of Okhotsk (Platonova, 1978), Sea of Japan (Belogurov and Fadeeva, 1985), and Hokkaido (this report). The exception is a report from Chaunskaya Bay, on the coast of the East Siberian Sea (Platonova and Kulangieva, 1995). However, that report was based on females only and, therefore, is suspect.

These situations emphasize the need to have male specimens when describing or redescribing species of *Leptosomatides,* and when studying the geographical distribution of species. Because of the poor condition of type specimens of the existing nominal species, it would be invaluable to base the new descriptions on topotype material, and to have enough for SEM and specialized LM observations as well.

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