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## *Tobrilus saprophagus* sp. n. and *Epitobrilus interstitialis* sp. n. (Nematoda, Triplonchida) from Lake Baikal, Russia

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### Abstract

Two new nematode species found in Lake Baikal (Russia) are described and illustrated. *Tobrilus saprophagus* sp. n. is morphologically close to *T. bekmanae* Tsalolikhin, 1975 and *T. securus* Gagarin & Naumova, 2011. The new species differs from *T. bekmanae* by the less slender tail (♂  $c' = 2.9\text{--}3.9$ , ♀  $c' = 3.5\text{--}6.8$  vs ♂  $c' = 6$ , ♀  $c' = 9$  in *T. bekmanae*), narrower labial region (24–30 μm vs 35–38 μm in *T. bekmanae*), shorter outer labial setae (10–12 μm vs 13–18 μm in *T. bekmanae*) and shorter stoma (25–32 μm vs 40–56 μm in *T. bekmanae*). *T. saprophagus* sp. n. differs from *T. securus* by the shorter and less slender tail (♂  $c = 11.5\text{--}16.1$ ,  $c' = 2.9\text{--}3.9$ , ♀  $c = 8.8\text{--}13.1$ ,  $c' = 3.5\text{--}6.8$  vs ♂  $c = 6.7\text{--}8.4$ ,  $c' = 6.3\text{--}9.3$ , ♀  $c = 7.1\text{--}8.4$ ,  $c' = 6.6\text{--}7.7$  in *T. securus*), longer outer labial setae (10–12 μm vs 6.5–9.0 μm in *T. securus*) and shorter spicules (45–48 μm vs 52–58 μm in *T. securus*). *Epitobrilus interstitialis* sp. n. is close to *E. steineri* (Micoletzky, 1925), but differs by the longer body (3.88–5.97 mm vs 2.14–3.35 mm), longer tail (250–335 μm vs 160–199 μm for males), longer outer labial setae (27–40 μm vs 22–25 μm) and longer spicules (73–78 μm vs 51–71 μm). Diagnostic morphological characters of males of valid species of the genus *Epitobrilus* Tsalolikhin, 1981 are given. *Tobrilus* (*Epitobrilus*) *medius* G. Schneider, 1916 (*apud* Tsalolikhin, 1980) is synonymized with the species *Eutobrilus peregrinator* Tsalolikhin, 1983.

**Key words:** free-living freshwater nematodes, new species, taxonomy

### Introduction

Lake Baikal in Russia is a unique freshwater body inhabited by endemic fauna. Recently about 100 nematode species belonging to 33 genera have been reported from this lake (Gagarin & Naumova 2010a, b, c, d; 2011a, b, c, d, e; 2012a, b, c, d; 2015a, b; 2016a, b; Naumova, 2017; Naumova & Gagarin 2015, Naumova et al. 2012; Shoshin & Tsalolikhin 2001; Tsalolikhin 1980, 1983).

Many species of nematodes (cosmopolitan and endemic) have been described from the splash zone (Gagarin & Naumova 2012a, c; 2016a). Our continued investigation of the splash zone nematofauna reveals another new species, *Epitobrilus interstitialis* sp. n.

*Tobrilus saprophagus* sp. n. was found inside the bodies of dead sponges (*Lubomirskia baicalensis* (Pallas, 1776) Dybowski, 1880) in the littoral zone. Previously, four species of baikalian nematodes have been reported as sponge commensals: *Tobrilus amabilis* Tsalolikhin, 1974, *T. latens* Tsalolikhin, 1974, *Tectonchus absconditus* Tsalolikhin, 1974 and *Eudorylaimus spongiophilus* Batalova, 1983. Mass die-offs of baikalian sponges (Timoshkin et al, 2016) have become more frequent recently and the dead sponge bodies are filled with many different invertebrates, including nematodes. We believe *T. saprophagus* sp. n. is saprophagous, and not a commensal sponge associate.

### Material and methods

Nematodes were collected in the South Basin of Lake Baikal from the following sites:

Bolshie Koty Bay opposite the Chernaya Valley (N 51°31'53", E 105°03'07"), 6–7 m depth, bodies of dead *Lubomirskia baicalensis* collected by divers: #1 (23 December 2015) and #19 (22 Much 2016).

Bolshie Koty Bay opposite the Biological Station of the Limnological Institute (N 51°32'23", E 105°02'17"), sand in the shore splash zone, 50 cm above the shoreline (collected on 25 June, 25 August and 31 October 2010).

Bolshie Koty Bay opposite the Varnachka Valley (N 51°32'30", E 105°03'44"), sand in the shore splash zone, 50 cm above the shoreline (collected on 9 September 2009 and 28 October 2015).

Listvyanichny Bay opposite "Nerpinary" (seals pool) (N51°30'16", E104°31'23"), sand in the shore splash zone, 0.5–1 m above the shoreline (collected on 4 September 2012 and on 29 July and 22 September 2015).

The samples contained numerous free-living nematodes, including the two species described herein. Nematodes were fixed by standard methods and mounted in glycerin on permanent slides. All observations were made using Olympus CX-21 and Nikon Eclipse 80i light microscopes with Nomarski DIC accessories. Images were taken using a Nikon DS-Fil digital camera and Intel Pentium Dual CPU E 2200 Processor Series for Desktop with the NIS-Elements D 3.2 program for analysis and documentation of images from the preparations.

#### Abbreviations:

*a*—body length divided by maximum body diameter;

a.b.d.—anal or cloacal body diameter, in  $\mu\text{m}$ ;

*b*—body length divided by pharyngeal length;

*c*—body length divided by tail length;

*c'*—tail length in anal or cloacal body diameters;

c.s.—length of cephalic setae (third ring), in  $\mu\text{m}$ ;

diam.c.s.—body diameter at the level of lips, in  $\mu\text{m}$ ;

d.midb.—mid-body diameter, in  $\mu\text{m}$ ;

dis.ph.cl.—distance from the pharynx base to the cloaca, in  $\mu\text{m}$ ;

dis.ph.v.—distance from the pharynx base to the vulva, in  $\mu\text{m}$ ;

dis.v.a.—distance from the vulva to the anus, in  $\mu\text{m}$ ;

gub.- gubernaculum length, in  $\mu\text{m}$ ;

*L*—body length, in  $\mu\text{m}$ ;

o.l.s.—length of the outer labial setae (second ring), in  $\mu\text{m}$ ;

o.l.s.c.r.—length of the outer labial setae as percentage of body diameter at the level of cephalic setae;

ph.l.—pharyngeal length, in  $\mu\text{m}$ ;

spic.—spicula length along arc, in  $\mu\text{m}$ ;

st.l.—stoma length, in  $\mu\text{m}$ ;

sub.s.—presence or absence of the subterminal seta on tail;

suppl.—number of supplements;

t.l. - tail length, in  $\mu\text{m}$ ;

*V*—distance of vulva from anterior body end as percentage of body length.

## Descriptions

### Order Triplonchida Cobb, 1920

### Family Tobrilidae Filipjev, 1918

### Genus *Tobrilus* Andrassy, 1959

**Diagnosis** (after Zullini 2006 and Andrassy 2007). Body 1.0–4.5 mm long. Cuticle smooth or very finely annulated. Buccal cavity cup- or funnel-shaped, with overlapping pocket and teeth close to each other. Vagina moderately strong. Spicules comparatively short. Male supplements 3 to 13, mostly six, small, non-echinate but with a small central thorn, submerged, not protruding. Spacing between supplements nearly equal.

Type species: *Tobrilus gracilis* (Bastian, 1865) Andrassy, 1959

Number of species: 21–23.

***Tobrilus saprophagus* sp. n.**

(Figs 1, 2; Table 1)

**Type material.** Holotype male, slide reference number 102/58, deposited in the Helminthological Museum of the Russian Academy of Sciences (RAS), Institute of Ecology and Evolution, Center for Parasitology RAS (Moscow, Russia).

**Paratypes.** Two males and four females deposited in the Helminthological Museum of the Russian Academy of Sciences (RAS), Institute of Ecology and Evolution, Center for Parasitology RAS (Moscow, Russia). Seven males and nine females deposited in the collection of Limnological Institute Siberian Branch of the Russian Academy of Sciences (Irkutsk, Russia).

**Type locality.** Bolshie Koty Bay opposite the Chernaya Valley (N 51°31'53", E 105°03'07"), 6–7 m depth.

**Etymology.** The specific epithet means “saprophage”, as this nematode was found in the bodies of dead sponges.

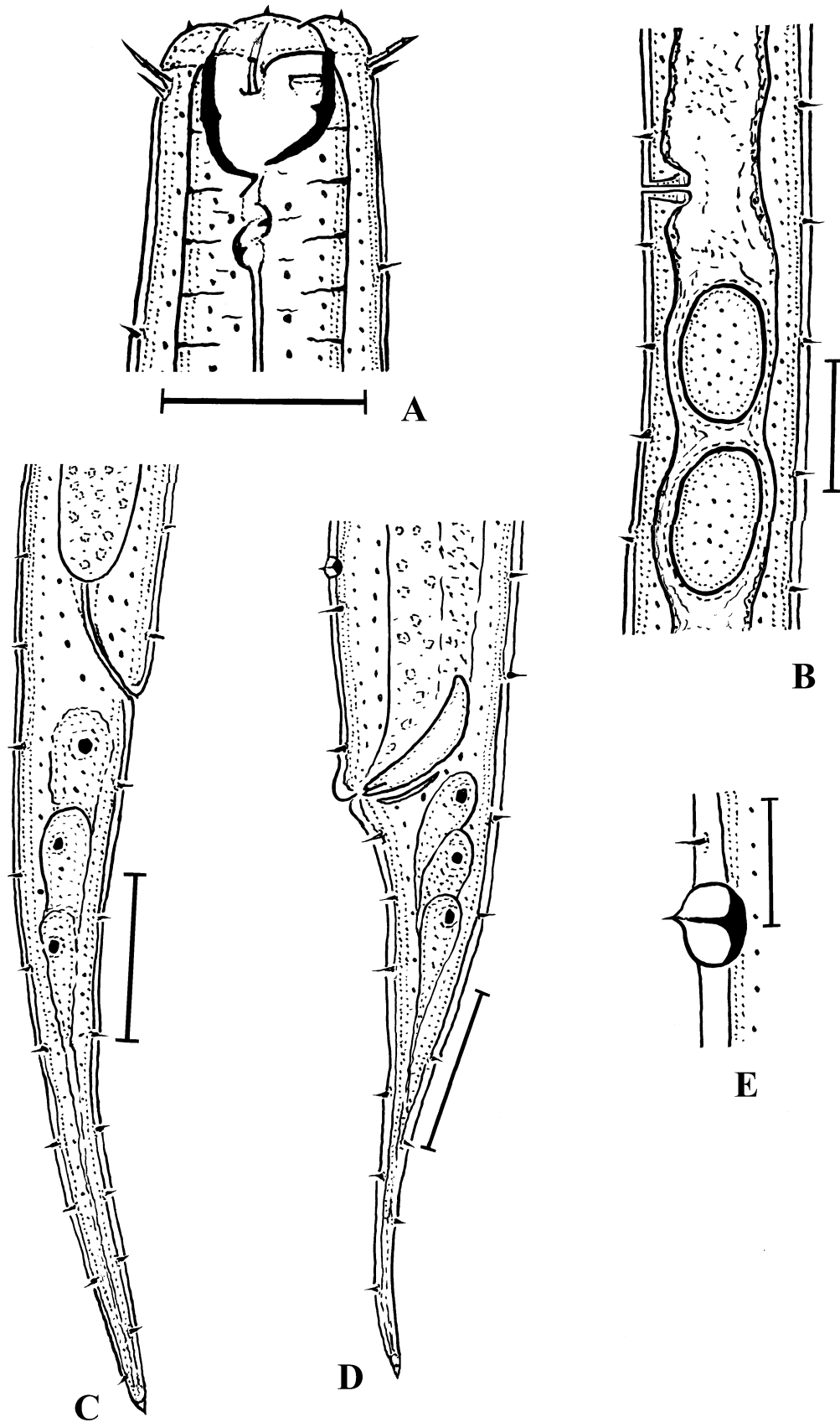
**Description. Male.** Body comparatively long and thin. Cuticle smooth under light microscope, 2.0–2.5 µm thick. Crystalloids absent; somatic setae rare and short 6–7 µm long. Labial region slightly offset from the adjacent body; lips well developed. Body diameter at the posterior pharynx end 2.4–2.8 times the width of the labial region. Inner labial sensillae papilliform. Six outer labial sensillae in the shape of articulate setae 10–11 µm long, 37–46 % of labial region width. Four cephalic sensillae in the shape of thin and smooth setae 5.0–6.5 µm long. Body circles of setae drawn close together. Cheilostom comparatively large. Buccal cavity spacious, funnel-shaped, with thick walls. Dorsal pocket and its tooth absent. Both subventral pockets overlapping adjacent to each other. Its teeth small, close to each other. Stoma 1.1–1.4 times as long as labial region width. Amphidial fovea cup-shaped, opening at the level of buccal cavity. Pharynx muscular, comparatively long, expanding gradually along entire length. Cardiac glands large, rounded, 20–23 µm in diameter. Ventral gland, its canal, ampulla and excretory pore not seen.

Testes paired, opposed, situated to the left of intestine; anterior testis outstretched, posterior testis reflexed. Vas deferens well developed. Spicules thick, slightly curved, short, 0.9–1.0 times as long as the cloacal body diameter, apically bifurcate. Gubernaculum in the shape of a thin plate, 47–58% of the spicule length. Precloacal supplements 6–7 in number, small, submerged. Supplement ampulla flattened, contents concentrated at ampulla base. Supplement cap absent. Central thorn protruding slightly above cuticle. Supplements approximately identical in size and situated about equidistant from each other. Distance from cloaca to first supplement 20–35 µm; supplement row 201–317 µm long. Tail slender, elongate-conical, with subterminal setae. Caudal glands well developed; spinneret in the shape of a short, conical tube.

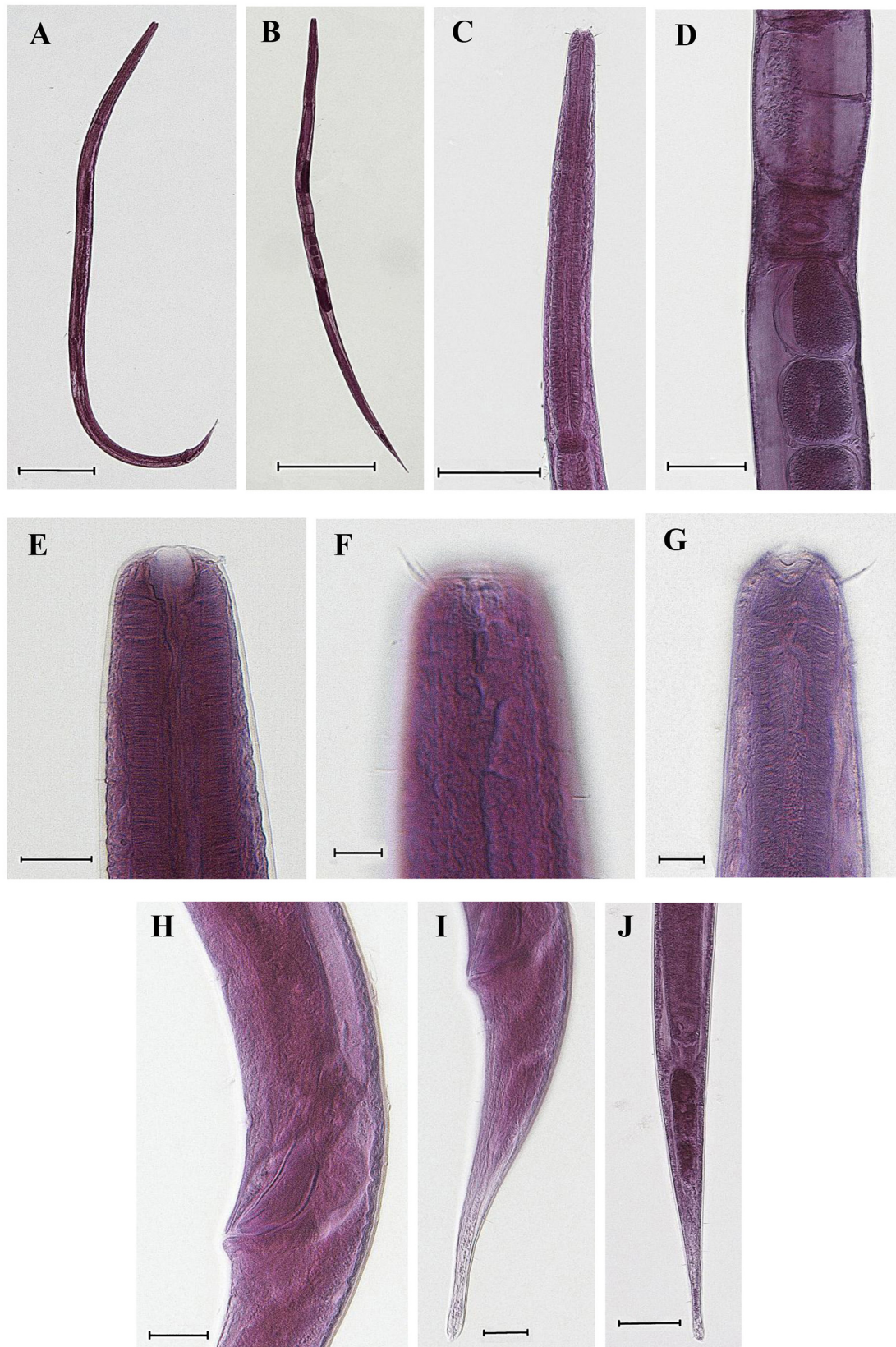
**Female.** General morphology similar to that of males in structure of cuticle and anterior body end. Cuticle smooth. Labial region slightly offset from the adjacent body; lips well developed. Inner labial sensillae papilliform, outer labial sensillae in the shape of articulated setae; cephalic sensillae in the shape of smooth setae. Both circles of setae drawn close together. Cheilostom small; buccal cavity spacious, funnel-shaped. Both subventral pockets overlapping adjacent to each other. Teeth in pockets small. Pharynx muscular, expanding gradually towards base. Cardia small, surrounded by 3 round glands. Prerectum not observed. Rectum length equal to or slightly greater than anal body diameter. Reproductive system didelphic, amphidelphic. Ovaries situated to the left of intestine, reflexed and comparatively short. Oocytes numerous. Vulva a transverse slit and situated slightly anterior to mid-body. Vulva lips not sclerotized and not protruding outside the body contour. Cuticular wrinkles round vulva and vulva glands not seen. Vagina short, with thick walls. Uterus containing numerous spermatozoa and 1–4 eggs, measuring 70–92 x 42–60 µm. Tail slender, long, elongate-conical, with subterminal setae. Caudal glands well developed.

**Diagnosis.** Body comparatively long and thin (L = 2033–2688 µm, a = 30–43). Cuticle smooth. Crystalloids absent. Outer labial setae articulate; cephalic setae smooth. Both circles of setae drawn close together. Outer labial setae as long as 37–46% of labial region width. Cheilostom small. Buccal cavity spacious, funnel-shaped. Both subventral pockets overlapping adjacent to each other. Stoma 1.1–1.4 as long as labial region width. Spicules thick, slightly curved, short, 0.9–1.0 as long as the cloacal body diameter. Gubernaculum in the shape of a thin plate. Precloacal supplements 6–7 in number, vesiculate, small, submerged under cuticle except for short thorn protruding beyond cuticle. Tail slender, long, elongate-conical with subterminal setae.

**Differential diagnosis.** *Tobrilus saprophagus* sp. n. is similar to *T. bekmanae* Tsalolikhin, 1975 and *T. securus* Gagarin & Naumova, 2011 in body size and in stoma shape and structure. From the first species it differs in the less



**FIGURE 1.** *Tobrilus saprophagus* sp. n. Holotype male and paratype female. A: male head; B: vulva region; C: female tail; D: male tail; E: supplement. Scale bars: B, C, D—50  $\mu$ m; A—25  $\mu$ m; E—10  $\mu$ m.



**FIGURE 2.** *Tobrilus saprophagus* sp. n. Holotype male, paratype male and female. A: male, entire body; B: female, entire body; C: male, anterior body end; D: vulva region; E, F: male head; G: female head; H: cloaca region; I: male tail; J: female tail. Scale bars: B—500  $\mu$ m; A—250  $\mu$ m; C—100  $\mu$ m; D, J—50  $\mu$ m; E, H, I—20  $\mu$ m; F, G—10  $\mu$ m.

slender tail ( $\sigma' c' = 2.9\text{--}3.9$ ,  $\rho' c' = 3.5\text{--}6.8$  vs  $\sigma' c' = 6$ ,  $\rho' c' = 9$  in *T. bekmanae*), narrower labial region (24–30  $\mu\text{m}$  vs 35–38  $\mu\text{m}$  in *T. bekmanae*), shorter outer labial setae (10–12  $\mu\text{m}$  vs 13–18  $\mu\text{m}$  in *T. bekmanae*) and shorter stoma (25–32  $\mu\text{m}$  vs 40–56  $\mu\text{m}$  in *T. bekmanae*) (Tsalolikhin 1975). From *T. securus* it differs in the shorter and less slender tail ( $\sigma' c = 11.5\text{--}16.1$ ,  $c' = 2.9\text{--}3.9$ ,  $\rho' c = 8.8\text{--}13.1$ ,  $c' = 3.5\text{--}6.8$  vs  $\sigma' c = 6.7\text{--}8.4$ ,  $c' = 6.3\text{--}9.3$ ,  $\rho' c = 7.1\text{--}8.4$ ,  $c' = 6.6\text{--}7.7$  in *T. securus*), longer outer labial setae (10–12  $\mu\text{m}$  vs 6.5–9.0  $\mu\text{m}$  in *T. securus*) and shorter spicules (45–48  $\mu\text{m}$  vs 52–58  $\mu\text{m}$  in *T. securus*) (Gagarin & Naumova 2011d).

**TABLE 1.** Morphometrics of *Tobrilus saprophagus* sp. n.

Character	Holotype male	Paratype males (n = 9)	Paratype females (n = 13)
L	2190	2339±172 (2067–2557)	2370±225 (2023–2688)
a	35	37±3 (33–43)	34±2 (30–40)
b	5.0	5.1±0.3 (4.8–5.5)	5.1±0.3 (4.5–5.6)
c	13.7	13.7±1.4 (11.5–16.1)	10.5±1.5 (8.8–13.1)
c'	3.5	3.5±0.3 (2.9–3.9)	5.6±0.8 (3.5–6.8)
V	–	–	47±2 (42–50)
diam.c.s.	24	25±1 (24–27)	28±2 (26–30)
d.midb.	63	63±6 (55–70)	70±9 (53–80)
a.b.d.	46	48±2 (44–50)	41±5 (31–50)
o.l.s.	11	11±1 (10–11)	11±1 (10–12)
c.s.	5	5±1 (5–7)	6±1 (5–7)
st.l.	27	28±1 (25–31)	30±1 (27–32)
ph.l.	442	459±20 (438–500)	463±38 (380–530)
dis.ph.cl.	1588	1710±155 (1450–2000)	–
dis.ph.v.	–	–	636±64 (550–750)
dis.v.a.	–	–	1044±133 (800–1200)
spic.	45	46±1 (45–48)	–
gub.	27	24±3 (20–28)	–
suppl.	6	6–7	–
t.l.	160	170±10 (150–182)	228±33 (175–292)

## Genus *Epitobrilus* Tsalolikhin, 1981

**Diagnosis** (modified after Andr ssy 2007). Body 1.1 to 5.3 mm long. Outer labial setae, with rare exceptions, long (45–65% of head diameter). Amphidial fovea at level of stoma. Buccal cavity funnel-shaped, anterior pocket jointed to the funnel-part of stoma or just posterior to that, posterior pocket separate, and teeth distant from each other. Vagina normal or slightly swollen. Spicules comparatively short. Supplements 5 to 13, echinate, protruded or semi-submerged.

**Type species.** *E. meyli* Tsalolikhin, 1981

Other valid species: *E. allophysis* (Steiner, 1919) Gagarin, 1991; *E. elephas* (Andr ssy, 1964) Zullini, 2006; *E. flagellatus* (Andr ssy, 1963) Tsalolikhin, 1981; *E. heptapapillatus* (Joubert & Heyns, 1979) Zullini, 2006; *E. husmanni* (Altherr, 1958) Zullini, 2006; *E. medius* (Schneider, 1916) Tsalolikhin, 2001; *E. parvipapillatus* (Kreis, 1932) Tsalolikhin, 1981; *E. sablensis* (Ebsary, 1982) Tsalolikhin, 2001; *E. scalensis* (Schneider, 1925) Andr ssy, 2007; *E. setosus* (Altherr, 1963) Tsalolikhin, 1981; *E. steineri* (Micoletzky, 1925) Andr ssy, 2007, *E. interstitialis* sp. n. Morphometrics of these species are given in Table 2.

Baikalian species of the genus *Epitobrilus* were unknown until now. *Tobrilus medius* from Lake Baikal was described and illustrated by S. Ya. Tsalolikhin (1980), but has been re-assigned to *Eutobrilus peregrinator* Tsalolikhin, 1983.



**TABLE 2.** Morphometrics of *Epitobrilus interstitialis* sp. n.

Character	Holotype male	Paratype males (n = 13)	Paratype females (n = 11)
L	4880	4759±320 (3884–5290)	4908±787 (4108–5972)
a	63	51±7 (43–65)	50±7 (39–63)
b	5.1	5.0±0.9 (4.6–5.5)	5.1±0.3 (4.7–5.6)
c	27.1	27.1±2.9 (21.5–32.2)	18.0±2.1 (16.1–22.3)
c'	2.9	3.0±0.3 (2.3–3.4)	4.5±0.5 (3.6–5.5)
V	–	–	52±2 (48–55)
diam.c.s.	55	61±5 (55–70)	60±10 (49–73)
d.midb.	75	94±11 (75–122)	101±21 (77–145)
a.b.d.	55	60±4 (53–65)	62±12 (47–85)
o.l.s.	37	35±3 (33–37)	33±5 (27–40)
c.s.	13	13±1 (12–15)	11±3 (9–12)
st.l.	57	59±6 (53–62)	57±5 (50–63)
ph.l.	963	956±63 (843–1050)	957±117 (825–1162)
dis.ph.cl.	3725	3625±345 (2850–4112)	–
dis.ph.v.	–	–	1580±285 (1250–2050)
dis.v.a.	–	–	2091±401 (1638–2688)
spic.	75	75±1 (73–78)	–
gub.	30	26±3 (20–30)	–
suppl.	6	6±1 (6–7)	–
t.l.	175	177±48 (135–200)	271±27 (250–335)

***Epitobrilus interstitialis* sp. n.**

(Figs 3, 4; Table 2, 3)

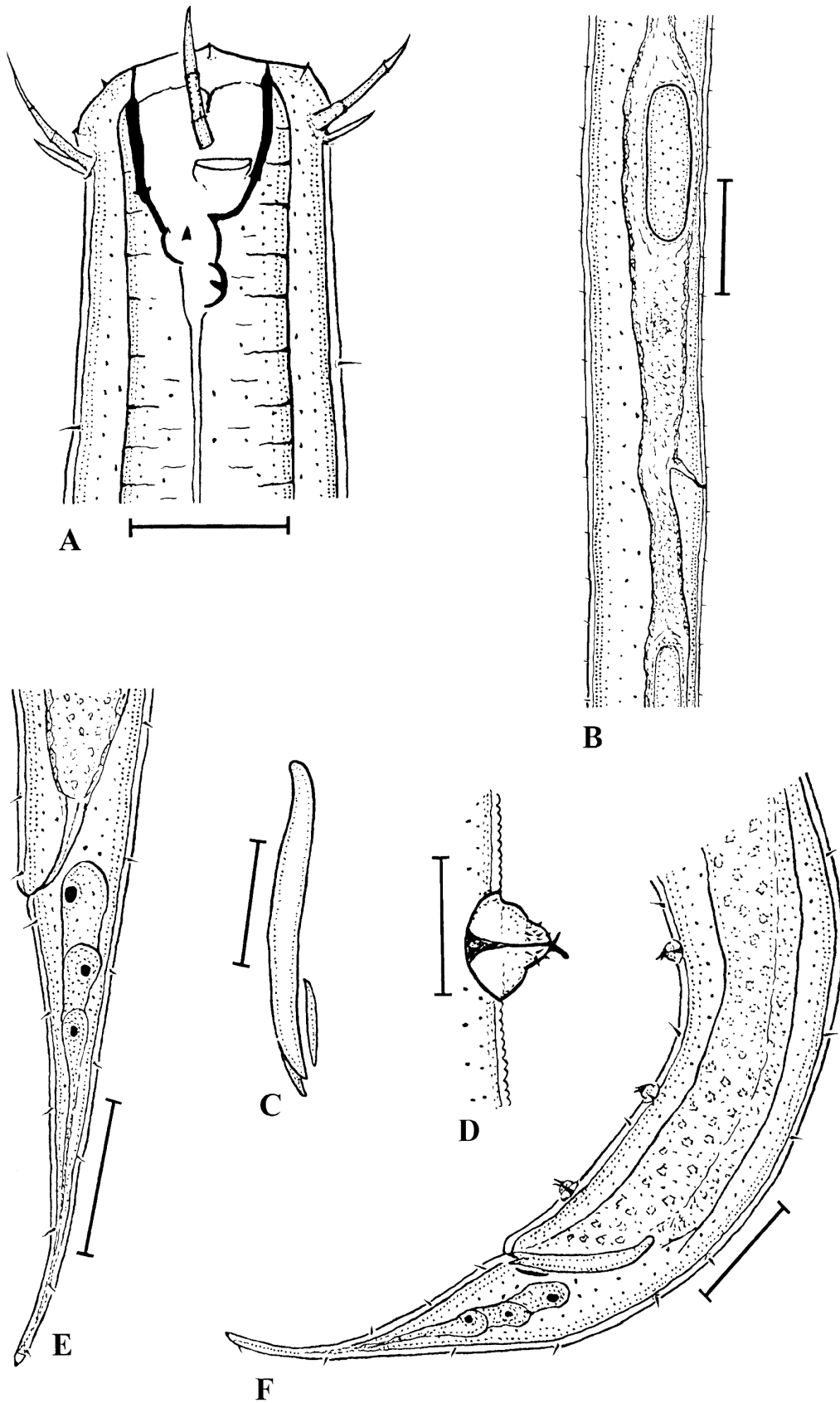
**Type material.** Holotype male, slide reference number 102/59, deposited in the Helminthological Museum of the Russian Academy of Sciences (RAS), Institute of Ecology and Evolution, Center for Parasitology RAS (Moscow, Russia).

**Paratypes.** Fourteen males and eleven females deposited in the collection of the Limnological Institute, Siberian Branch of the Russian Academy of Sciences (Irkutsk, Russia)

**Type locality.** Lake Baikal, Bolshie Koty Bay, opposite the Biological Station of the Limnological Institute. Also collected in Bolshie Koty Bay opposite the Varnachka Valley (N 51°32'30", E 105°03'44") and Listvyanichny Bay opposite Nerpinary (seals pool) (N51°30'16", E104°31'23"). Sand in the shore splash zone.

**Etymology.** The specific epithet means “from sandy splash zone, interstitial”.

**Description. Male.** Body comparatively long and thin. Cuticle finely annulated, 2.0–2.5 µm thick at mid-body. Cuticular rings narrow, poorly visible. Somatic setae sparse and short, 6–8 µm long. Labial region slightly off set from the adjacent body; lips well developed. Body diameter at the posterior pharynx end 1.5–1.8 times the width of the labial region. Inner labial sensillae papilliform. Six outer labial sensillae in the shape of thin, articulate setae 33–37 µm long, 55–70% of labial region width. Four cephalic sensillae in the shape of thin and smooth setae 12–15 µm long. Both circles of setae drawn close together. Cheilostom comparatively thin. Buccal cavity spacious, funnel-shaped, with thick walls. Dorsal pocket and its tooth absent. Anterior subventral pocket only slightly separated from buccal cavity. Posterior subventral pocket more separated from anterior subventral pocket. Subventral teeth in both pockets comparatively small, located from each other at distance 15–18 µm. Stoma length approximately equal to width of labial region. Amphidial fovea cup-shaped, located at the level of buccal cavity. Pharynx muscular, comparatively long, expanding gradually along its entire length. Cardiac gland large, rounded, 30–40 µm in diameter. Ventral gland and canal, ampulla, and excretory pore not observed.



**FIGURE 3.** *Epitobrillus interstitialis* sp. n. Holotype male and paratype female. A: male head; B: vulva region; C: spicule and gubernaculum; D: supplement; E: female tail; F: male tail. Scale bars: B, E—90  $\mu$ m; F—60  $\mu$ m; A—40  $\mu$ m; C—30  $\mu$ m; D—15  $\mu$ m.





**FIGURE 4.** *Epitobrilus interstitialis* sp. n. Holotype male, paratype male and female. A: male, entire body; B: female, entire body; C: male, anterior body end; D: vulva region; E, F: male head; G: female head; H: male, body at supplement region; I: male posterior body end; J: female tail. Scale bars: A, B—500  $\mu$ m; C—200  $\mu$ m; D, H—100  $\mu$ m; G, I, J—50  $\mu$ m; E, F—20  $\mu$ m.

**TABLE 3.** Diagnostic morphometric characters of males of valid species of the genus *Epitobrilus* (except for *E. flagellatus*, for which female characters are given, as males are unknown).

Species	L	a	b	c	c'	V
<i>allophysis</i>	1.18–1.52	27–30	3.4–3.7	6.4	6.8–7.7	–
<i>elephas</i>	3.73–4.34	27–40	4.2–5.0	12.1–14.0	3–4	–
<i>flagellatus</i>	0.96–1.04	27–34	4.2–5.0	3.4–3.9	12–13	43.0–45.2
<i>heptapapillatus</i>	2.01–2.21	42–47	6.0–6.4	7.8–10.5	9	–
<i>husmanni</i>	1.93–2.54	28–51	4.1–5.5	9.1–11.9	5.0–5.5	–
<i>medius</i>	1.60–2.78	16–34	4.0–5.4	10.6–18.3	2.5–4.0	–
<i>meyli</i>	1.42–1.63	29–35	5.2–6.0	9.9–11.6	4.0	–
<i>parvipapillatus</i>	1.3	33	5.2	9.9	6.0	–
<i>sablensis</i>	2.3	51	4.6	8.7	6.5	–
<i>scalensis</i>	1.87–2.22	20–23	4.0–4.4	10.6–15.2	?	–
<i>setosus</i>	1.8	40	4.7	11.2	6–7	–
<i>steineri</i>	2.14–3.35	30–60	3.9–5.4	13.4–16.8	3–5	–
<i>interstitialis</i> <b>sp.n.</b>	4.75–5.29	43–65	4.6–5.5	21.5–32.2	2.3–3.4	–

continued.

Species	diam.c.s.	o.l.s.	o.l.s.c.r.	st.l.	sub.s.	spic.	suppl.
<i>allophysis</i>	22–24	12–15	55–63	34–43	–	32	6–8
<i>elephas</i>	?	17–20	20	87–94	–	136–145	9–13
<i>flagellatus</i>	13	7	50	27–30	–	–	–
<i>heptapapillatus</i>	30	12–13	45	32	–	63–69	7
<i>husmanni</i>	32–38	14–24	45–63	32–45	–	44–55	6–7
<i>medius</i>	40–50	20–28	50–60	60	+	53–65	5–6
<i>meyli</i>	20–25	9–10	50	20–26	+	44–51	6
<i>parvipapillatus</i>	17	4–5	25	?	+	25	6
<i>sablensis</i>	40–45	20–21	47–52	70	–	40	7
<i>scalensis</i>	?	?	45	?	?	?	6
<i>setosus</i>	30	12	40	35–38	–	51	6
<i>steineri</i>	42–48	22–25	45–55	53–56	–	51–71	6
<i>interstitialis</i> <b>sp.n.</b>	55–70	33–37	56–65	53–62	+	73–78	6–7

Testes paired, opposed, situated to the left of intestine; anterior testis outstretched, posterior testis reflexed. Vas deferens well developed. Spicules comparatively short and almost straight, 1.2–1.4 times as long as the cloacal body diameter. Capitulum absent; apical end of spicules bifurcated. Gubernaculum in the shape of a thin plate, 27.4–38.5% of spicule length. Precloacal supplement echinate, protruded, 6–7 in number. Supplement ampulla slightly flattened, its contents concentrated at ampulla base. Supplement pad large, armed with numerous (approximately 40–50) small thorns; cap comparatively small, with large central thorn bearing a lateral apophysis. Supplements about identical size and located approximately equidistant from each other. The nearest supplement to the cloaca located at the level of the proximal end of the spicules. Supplement row 372–542  $\mu\text{m}$  long. Tail slender, elongate-conical, with subterminal seta. Three caudal glands well developed, opening through a short spinneret.

**Female.** General morphology similar to that of males in cuticle structure and anterior body, but with slightly longer body and longer tail. Cuticle finely annulated. Lips well developed. Inner labial sensillae papilliform. Outer labial sensillae and cephalic sensillae in the shape of thin setae. Outer labial setae articulated and as long as 55–70% of labial region width. Both circles of setae drawn close together. Cheilostom small; buccal cavity spacious, funnel-shaped. Dorsal pocket and tooth absent. Anterior subventral pocket only slightly separated from buccal cavity. Posterior subventral pocket well separated from anterior subventral pocket. Subventral teeth in both pockets

comparatively small and located 15–20 µm apart. Amphidial fovea cup-shaped, located at the level of buccal cavity. Pharynx muscular, expanding gradually along its entire length. Cardiac gland large. Rectum length equal to or slightly greater than anal body diameter. Reproductive system didelphic, amphidelphic. Ovaries situated to the left of intestine, reflexed and comparatively short. Oocytes numerous. Vulva a transverse slit and situated at level of mid-body. Vulva lips not sclerotized and not protruding beyond the body contour. Advulval cuticular wrinkles and vulval glands not seen. Vagina short, with thick walls. Uterus containing numerous spermatozoa and 1–5 intrauterine eggs, measuring 82–105 x 50–70 µm. Tail elongate-conical, with subterminal setae. Three caudal glands present, opening through a short, tube-like spinneret.

**Diagnosis.** Body comparatively long and thin (L = 4108–5972 µm, a = 39–65). Cuticle finely annulated. Crystalloids absent. Outer labial sensillae and cephalic sensillae in the shape of setae. Outer labial setae articulate and are as long as 55–70% of labial region diameter. Both circles of setae drawn close together. Cheilostom small; buccal cavity spacious, funnel-shaped. Dorsal pocket and its tooth absent. Anterior subventral pocket only slightly separated from buccal cavity; posterior subventral pocket distinctly separate from anterior subventral pocket. Vulva a transverse slit, situated at about mid-body. Males with comparatively short, almost straight spicules. Spicules bifurcate apically. Gubernaculum in the shape of a thin plate. Precloacal supplement echinate, protruded, 6–7 in number. Supplement ampulla slightly flattened, contents concentrated at ampulla base. Supplement pad large, armed with numerous small thorns. Cap comparatively small, with a large central thorn bearing a lateral apophysis. All supplements nearly identical in size and located approximately equidistant from each other. Tail slender, long, with subterminal setae.

**Differential diagnosis.** *Epitobrilus interstitialis* sp. n. is the largest in the genus *Epitobrilus* (Table 2). It is morphologically close to *E. steineri* (Micoletzky, 1925) Andrassy, 2007, but differs from it in the longer body (♂ L = 4.75–5.29 mm vs ♂ L = 2.14–3.35 mm in *E. steineri*), longer tail (♂ c = 13.4–16.8 vs ♂ c = 21.5–32.2 in *E. steineri*), longer outer labial setae (27–40 µm long, 56–65% of labial region diameter vs 22–25 µm long, 45–55% of labial region diameter in *E. steineri*) and longer spicules (73–78 µm vs 51–71 µm in *E. steineri* (Micoletzky 1925, Tsalolikhin 1983, Gagarin 1993).

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## References

- Altherr, E. (1958) Nématodes du bassin inférieur de la Weser et des dunes d'Héligoland. Espèce nouvelles ou incomplètement décrites. *Mémoires de la Société vaudoise des Sciences naturelles*, 12, 4–63.
- Altherr, E. (1963) Nématodes d'eau douce. In: *Biologie de l'Amérique Australe*, 2, 7–30.
- Andrassy, I. (1959) Neubenennungen einiger homonymen Nematoden-Gattungen. *Nematologica*, 4, 223–226. <http://dx.doi.org/10.1163/187529259X00255>
- Andrassy, I. (1963) Nematoda. Neue und einige seltene Nematoden—Arten aus Argentinien. In: *The Zoological result of Gyh. Topa's Collectings in Sout Argentina, 2' Annates historico-naturelles Musei nationalis Hungarici*, 55, 243–273.
- Andrassy, I. (1964) Ein Versuchsschlüssel zur Bestimmung der *Tobrilus* Arten. *Annales Universitatis Scientiarum Budapestinensis*, 7, 3–18.
- Andrassy, I. (2007) *Free-living nematodes of Hungary (Nematoda errantia)*. II. Hungarian Natural History Museum and Systematic Zoology Research Group of the Hungarian Academy of Sciences. Budapest, 497 pp.
- Bastian, H.C. (1865) On the Anatomy and Physiology of the Nematoids, Parasitic and Free, with Observations on Their Zoological Position and Affinities to the Echinoderms. *Philosophical Transactions*, 156, 545–638. <http://dx.doi.org/10.1098/rstl.1866.0021>
- Batalova, F.M. (1983) New data on Nematodes, commensals of Baikal sponges *Zoologicheskii Zhurnal*, 62, 1108–1110. [In Russian]
- Cobb, N.A. (1920) One hundred new nemas (type species of 100 new genera). *Contributions to a Science of Nematology* 9,

- Dybowski, W. (1880) Studien über die Spongien des russischen Reiches mit besonderer Berücksichtigung der Spongienfauna des Baikalsees. *Mémoires de l'Académie Impériale des Sciences Naturelles de St-Petersbourg*, 27, 1–71. [In German]
- Ebsary, B.A. (1982) Canadian species of *Tobrilus* (Nematoda: Tobrilidae) with description of three new species. *Canadian Journal of Zoology*, 60, 3048–3062.  
<https://doi.org/10.1139/z82-387>
- Filipjev, I.N. (1918) Free-living marine nematodes of the Sevastopol area. *Transactions of the Zoological Laboratory and the Sevastopol Biological Station of the Russian Academy of Sciences*. Series II, No 4 (Issue I & II).
- Gagarin, V.G. (1991) Nematodes of family Tobrilidae (Enoplida) from the arctic water bodies. *Zoologicheskij Zhurnal* 70, 11–21. [In Russian]
- Gagarin, V.G. (1993) *Free-living nematodes from fresh-water bodies of Russia and adjacent countries*. Hydrometeoizdat, Sankt-Peterburg, 351 pp. [In Russian]
- Gagarin, V.G. & Naumova, T.V. (2010a) Two new species of the genus *Hofmaenneria* Schneider, 1940 (Nematoda, Monhysterida) from Lake Baikal, Russia. *International Journal of Nematology*, 20, 7–12.
- Gagarin, V.G. & Naumova, T.V. (2010b) *Monhystera naphthera* sp. n. (Nematoda, Monhysteridae) from a bitumen biotope of Lake Baikal abyssal. *Zoologicheskij Zhurnal*, 89, 1264–1267. [In Russian]
- Gagarin, V.G. & Naumova, T.V. (2010c) Two new species of free-living nematodes from Lake Baikal, Russia. *Russian Journal of Nematology*, 18, 103–110.
- Gagarin, V.G. & Naumova, T.V. (2010d) Three new species of free-living nematodes from Lake Baikal, Russia. *International Journal of Nematology*, 20, 141–149.
- Gagarin, V.G. & Naumova, T.V. (2011a) Two new species of Dorylaimids (Nematoda, Dorylaimida) from Lake Baikal. *Inland Water Biology*, 4, 28–33.  
<http://dx.doi.org/10.1134/S1995082911010068>
- Gagarin, V.G. & Naumova, T.V. (2011b) Two nematode species of the family Tobrilidae (Enoplida) De Coninck, 1965 from Lake Baikal, Russia. *Zootaxa*, 2815, 59–68.
- Gagarin, V.G. & Naumova, T.V. (2011c) *Paratrilobus granulatus* sp. n., *Tobrilus longisetosus* sp. n. and *Domorganus acutus* (Tsalolikhin, 1977) from Lake Baikal, Russia. *International Journal of Nematology*, 21, 1–11.
- Gagarin, V.G. & Naumova, T.V. (2011d) Two species of free-living nematodes from Lake Baikal. *Inland Water Biology*, 3, 5–10.  
<http://dx.doi.org/10.1134/S1995082911030072>
- Gagarin, V.G. & Naumova, T.V. (2011e) *Prodorylaimus filamentus* sp. n. and *Eutobrilus longicaudatoides* sp. n. (Nematoda) from the Lake Baikal. *Zootaxa*, 3103, 57–68.
- Gagarin, V.G. & Naumova, T.V. (2012a) *Eutobrilus obesus* sp. nov. and *E. brzeskii* sp. nov. (Nematoda: Triplonchida: Tobrilidae) from Lake Baikal, Russia. *Annales Zoologici (Warszawa)*, 62, 317–324.  
<https://doi.org/10.3161/000345412X652855>
- Gagarin, V.G. & Naumova, T.V. (2012b) Free-living nematodes (Nematoda) fauna from the interstitial of the Lake Baikal splash zone. *Inland Water Biology*, 5, 229–235.  
<http://dx.doi.org/10.1134/S1995082912030030>
- Gagarin, V.G. & Naumova, T.V. (2012c) *Paramononchus orientalis* sp. n. and *Ethmolaimus maximus* sp. n. (Nematoda) from Lake Baikal, Russia. *Zootaxa*, 3513, 51–60.  
<http://dx.doi.org/10.5281/zenodo.282559>
- Gagarin, V.G. & Naumova, T.V. (2012d) Two new species of *Theristus* Bastian, 1865 (Nematoda: Xyalidae) from the interstitial zone of Lake Baikal, Siberia, Russia. *Nematology*, 14, 499–508.  
<http://dx.doi.org/10.1163/156854111X612225>
- Gagarin, V.G. & Naumova, T.V. (2015a) *Domorganus gigas* sp.n. (Nematoda) from Lake Baikal, Russia. *Zootaxa*, 4052, 490–494.  
<http://dx.doi.org/10.11646/zootaxa.4052.4.9>
- Gagarin, V.G. & Naumova, T.V. (2015b) Description of the new species *Prodorylaimus vladimiri* sp.nov. and redescription of the rare nematode species *Lamuania orientalis* Tsalolikhin, 1976 (Nematoda, Enoplida) from Lake Baikal, *Amurian Zoological Journal*, 7, 197–205. [In Russian]
- Gagarin, V.G. & Naumova, T.V. (2016a) *Ethmolaimus* sp. n. and *Paramononchus major* sp. n. (Nematoda) from Lake Baikal, Russia. *Zootaxa*, 4098, 582–592.  
<http://dx.doi.org/10.11646/zootaxa.4098.3.10>
- Gagarin, V.G. & Naumova, T.V. (2016b) *Tobrilus methanus* sp.n. and *Tripyla posolskii* sp.n. from Lake Baikal, Russia. *Zootaxa*, 4196, 95–106.  
<https://dx.doi.org/10.11646/zootaxa.4196.1.5>
- Joubert, A.P. & J. Heyns, J. (1979) Freshwater nematodes from South Africa 3. *Tobrilus* Andrassy, 1959. *Journal Limnological Society of Southern Africa*, 5, 17–26.
- Kreis, H. (1932) Reports of an expedition to Paraguay and Brasil in 1926–1927. *The Journal of the Linnean Society of London (Zoology)*, 38, 55–90. Micoletzky, H. (1925) Die freilebenden Süßwasser- und Moornematoden Dänemarks. *Mémoires de l'Académie Royale des Sciences et des Lettres de Danemark*, 8, 57–310.

- Naumova, T.V. (2017) Free-living Nematode Fauna of Lake Baikal. *Session and poster presentations, 12<sup>th</sup> International Symposium of the Russian Society of Nematologists "Nematodes and other Ecdysozoa under the growing ecological footprint on ecosystems"*, 31 July - 6 August, 60.
- Naumova, T.V. & Gagarin, V.G. (2015) Prospects for Research of Free-Living Nematode (Nematoda) in Lake Baikal. *Session and poster presentations, 6th International Vereshchagin Baikal Conference, 7–12 September*, pp. 148–149.
- Naumova, T.V., Sitnikova, T.Ya. & Gagarin, V.G. (2012) Species composition and distribution of free-living nematodes (Nematoda) inhabiting areas of natural oil and gas seeps in Lake Baikal. *Inland Water Biology*, 2, 3–11.  
<http://dx.doi.org/10.1134/S1995082912030030>
- Pallas, P.S. (1776) *Reise durch verschiedene Provinzen des Russischen Reichs*. Theil 3, Vom Jahr 1772 und 1773. Kayserliche Academie der Wissenschaften, St. Petersburg. 760 s. + Register. [In German]
- Schneider, G. (1916) Synopsis Öfver de I Östra, Norra Och Mellersta Europas färskvatten fritt lefvande Nematoderma. *Acta Societatis pro Fauna et Flora Jennica*, 44, 1–83.
- Schneider, W. (1925) Freilebende Süßwassernematoden aus ostholsteinischen seen nebst Bemerkungen über die Nematodenfauna des Madü- und Schaalsees. *Archiv für Hydrobiologie*, 15, 536–582. [In German]
- Shoshin, A.V. & Tsalolikhin, S.Ya. (2001) Free-living nematodes (Nemathelminthes: Nematoda). In: Timoshkin, O.A. (Ed.), *Index of animal species inhabiting Lake Baikal and its catchment area. Vol. I. Lake Baikal, Book 1*. Nauka, Novosibirsk, Russia, pp. 305–320. [In Russian]
- Steiner, G. (1919) Die von A. Monard gesammelten Nematoden der Tiefenfauna des Neuenburgersees. *Bulletin de la Société neuchâtoise des sciences naturelles*, 43, 142–240.
- Timoshkin, O.A., Samsonov, D.P., Yamamuro, M., Moore, M.V., Belykh, O.I., Malnik, V.V., Sakirko, M.V., Shirokaya, A.A., Bondarenko, N.A., Domysheva, V.M., Fedorova, G.A., Kochetkov, A.I., Kuzmin, A.V., Lukhnev, A.G., Medvezhonkova, O.V., Nepokrytykh, A.V., Pasynkova, E.M., Poberezhnaya, A.E., Potapskaya, N.V., Rozhkova, N.A., Sheveleva, N.G., Tikhonova, I.V., Timoshkina, E.M., Tomberg, I.V., Volkova, E.A., Zaitseva, E.P., Zvereva, Yu.M., Kupchinsky, A.B. & Bukshuk, N.A. (2016) Rapid ecological change in the coastal zone of Lake Baikal (East Siberia): Is the site of the world's greatest freshwater biodiversity in danger? *Journal of Great Lakes Research*, 42, 487–497.  
<http://dx.doi.org/10.1016/j.jglr.2016.02.011>
- Tsalolikhin, S.Ya. (1974) New species of freshwater nematodes—commensals of baikalian sponges. *Zoologicheskii Zhurnal*, 53, 1081–1085. [In Russian]
- Tsalolikhin, S.Ya. (1975) New species from Lake Baikal abyssal zone. *Zoologicheskii Zhurnal*, 54, 771–775. [In Russian]
- Tsalolikhin, S.Ya. (1980) *Free-living nematodes of the Baikal Lake*. Nauka, Novosibirsk, Russia, 120 pp. [In Russian]
- Tsalolikhin, S.Ya. (1981) A revision of the genus *Tobrilus*. *Zoologicheskii Zhurnal*, 60, 1302–1313. [In Russian]
- Tsalolikhin, S.Ya. (1983) *Nematodes of the families Tobrilidae and Tripylidae of the World Fauna*. Nauka, Leningrad. Russia, 232 pp. [In Russian]
- Tsalolikhin, S.Ya. (2001) Synopsis of the System of the Family Tobrilidae. *Russian Journal of Nematology*, 9, 19–24.
- Zullini, A. (2006) Order Triplonchida. In: Eyualem-Abebe, Traunspurger, W., & Andrásy, I. (Eds.), *Freshwater nematodes: Ecology and taxonomy*. CABI Publishing, Wallingford, UK, pp. 293–325.  
<http://dx.doi.org/10.1079/9780851990095.0293>