

Three new species of free-living nematodes of the family Comesomatidae from the delta of the Mekong River, Vietnam (Nematoda, Monhysterida)

V.G. Gagarin & Nguyen Vu Thanh

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Sabatieria parvula sp. n., *Dorylaimopsis tumida* sp. n. and *Paracomesoma curvatum* sp. n. from the delta of the Mekong River (Vietnam) are described and illustrated. *Sabatieria parvula* sp. n. differs from *S. parabyssalis* Wieser, 1954 and *S. stekhoveni* Vitiello, 1970 in the slenderer body, longer tail and narrowed labial region. *Dorylaimopsis tumida* sp. n. differs from *D. mediterranea* Grimaldi de Zio, 1968 in the shorter body, longer cephalic setae, shorter spicules and absence of striation of spicules. *Paracomesoma curvatum* sp. n. differs from *P. longispiculum* (Timm, 1961) in the longer body, shorter cephalic setae, longer stoma and spicules, and structure of cuticle areolation.

V.G. Gagarin, Institute of Inland Waters Biology, Russian Academy of Sciences, Borok 152742, Yaroslavl Prov., Russia.

Nguyen Vu Thanh, Department of Nematology, Institute of Ecology and Biological Resources (IEBR), Vietnam National Centre for Natural Sciences and Technology (NCST), 18 Hoang Quos Viet Rd., 10000 Hanoi, Vietnam.

Introduction

Investigation of the fauna of free-living nematodes in Vietnam water bodies is improved with creating of the new database for the biological monitoring of water quality from all river watersheds and the wetland ecosystem of Vietnam (Gagarin & Nguyen, 2003a, 2003b; Gagarin et al., 2003). In 2002, thirty one nematode samples were collected from the water ecosystem of the Mekong River delta. Samples were taken at mangrove mudflats at the 1-3 m depth from boat using Porar grabs (core sampler). Samples were fixed by hot TAF solution, processed to pure glycerin by a slow evaporation method (Seinhorst, 1959) and mounted on permanent glass slides.

Sabatieria parvula sp. n. (Figs 1-7)

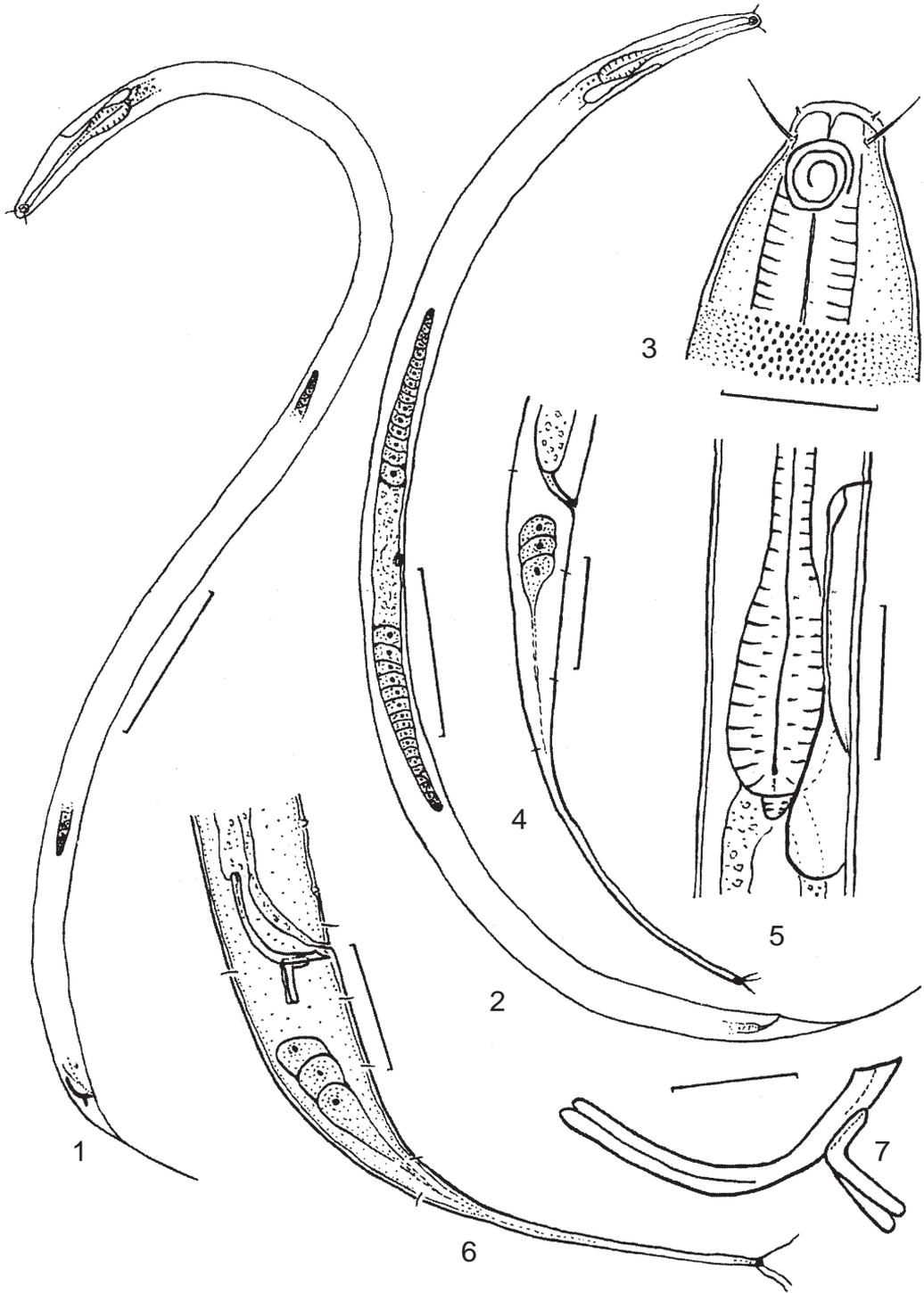
Holotype. ♂, Vietnam, Ba Ria Prov., delta of Mekong River, mangrove, depth 1.0-1.5 m, silt, 26.III.2002, slide no. 33/II, deposited at Institute of Inland Waters Biology, Borok.

Paratypes. 12 ♂, 5 ♀, collected with holotype (5 ♂ deposited with holotype; 7 ♂ and 5 ♀ deposited at Institute of Ecology and Biological Resources, Hanoi).

Measurements. See Table 1.

Description. Female. Body slender. Cuticle annulate and marked with transverse rows of fine punctations. Lateral differentiation consisting of

larger and more widely spaced irregular punctations commences a short distance posterior to amphids and terminates at the base of the conical portion of the tail. Somatic setae small, sparse. Mouth surrounded by six rounded lips. Internal labial papillae not visible. Six external labial papillae large, conical. Four cephalic setae 5.5-6.5 µm long (85-90% of labial region width). Cervical setae absent. Amphidial fovea spiral, with 3 turns, situated at distance 3-5 µm from anterior end. Diameter of amphidial fovea 65-75% of corresponding body diameter. Buccal cavity cup-shaped, with weakly sclerotized walls. Pharynx slender, muscular, swollen proximally, but not forming a bulb. Cardia small, triangular. Ventral gland at cardia level; excretory pore posterior to nerve ring, at 89-106 µm from anterior end. Reproductive system didelphic, amphidelphic; ovaries outstretched. Germinal zone of oogonia arranged in one row; growth zone with a single row of developing oocytes. Uterus filled with sperm mass. Vagina short. Vulva in front to midbody, crescent-shaped. Lips of vulva not cuticularized and not protruded. Tail long and slender, with distinct, rather broad, conical basal portion and rather narrow, cylindrical posterior portion, the latter 1.1-1.3 times as long as anterior conical portion. Tail armed with 4 pairs of short caudal setae 2 µm long. Tail tip enlarged, with three terminal setae 12-15 µm long.



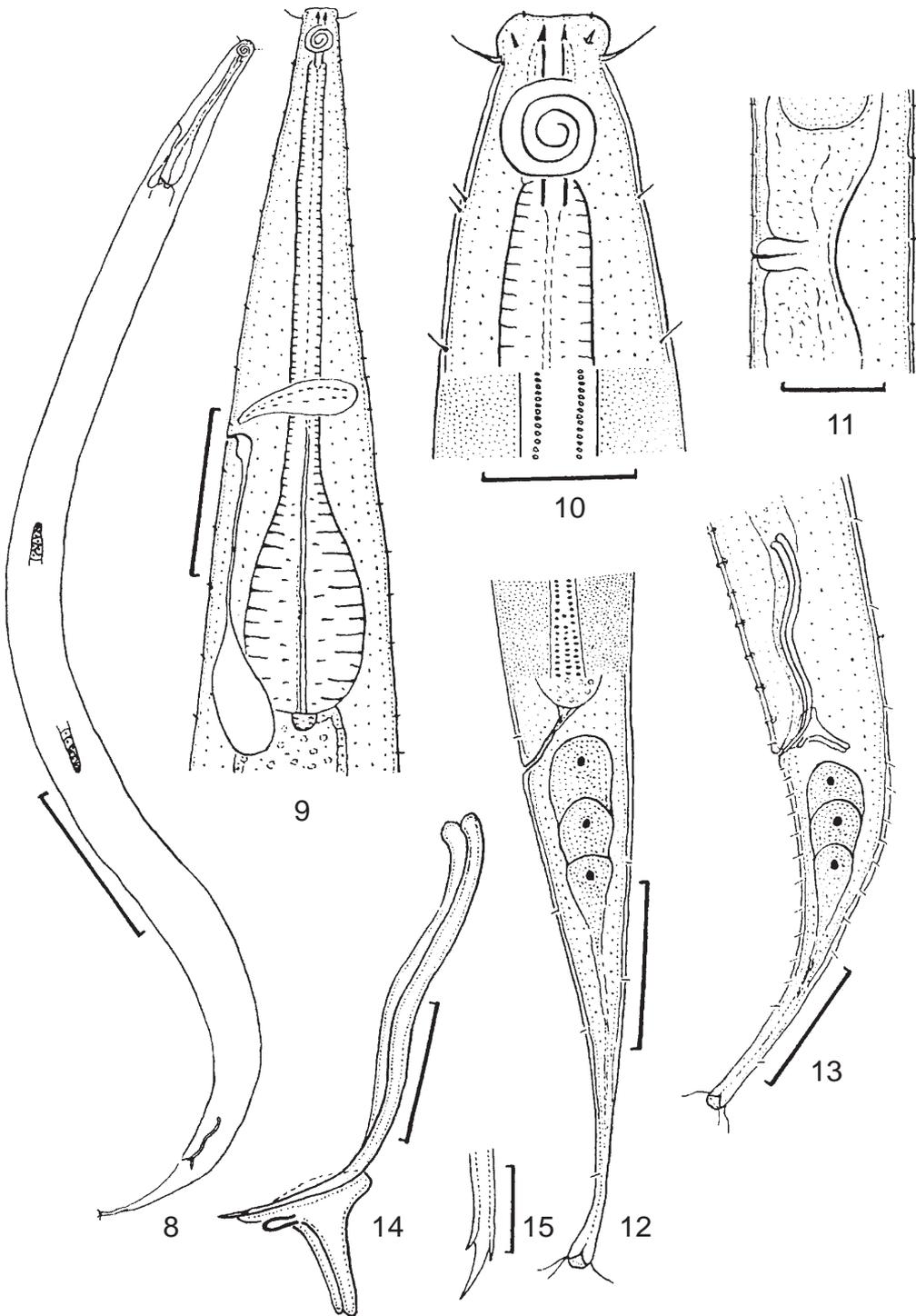
Figs 1-7. *Sabatieria parvula* sp. n. 1, male, habitus; 2, female, habitus; 3, male head; 4, female tail; 5, cardia region; 6, male tail; 7, spicular apparatus. Scale bars: 150 μm (1, 2), 30 μm (4-6), 10 μm (3, 7).

Table 1. Measurements of *Sabatieria parvula* sp. n. (all measurements in µm).

Characteristic	Holotype, male	Paratypes			
		12 males		5 females	
		range	mean	range	mean
<i>L</i>	1358	1253-1428	1328	1279-1396	1338
<i>a</i>	49	45-58	50	39-43	41
<i>b</i>	10.0	8.6-10.3	9.5	8.9-9.7	9.5
<i>c</i>	10.8	9.9-11.6	10.8	8.7-10.0	9.5
<i>c'</i>	6.4	5.3-6.4	5.9	7.1-7.5	7.3
<i>V</i> , %	–	–	–	40.5-46.3	43.7
Labial region width	7.0	7.5-8.5	7.0	7.0-8.5	7.5
Cephalic setae length	5.5	5.5-6.5	6.0	5.5-6.5	6.0
Amphidial fovea diameter	6.0	5.5-6.5	6.0	5.0-6.5	5.7
Pharynx length	136	129-150	140	132-157	142
Posterior end of pharynx – vulva	–	–	–	403-490	443
Posterior end of pharynx – cloaca	1096	994-1152	1065	–	–
Vulva – anus	–	–	–	580-661	612
Tail length	126	112-132	123	136-147	141
Spicule length (along arc)	28	27-29	28	–	–
Ventromedian supplements	12	12-18	13	–	–

Male. Similar to female in general characteristics, but rather slender and with shorter tail. Cuticle annulate and marked with fine punctations. On lateral parts of body, punctations larger and more widely spaced than on ventral and dorsal sides. Somatic setae small, sparse. Cephalic end narrowed. Internal labial papillae not visible. Six external labial papillae large, conical. Four cephalic setae 5.5-6.5 µm long. Amphidial fovea spiral, with 3 turns, situated 2.5-5.0 µm from anterior end of body. Diameter of amphidial fovea 70-80% of corresponding body diameter. Buccal cavity cup-shaped, with weakly sclerotized walls. Pharynx slender, muscular, gradually swollen proximally. Cardia small, triangular. Ventral gland compact, situated at cardia level; excretory pore posterior to nerve ring, at 87-103 µm from anterior body end. Gonads diorchic; testes opposite and outstretched. Two bent spicules equal in length, proximally enlarged, with median seam. Apical ends of spicules thick and obliquely truncate. Gubernaculum with two dorsal apophyses. Ten to eighteen precloacal ventromedian supplements, in the form of small papillae. Tail slender, with rather broad, conical anterior portion and rather narrow cylindrical posterior portion, the latter 1.1-1.2 times as long as anterior conical portion. Tail armed with 5 pairs of short caudal setae. Tail tip enlarged, with three terminal setae 13-15 µm long.

Comparison. The new species belongs to the *Sabatieria praedotrix* group, according to classification by Platt (1985), and is similar in the body length to *S. parabyssalis* Wieser, 1954 and *S. stekhoveni* Vitiello, 1970. It differs from *S. parabyssalis* in the slenderer body (*a* = 39-43 in females and 45-58 in males of the new species vs. 27-28 and 30-32, respectively, in *S. parabyssalis*), longer tail (*c* = 8.7-10.0, *c'* = 7.1-7.5 in females and *c* = 9.9-11.6, *c'* = 5.3-6.4 in males of the new species, vs. 11.2-12.7, 4.0-4.3, 11.2-13.0, 3.75-4.0, respectively, in *S. parabyssalis*), narrower labial region (7.0-8.5 µm wide in the new species, vs. 12-14 µm in *S. parabyssalis*) and shorter spicules (27-29 µm long in males of the new species vs. 39 µm long in males of *S. parabyssalis*) (Wieser, 1954). The new species differs from *S. stekhoveni* in the slenderer body (*a* = 39-43 in females and 45-58 in males of the new species vs. 35-38 and 34-41, respectively, in *S. stekhoveni*), longer tail (*c* = 8.7-10.0, *c'* = 5.3-7.5 in females and *c* = 9.9-11.6, *c'* = 5.3-6.4 in males of the new species, vs. 11.1-12.9, 3.7-4.2, 12.1-13.5, 4.5-5.0, respectively, in *S. stekhoveni*), larger amphidial fovea (its diameter is 70-80% of corresponding body diameter in the new species vs. 50-60% in *S. stekhoveni*), narrower labial region (7.0-8.5 µm wide in the new species vs. 12-13 µm in *S. stekhoveni*) and shorter spicules (27-29 µm long in males of the new spe-



Figs 8-15. *Dorylaimopsis tumida* sp. n. 8, male, habitus; 9, anterior end of male; 10, male head; 11, vulva region; 12, female tail; 13, male tail; 14, spicular apparatus; 15, apical end of spicule. Scale bars: 200 μm (8), 50 μm (9, 11-13), 25 μm (14), 15 μm (10), 10 μm (15).

Table 2. Measurements of *Dorylaimopsis tumida* sp. n. (all measurements in µm).

Characteristic	Holotype, male	Paratypes			
		16 males		11 females	
		range	mean	range	mean
<i>L</i>	1717	1456-1774	1651	1601-1802	1684
<i>a</i>	21	21-29	25	20-26	22
<i>b</i>	8.2	7.3-8.4	7.8	7.0-9.0	7.7
<i>c</i>	12.1	9.5-12.5	11.2	9.7-13.1	10.9
<i>c'</i>	3.3	3.0-3.9	3.5	3.4-4.2	3.9
<i>V</i> , %	—	—	—	42.2-48.3	46.0
Labial region width	11	10-12	11	11-13	12
Cephalic setae length	7.5	7.0-8.5	8.0	7.0-8.0	7.5
Stoma length	22	20-25	23	21-24	23
Amphidial fovea diameter	11	10-11	11	9-11	10
Pharynx length	210	189-227	211	178-242	220
Posterior end of pharynx – vulva	—	—	—	490-637	556
Posterior end of pharynx – cloaca	1368	1120-1400	1293	—	—
Vulva – anus	—	—	—	700-826	753
Tail length	139	132-174	147	122-168	155
Spicule length (along arc)	82	75-85	80	—	—
Dorsal apophyses of gubernaculum length	23	21-25	23	—	—
Ventromedian supplements	15	13-18	15	—	—

cies vs. 44-47 µm in males of *S. stekhoveni*) (Vi-tiello, 1970).

Etymology. The species name means “little”, “small”.

***Dorylaimopsis tumida* sp. n.**
(Figs 8-15)

Holotype. ♂, Vietnam, Ba Rio Prov., delta of Mekong River, mangrove, depth 1-2 m, silt, 26.III.2002, slide no. 38/II, deposited at Institute of Inland Waters Biology, Borok.

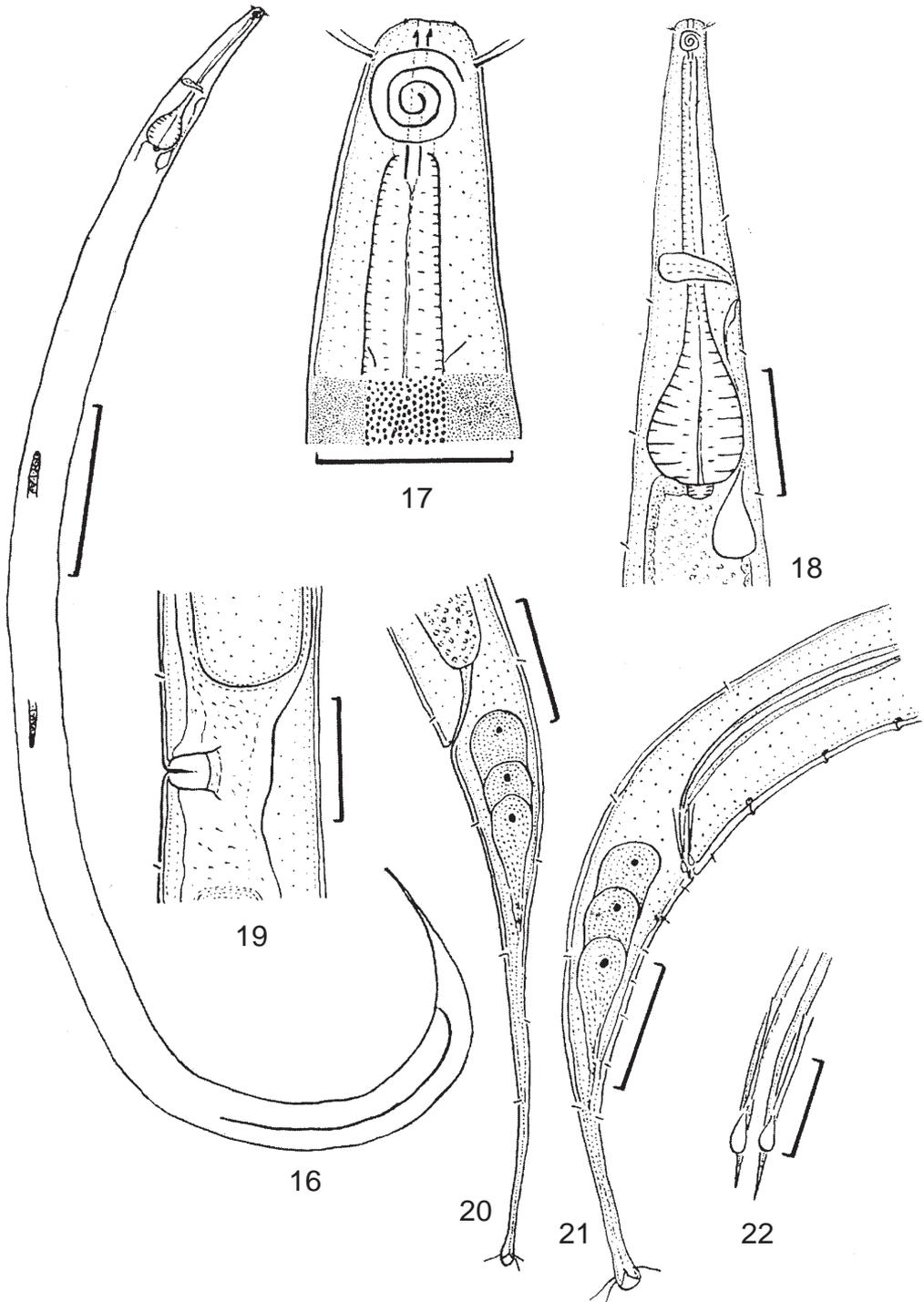
Paratypes. 11 ♀, 16 ♂, collected with holotype (4 ♀ and 2 ♂ deposited with holotype, slide no. 39/II; 7 ♀ and 14 ♂ deposited at Institute of Ecology and Biological Resources, Hanoi).

Measurements. See Table 2.

Description. Female. Body small, comparatively thick. Cuticle annulate and marked with fine punctations. Punctations on lateral parts of body rather large and situated in two longitudinal rows. Width of lateral cuticle rows 1/5-1/6 of corresponding body diameter. Punctations on ventral and dorsal sides of body rather small, situated irregularly. Cuticle in vulva region about 1.0-1.3 µm thick. Somatic setae short, sparse. Cephalic end set off from the rest of body by circular depression. Six internal labial papillae small, hardly visible. Six external labial papillae in the form

of short setae. Four cephalic setae 7-8 µm long, corresponding to 60-65% of labial region width. Cervical setae present. Amphidial fovea spiral, with 3 turns, situated at base of labial region. Diameter of amphidial fovea 70-80% of corresponding body diameter. Stoma in the form of cuticularized tube, about twice as long as labial region width. Pharynx slender, muscular, swollen proximally. Cardia small, in lumen of intestine. Length of rectum subequal to one anal body diameter. Ventral gland compact, situated at cardia level; excretory pore posterior to nerve ring, at 100-132 µm distance from anterior body end. Reproductive system didelphic, amphidelphic; ovaries outstretched. Uterus filled with sperm mass. Vagina short. Vulva anterior to midbody, crescent-shaped. Lips of vulva not cuticularized and not protruded. Tail slender, with rather broad, conical basal portion and rather narrow, cylindrical posterior portion; anterior portion 1.3-1.7 times as long as posterior one. Tail armed with short caudal setae. Tail tip enlarged, with three terminal setae 10-13 µm long. Caudal gland present; spinneret short, conical.

Male. Similar to female in general characters. Structure of cuticle and head like in females. Cervical setae present. Amphidial fovea spiral, with 3 turns, situated at base of labial region.



Figs 16-22. *Paracomesoma curvatum* sp. n. **16**, male, habitus; **17**, male head; **18**, anterior end of male; **19**, vulva region; **20**, female tail; **21**, male tail; **22**, apical end of spicules. Scale bars: 200 μ m (16), 50 μ m (18-21), 20 μ m (17, 22).

Table 3. Measurements of *Paracomesomea curvatum* sp. n. (all measurements in µm).

Characteristic	Holotype, male	Paratypes			
		10 males		8 females	
		range	mean	range	mean
<i>L</i>	1814	1750-1970	1821	1718-2127	1874
<i>a</i>	28	28-40	34	25-40	30
<i>b</i>	9.8	8.8-10.0	9.4	8.7-10.3	9.4
<i>c</i>	10.5	9.9-12.4	11.1	7.9-9.8	8.9
<i>c'</i>	4.1	4.1-5.1	4.5	4.6-6.5	5.5
<i>V</i> , %	–	–	–	45.0-48.3	46.7
Labial region width	11	10-11	11	10-12	11
Cephalic setae length	5.5	5.0-5.5	5.5	5.0-5.5	5.5
Stoma length	19	17-20	18	17-19	18
Amphidial fovea diameter	10.0	9.5-10.5	10.0	9.0-10.0	9.5
Pharynx length	186	186-200	194	175-213	199
Posterior end of pharynx – vulva	–	–	–	630-752	675
Posterior end of pharynx – cloaca	1456	1375-1610	1462	–	–
Vulva – anus	–	–	–	714-938	788
Tail length	172	144-176	165	175-234	212
Spicule length (along arc)	330	300-343	320	–	–
Ventromedian supplements	25	18-25	23	–	–

Diameter of amphidial fovea 80-85% of corresponding body diameter. Ventral gland compact, situated at cardia level; excretory pore posterior to nerve ring, at 102-126 µm from anterior body end. Gonads diorchic; testes opposite and outstretched. Spicules thin and bent. Gubernaculum with two dorsal apophyses and median guiding piece. Thirteen to eighteen preloocal ventromedian supplements in the form of small, weakly visible papillae. Five to six supplements situated in region of spicules. Tail slender, with rather broad conical anterior portion and rather narrow cylindrical posterior portion; anterior portion 1.4-2.0 times as long as posterior one. Caudal setae short, numerous. Tail tip enlarged, with three terminal setae 8-12 µm long.

Comparison. The new species is close to *D. mediterranea* Grimaldi de Zio, 1968. It differs from the latter in the shorter body (*L* = 1456-1802 µm in the new species vs. 1700-2215 µm in *D. mediterranea*), longer cephalic setae (7.0-8.5 µm long, 60-65% of labial region width in the new species vs. 3.7-7.5 µm long, 40-54% of labial region width in *D. mediterranea*), shorter spicules (75-85 µm long in the new species vs. 182-225 µm long in *D. mediterranea*) and absence of striation of spicules (Grimaldi de Zio, 1968).

Etymology. The species name means “obese”, “thick”.

Paracomesomea curvatum sp. n. (Figs 16-22)

Holotype. ♂, Vietnam, Ba Rio Prov., delta of Mekong River, mangrove, depth 1.5 m, silt, 7.III.2002, slide no. 41/II, deposited at Institute of Inland Waters Biology, Borok.

Paratypes. 10 ♂, 8 ♀, collected with holotype (5 ♂ and 2 ♀ deposited with holotype, slide no. 42/II; 6 ♀ and 5 ♂ deposited at Institute of Ecology and Biological Resources, Hanoi).

Measurements. See Table 3.

Description. Female. Body small, curved, comparatively thick. Cuticle annulate and marked with fine irregular punctations. Punctations on lateral parts of body rather large. Width of lateral cuticle rows 2/5 of corresponding body diameter. Punctations on ventral and dorsal sides of body rather small. Cuticle in vulva region 1.3-1.5 µm thick. Somatic setae short, numerous. Six internal labial papillae small. Six external labial papillae in the form of setae 4.0-4.5 µm long. Four cephalic setae 5.0-5.5 µm long. Both circles of setae drawn together. Cervical setae present. Amphidial fovea spiral, with 3 turns, situated at base of labial region. Diameter of am-

phidial fovea 70-75% of corresponding body diameter. Stoma in the form of narrow cuticularized tube, about twice as long as labial region width. Pharynx slender, muscular, swollen proximally. Cardia small, in lumen of intestine. Length of rectum subequal to one anal body diameter. Ventral gland compact, situated at cardia level; excretory pore posterior to nerve ring, at 120-145 μm from anterior body end. Reproductive system didelphic, amphidelphic; ovaries outstretched. Uterus filled with sperm mass. Vagina short, with muscular walls. Vulva anterior to midbody, crescent-shaped. Lips of vulva not cuticularized and not protruded. Tail slender, with rather broad, conical basal portion and rather narrow, cylindrical posterior portion; anterior portion 0.6-0.7 times as long as posterior one. Tail with short caudal setae. Tail tip enlarged, with three terminal setae 11-12 μm long. Caudal setae present; spinneret short, conical.

Male. Similar to female in general characters. Structure of cuticle and head like in female. Cervical setae present. Amphidial fovea spiral, with 3 turns, situated at base of labial region. Diameter of amphidial fovea 70-80% of corresponding body diameter. Stoma in the form of cuticularized tube, about 1.5 times as long as labial region width. Ventral gland compact, situated at cardia level; excretory pore posterior to nerve ring. Gonads diorchic; testes opposite and outstretched. Spicules thin and long, 1.8-2.0 times as long as tail. Capitulum of spicule small, poorly developed. Two gubernaculum, each consisting of two sclerotized pieces. Proximal sclerotized piece in the form of thin plate 13-15 μm long; distal sclerotized piece drop-shaped. Eighteen to twenty five precloacal ventromedian supplements, in the form of small, weakly visible papillae. Five to eight supplements situated in region of spicules. Tail slender, with rather broad, conical anterior portion and rather narrow, cylindrical posterior portion; anterior portion 1.2-1.3 times as long as posterior one. Caudal setae short, numerous. Tail tip with three terminal se-

tae 10-12 μm long. Caudal glands present; spinneret short, conical.

Comparison. The new species differs from *P. longispiculum* (Timm, 1961) Hopper, 1967, described from a single male from Biscay Bay, in the longer body ($L = 1718\text{-}2127 \mu\text{m}$ in the new species vs. 1.5 mm in *P. longispiculum*), shorter cephalic setae (5.0-5.5 μm long in the new species vs. 8 μm in *P. longispiculum*), longer stoma (17-20 μm long in the new species vs. 14 μm in *P. longispiculum*), longer spicules (300-343 μm long in the new species vs. 225 μm in *P. longispiculum*), and distinctive structure of cuticle areolation (Timm, 1961).

Etymology. The species name means "curved", "bent".

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