

Oncholaimus langhovdensis sp. nov. (Nematoda: Enoplea: Oncholaimida), a New Species of Free-living Marine Nematode from Langhovde, Dronning Maud Land, East Antarctica

Daisuke Shimada^{1,5}, Atsushi C. Suzuki¹,
Megumu Tsujimoto², Satoshi Imura^{2,3}, and Keiichi Kakui⁴

¹Department of Biology, Keio University, 4-1-1 Hiyoshi, Yokohama, Kanagawa 223-8521, Japan
E-mail: dsk-shimada@keio.jp

²National Institute of Polar Research, 10-3 Midori-cho, Tachikawa, Tokyo 190-8518, Japan

³Department of Polar Science, SOKENDAI (The Graduate University for Advanced Studies),
10-3 Midori-cho, Tachikawa, Tokyo 190-8518, Japan

⁴Department of Biological Sciences, Faculty of Science, Hokkaido University, N10 W8, Sapporo, Hokkaido 060-0810, Japan

⁵Corresponding author

(Received 13 June 2017; Accepted 13 September 2017)

<http://zoobank.org/E02B9201-1FFC-4EDE-82B5-9D6CBA5ADA64>

A new species of free-living marine nematode, *Oncholaimus langhovdensis* sp. nov., is described from the intertidal zone of Langhovde (near Syowa Station), Dronning Maud Land, East Antarctica. It closely resembles 11 congeners in the conico-cylindrical tail shape present in males and amphid and excretory pore positions, short spicules, and Demanian system structure present in females. However, it mainly differs from these congeners in body size, de Man's ratios, tail length and shape, and Demanian system structure present in females. *Oncholaimus langhovdensis* sp. nov. also resembles four congeners known only by females, but it can be distinguished from them based on the tail length and uvette position. In addition to *O. langhovdensis* sp. nov., two undescribed species (Tripyloididae gen. sp. and Axonolaimidae gen. sp.) and four unidentified species (*Sphaerolaimus* sp., Oncholaimidae gen. sp., Comesomatidae gen. sp., and Chromadorida fam. gen. sp.) were found from the same locality.

Key Words: oncholaimid, Oncholaimidae, meiofauna, benthos, taxonomy, Syowa Station.

Introduction

During a faunal survey of intertidal meiobenthic animals in the vicinity of Syowa Station during the 56th Japanese Antarctic Research Expedition (JARE 56), an undescribed species of free-living marine nematode belonging to *Oncholaimus* Dujardin, 1845 was collected from coastal sand at Langhovde, East Antarctica. The genus *Oncholaimus sensu lato* (including *Oncholaimium* Cobb, 1930 and *Pseudoncholaimus* Kreis, 1932) contains more than 100 species (Gerlach and Riemann 1974; Gagarin and Nguyen 2011; Gagarin and Gusakov 2012; Pastor de Ward *et al.* 2013; Chen and Guo 2014; Smol *et al.* 2014; Gao and Huang 2016), most of which occur in marine or brackish environments (Smol and Coomans 2006), with 17 species described from the Antarctic region (Allgén 1932; Wieser 1953; Mawson 1956, 1958; Allgén 1959; Gerlach and Riemann 1974; Ingels *et al.* 2014). Nearly all described species were found in sub-Antarctic regions, and only *O. longissimus* Allgén, 1959 was reported from the coast of East Antarctica (Allgén 1959). Although seven species of free-living terrestrial nematodes were known around Syowa Station (Kito *et al.* 1991, 1996;

Kito 2009), we present the first taxonomic report on marine nematodes in this region.

Materials and Methods

Specimens were collected by ACS on 31 January 2015 from the coast of Langhovde (69°14'24.3"S, 39°42'55.8"E), Lützow-Holm Bay, Dronning Maud Land, East Antarctica. Intertidal sandy sediments were sampled with a shovel and washed in fresh water; the supernatant was then filtered through a 32 µm mesh, and the extract was fixed in 10% formalin or 99% ethanol. Nematodes were sorted under a stereomicroscope, mounted individually in anhydrous glycerin on glass slides supported by a paraffin wax ring (Hooper 1986a) for differential interference contrast microscope observation, and dried in a critical-point dryer and sputter-coated with gold (Au) for scanning electron microscope (SEM) observation. All examined specimens were deposited in the Invertebrate Collection of Hokkaido University Museum, Sapporo, Japan and catalogued with the acronym ICHUM (formerly named as ZIHU, the Zoological Institute, Hokkaido University).

Although DNA was extracted from ethanol-fixed specimens and their sequences were attempted to be determined following the protocol described by Shimada and Kajihara (2014), no data were obtained probably due to damage to the specimen.

Abbreviations: abd, body diameter at the anus (female) or cloaca (male); mbd, maximum body diameter; vbd, body diameter at the vulva. De Man's ratios (following Hooper 1986b): a, ratio of the body length to the maximum body diameter; b, ratio of the body length to the pharynx length; c, ratio of the body length to the tail length; V, position of the vulva from the anterior body end, expressed as a percentage of the body length.

Results

At least seven species (134 individuals) of free-living marine nematodes were collected from Langhovde (Table 1). In this paper, a new species, *Oncholaimus langhovdensis* sp. nov., is described along with appropriate illustrations.

Family **Oncholaimidae** Filipjev, 1916
Subfamily **Oncholaiminae** Filipjev, 1916
Genus ***Oncholaimus*** Dujardin, 1845

Oncholaimium Cobb, 1930: 227.

Pseudoncholaimus Kreis, 1932: 57.

Oncholaimus langhovdensis sp. nov.
(Figs 1–3)

Material examined. *Holotype.* Male (ICHUM 5311), whole mount. *Paratypes.* Four males (ICHUM 5312–5315), four females (ICHUM 5316, 5317, 5319, and 5320), whole mounts. *Non-type.* An immature female (ICHUM 5318), whole mount; a male and a female (ICHUM 5321 and 5322, respectively), Au-coated SEM specimens.

Table 1. Specimens collected from Langhovde. F, female; J, juvenile; M, male.

Species	Number of individuals					
	Formalin-fixed			Ethanol-fixed		
	M	F	J	M	F	J
Oncholaimida						
<i>Oncholaimus langhovdensis</i> sp. nov.	7	5	1	2		
Oncholaimidae gen. sp.	1	29	12	2	15	14
Enoplida						
Tripyloididae gen. sp.	5	1	2	1		
Axonolaimida						
Axonolaimidae gen. sp.	1	1			1	1
Comesomatidae gen. sp.		2	2	3	1	
Monhysterida						
<i>Sphaerolaimus</i> sp.	1	11	3	3	2	3
Chromadorida						
Chromadorida fam. gen. sp.		1		1		

Type locality and habitat. Intertidal sandy sediment, Langhovde (69°14'24.3"S, 39°42'55.8"E), Lützw-Holm Bay, Dronning Maud Land, East Antarctica.

Diagnosis. *Oncholaimus langhovdensis* sp. nov. is characterised by slender body (a=75–91 in males, 56–70 in females), amphids located at posterior half of buccal cavity (59–82% of buccal cavity length), excretory pore located posterior to buccal cavity (2.2–2.8 times buccal cavity length from anterior body end), long conico-cylindrical tail without caudal papilla in both sexes (3.1–3.7 times abd in males, 2.6–3.1 times abd in females), short spicules (1.1–1.3 times abd and 33–38% of tail length), presence of Demanian system, short ductus uterinus (170–240 µm, 2.2–3.9 times vbd), and absence of terminal pores of main duct.

Measurements. See Table 2.

Description. Body (Fig. 1A, B) long, almost cylindrical, gradually tapering toward both ends. Cuticle thin and smooth. Head (Figs 1C, D, 3A, B) rounded, diameter at the level of cephalic setae 52–62% of mbd in males, 41–47% of mbd in females. Six lips each with an inner labial papilla (Fig. 3A). Six outer labial and four cephalic setae equal in length, arranged in a single circle. Amphids located at level of posterior half of buccal cavity (63–82% from anterior body end in males and 59–67% in females), width 19–32% of corresponding body diameter, consisting of a slit-like aperture and oval fovea. Buccal cavity large, barrel-shaped, length/width=2.1–2.3. Three well-developed teeth in buccal cavity, left subventral one largest and right subventral and dorsal ones equal in size. Cervical region (Fig. 1E) with sparse setae, tapering anteriorly, and almost cylindrical in posterior half. Ventral excretory pore at 2.2–2.8 times buccal cavity length from anterior body end (12–19% of pharynx length). Nerve ring at 41–54% of pharynx length. Ventral gland single, width 51–70% of corresponding body diameter, posterior end at 1.3–1.5 times pharynx length from anterior body end. Tail (Figs 1F–I, 3C, D) sexually dimorphic. Rectum 1.2–1.5 times abd and 33–42% of tail length in males and 0.7–0.8 times abd and 26–30% of tail length in females. Three caudal glands (Fig. 2A) situated at 10–24 times abd anterior to cloaca in males and 6–13 times abd anterior to anus in females.

Male. Reproductive system (Fig. 2A) diorchic. Testes opposed, situated on right or left side of intestine, anterior one outstretched and beginning at 23–31% of body length, and posterior one reflexed backward and ending at 65–82% of body length. Long glandular caecum along anterior testis reported in some *Oncholaimus* species (*cf.* Coomans and Heyns 1983) not observed. Spicules (Figs 1F–H, 2B) paired, equal in shape and size, almost cylindrical, distally acute and proximally expanded; 1.1–1.3 times abd and 33–38% of tail length (equal to or slightly shorter than rectum). Gubernaculum absent. Cloacal region (Figs 1F–H, 3C, E) swollen, with a very small pre-cloacal papilla (Figs 1G, 3E) immediately anterior to cloaca. Six to eight circum-cloacal setae on each ventrolateral side, three to five of them pre-cloacal and the others post-cloacal (in holotype, five pre-cloacal and three post-cloacal). Tail (Figs 1F–H, 3C) long, conico-cylindrical, anterior 52–63% conical, ventrally bent in con-

Table 2. Measurements of *Oncholaimus langhovdensis* sp. nov. All measurements in μm , and are in the form: mean \pm s.d. (range). Abbreviations: abe, anterior body end; peb, posterior end of buccal cavity.

Character	Male		Female
	Holotype	Paratypes	Paratypes
n	—	4	4
L (mm)	4.1	4.9 \pm 0.4 (4.4–5.2)	5.0 \pm 0.3 (4.6–5.4)
a	75.4	85.3 \pm 5.3 (80.1–90.6)	62.7 \pm 6.0 (56.0–69.8)
b	7.1	7.2 \pm 0.2 (7.0–7.5)	7.8 \pm 0.2 (7.7–8.1)
c	38.0	41.5 \pm 4.0 (37.0–46.1)	31.5 \pm 4.5 (25.9–36.5)
V (%)	—	—	79.9 \pm 6.2 (70.8–84.3)
Head diameter at cephalic setae	33	33 \pm 1.5 (31–34)	37 \pm 1.0 (36–38)
Outer labial and cephalic setae length	6.7–8.0	7.4 \pm 0.6 (6.6–8.7)	7.7 \pm 0.8 (6.2–8.7)
Buccal cavity length	39	39 \pm 0.6 (38–39)	42 \pm 1.2 (41–43)
Buccal cavity diameter	18	18 \pm 0.6 (17–18)	19 \pm 0.6 (19–20)
Largest tooth tip from peb	31	31 \pm 1.7 (29–33)	33 \pm 1.5 (32–35)
Other teeth tips from peb	23	23 \pm 1.2 (22–25)	25 \pm 1.0 (23–26)
Amphids from abe	28–30	27 \pm 2.9 (24–31)	26 \pm 2.1 (24–29)
Amphid width	8.5–9.3	8.9 \pm 1.9 (7.5–11)	no data
Excretory pore from abe	109	90 \pm 4.7 (86–95)	103 \pm 5.2 (97–106)
Nerve ring from abe	288	312 \pm 17 (297–330)	324 \pm 9 (310–331)
Posterior end of pharynx from abe	581	676 \pm 40 (633–716)	636 \pm 31 (604–666)
Posterior end of ventral gland from abe	769	891 \pm 74 (805–956)	882 \pm 45 (823–932)
Ventral gland diameter	29	30 \pm 1.4 (28–31)	35 \pm 8.5 (28–46)
mbd	55	58 \pm 2.1 (55–60)	80 \pm 9.0 (68–90)
abd	32	34 \pm 3.9 (30–38)	57 \pm 4.9 (52–63)
Rectum length	44	45 \pm 2.2 (43–48)	43 \pm 2.1 (41–45)
Tail length	109	119 \pm 10 (106–130)	159 \pm 17 (138–179)
Tail diameter at cylindrical part	8.0	8 \pm 1.2 (7–9)	11 \pm 1.7 (8–12)
Caudal glands to cloaca/anus	381–627	560 \pm 152 (360–767)	535 \pm 157 (287–770)
Spicules length	41	41 \pm 2.4 (37–45)	—
Anterior testis from abe (mm)	1.2	1.3 \pm 0.1 (1.2–1.5)	—
Total length of testes (mm)	1.6	2.4 \pm 0.3 (2.1–2.7)	—
Ovary from abe (mm)	—	—	2.8 \pm 0.5 (2.3–3.3)
Ovary length	—	—	619 \pm 117 (463–741)
Uterus length	—	—	451 \pm 76 (366–548)
Vulva from abe (mm)	—	—	4.0 \pm 0.5 (3.3–4.5)
vbd	—	—	68 \pm 8.1 (61–79)
Egg length	—	—	209 \pm 65 (152–318)
Egg diameter	—	—	58 \pm 16 (39–76)
Osmosium from vulva	—	—	108 \pm 36 (83–149)
Uvette from vulva	—	—	215 \pm 36 (174–239)

cal part and nearly straight in cylindrical part (diameter 22–25% of abd). Ventral papilla in caudal region absent. A pair of short setae located at junction of conical and cylindrical parts of tail. Several pairs of extra caudal setae on cylindrical part. Two rows consisting of several setae on dorsal side of cloacal and caudal regions. Tip of tail slightly expanded, with a spinneret and two or three stout terminal setae.

Female. Reproductive system (Fig. 2C) monodelphic, posterior ovary absent. Anterior ovary 9–15% of whole body length, beginning at 49–62% from anterior body end. Uterus single, 8–12% of whole body length, beginning at 63–76% from anterior body end. Eggs elongated, length/width=2.5–6.1, one to three in uterus. Vulva (Fig. 3F) slit-like, with swelling of body surface, situated at 71–84% from anterior body end. Demanian system (Fig. 2C–E) present. Ductus uterinus posterior to uterus, connecting to right

side of main duct through uvette at 2.2–3.9 times vbd posterior to vulva. Ductus entericus anterior to uvette, connecting to dorsal side of intestine through osmosium at 1.1–2.4 times vbd posterior to vulva (1.2–2.1 times vbd anterior to uvette). Main duct inconspicuous in posterior body region, unbranched. Terminal pore indistinct on body surface. Tail (Figs 1I, 3D) 2.6–3.1 times abd long, conico-cylindrical but different in shape compared with that in males, anterior 69–77% conical and diameter of cylindrical part 15–21% of abd. Tip of tail not expanded. Several circumanal and caudal setae present.

Etymology. The specific name, *langhovdensis*, is an adjective derived from the type locality Langhovde.

Remarks. According to previous studies (Filipjev 1918; Steiner 1921; Ditlevsen 1928; Cobb 1930; Kreis 1932, 1934; Allgén 1935; Gerlach 1958; Allgén 1959; Wieser 1959; Chit-

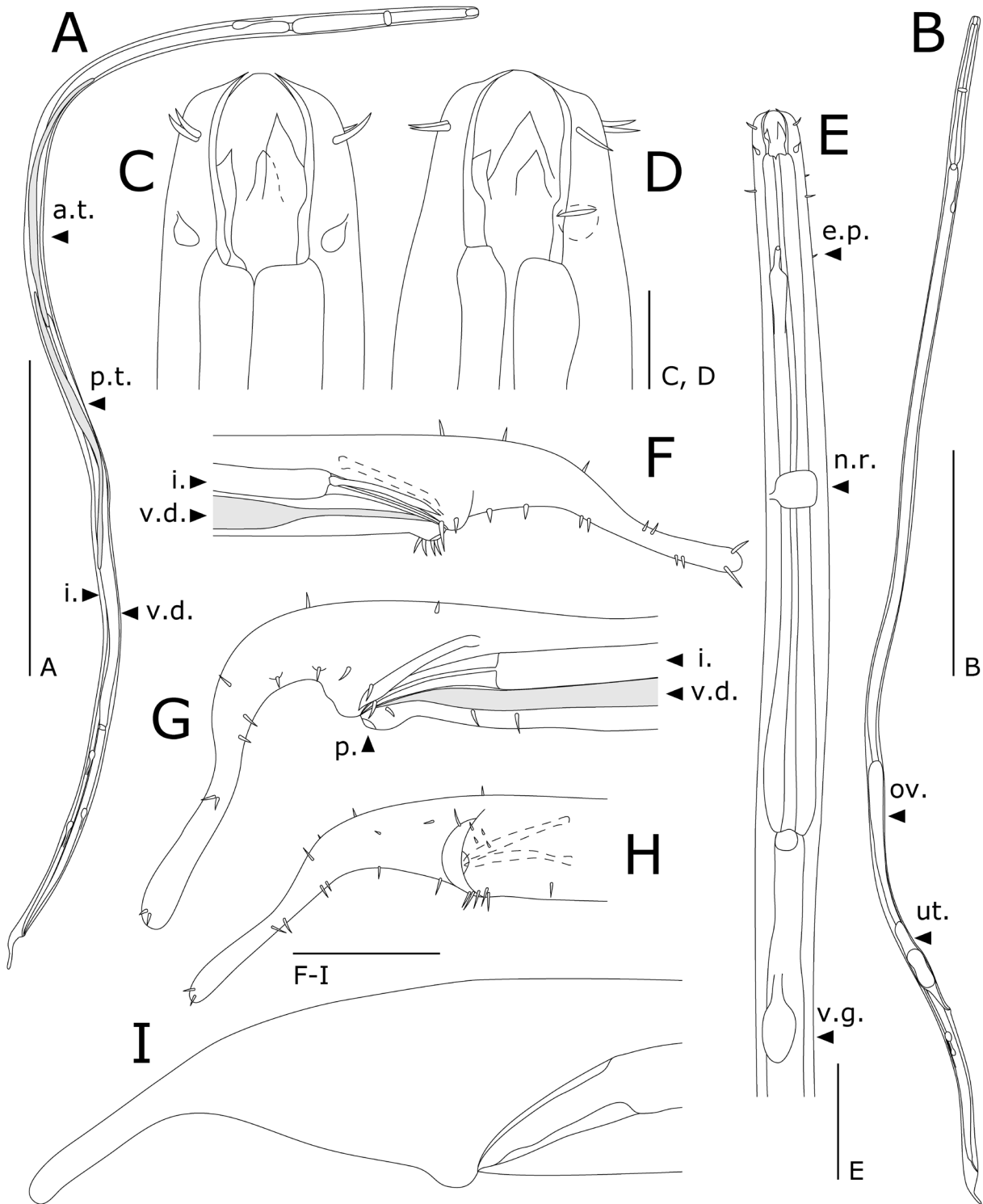


Fig. 1. *Oncholaimus langhovdensis* sp. nov. Males ICHUM 5311 (holotype; A, C, E, F), 5312 (D), 5313 (G), 5314 (H), and a female ICHUM 5316 (B, I). A, male body; B, female body; C, head, ventral view; D, head, lateral view; E, anterior region; F, male tail, lateral view; G, male tail, lateral view; H, male tail, ventral view; I, female tail, lateral view. Abbreviations: a.t., anterior testis; e.p., excretory pore; i., intestine; n.r., nerve ring; ov., ovary; p., papilla; p.t., posterior testis; ut., uterus; v.d., vas deferens; v.g., ventral gland. Scale bars: A, B, 1 mm; C, D, 20 μ m; E, 100 μ m; F–I, 50 μ m.

wood 1960; Filipjev 1968; Vitiello 1970; Belogurov *et al.* 1975a, b; Coles 1977; Belogurov and Belogurova 1978; Tsalolikhin 1979; Belogurov and Fadeeva 1980a, b; Belogurov *et al.* 1980; Smolyanko and Belogurov 1987; Pavlyuk 1991; Smolyanko and Belogurov 1991; Pastor de Ward 1993; Pla-

tonova and Kulangieva 1995; Huang and Zhang 2006; Leduc 2008; Shimada *et al.* 2009; Chen and Guo 2014), males of 35 species of the genus *Oncholaimus sensu lato* have conico-cylindrical tails (see taxonomic key below). Five species, *i.e.*, *Oncholaimus chiltoni* Ditlevsen, 1930, *O. gladius* Ger-

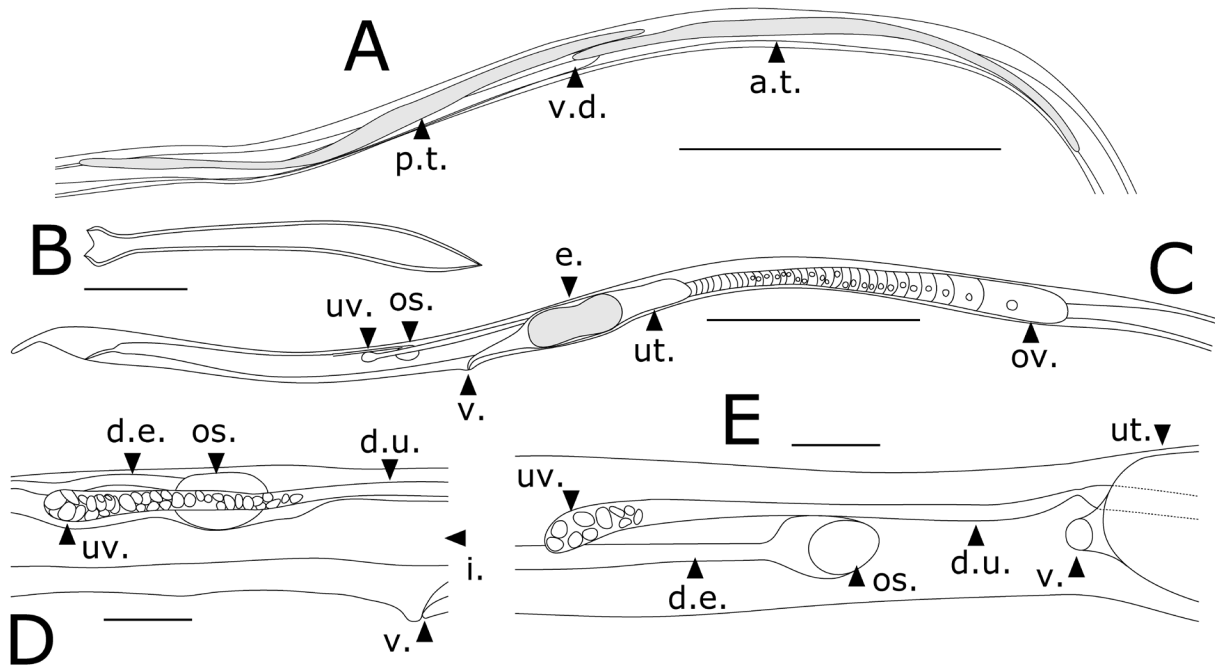


Fig. 2. *Oncholaimus langhovdensis* sp. nov. Male ICHUM 5311 (*holotype*; A, B), females ICHUM 5316 (C, D) and 5317 (E). A, testes; B, left spicule, lateral view; C, female posterior region; D, uvette and osmosium, right lateral view; E, uvette and osmosium, ventral view. Abbreviations: a.t., anterior testis; d.e., ductus entericus; d.u., ductus uterinus; e., egg; i., intestine; os., osmosium; ov., ovary; p.t., posterior testis; ut., uterus; uv., uvette; v., vulva; v.d., vas deferens. Scale bars: A, C, 500 μ m; B, 10 μ m; D, E, 50 μ m.

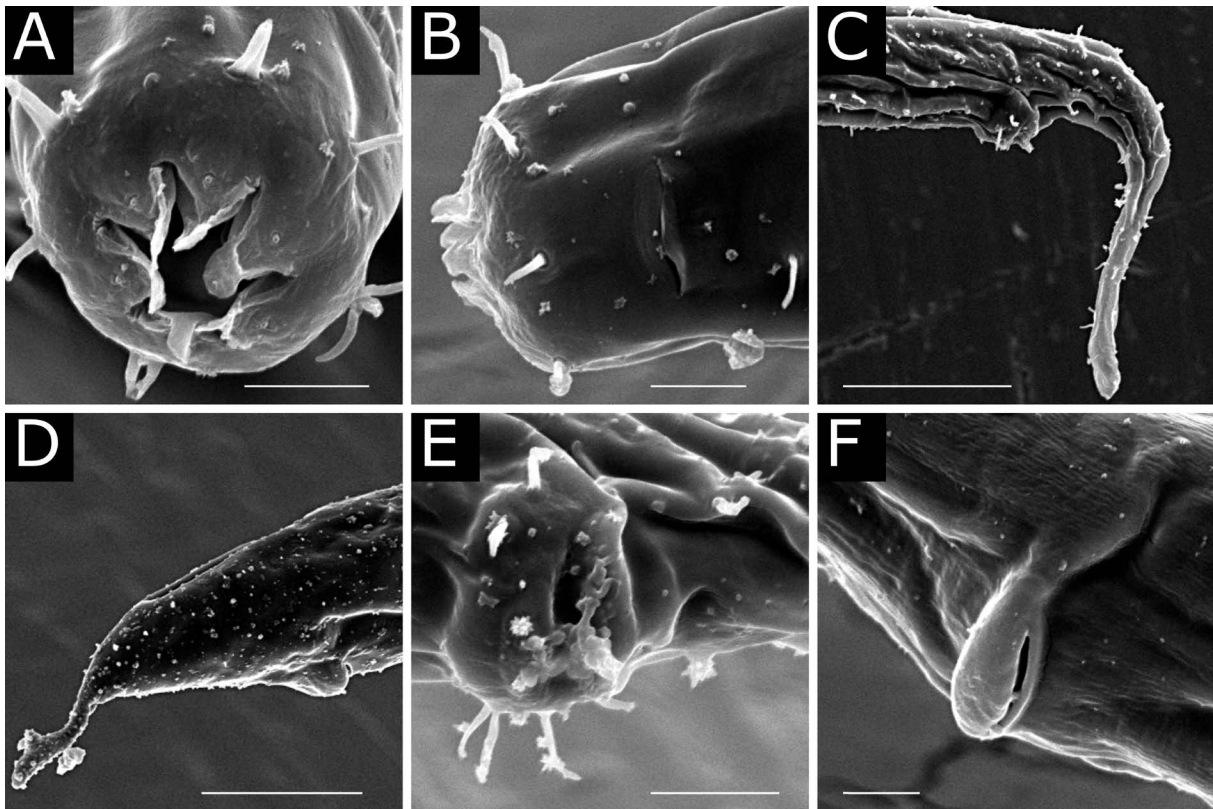


Fig. 3. *Oncholaimus langhovdensis* sp. nov., SEM images. A female ICHUM 5322 (A, B, D, F) and a male ICHUM 5321 (C, E). A, head, anterior view; B, head, lateral view; C, male tail, lateral view; D, female tail, lateral view; E, male cloacal region, ventral view; F, vulva, ventro-lateral view. Scale bars: A, B, E, F, 10 μ m; C, D, 50 μ m.

lach, 1956, *O. longissimus* Allgén, 1959, *O. manilius* Gerlach, 1957, and *O. steineri* Ditlevsen, 1928, are not included in spite of their conico-cylindrical tails, because *O. chiltoni* should be transferred to *Viscosia* de Man, 1890 based on its larger right subventral tooth than left one (Ditlevsen 1930), and the other four species should be transferred to *Metoncholaimus* Filipjev, 1918 based on the presence of gubernacula (Ditlevsen 1928; Gerlach 1956, 1957; Allgén 1959)

Oncholaimus langhovdensis sp. nov. closely resembles 11 of them based on the conico-cylindrical tails present in males and amphid (posterior half of buccal cavity) and excretory pore positions (2–3 times the buccal cavity length from the anterior body end), the short spicules (1.1–1.3 times abd and 30–40% of the tail length), and Demanian system present in females. *Oncholaimus langhovdensis* sp. nov. is easily distinguished from three anomalous species: *O. nigrocephalatus* Cobb, 1930 (with three masses of pigment granules at the base of the buccal cavity) (Cobb 1930; Timm 1952); *O. lanceolatus* Vitiello, 1970 (greatly elongated tail with a filiform posterior part) (Vitiello 1970); and *O. paropisthonchus* Belogurov and Belogurova, 1978 (three teeth almost equal in size) (Belogurov and Belogurova 1978). It also differs from *O. apostematus* Wieser, 1959, *O. olium* (Belogurov *et al.*, 1975), and *O. tchesunovi* (Platonova and Kulangieva, 1995) in the main duct of the Demanian system (single, unbranched duct without determinable pore in *O. langhovdensis* sp. nov. vs. branched duct with several pores in the three species) (Wieser 1959; Belogurov *et al.* 1975a, b; Zhang and Platt 1983; Platonova and Kulangieva 1995), from *O. malgassus* Gerlach, 1958 and *O. sheri* (Chitwood, 1960) in the female tail shape (anterior part tapering just posterior to the anus and diameter of the cylindrical part less than 1/4 of abd vs. anterior part tapering from the pre-anal region in *O. sheri*, and cylindrical part approximately 1/2 wide of abd in *O. malgassus*) (Gerlach 1958; Chitwood 1960), from *O. opisthonchus* Filipjev, 1927 and *O. ushakovi* Filipjev, 1927 in the more slender body shape (mbd=55–60 µm, a=75.4–90.6 in males vs. mbd=140 µm, a=37.1 and mbd=95–130 µm, a=43–59, respectively) (Filipjev 1927), and from *O. paracampylocercoides* (Smolyanko and Belogurov, 1991) in the smaller body size and longer pharynx (4.4–5.4 mm, b=7.0–8.1 vs. 6.2–7.2 mm, b=9.4–11.8) (Smolyanko and Belogurov 1991).

Oncholaimus langhovdensis sp. nov. resembles 13 congeners known only by females. *Oncholaimus langhovdensis* sp. nov. most closely resembles four of them in the conico-cylindrical tail, amphid and excretory pore positions, and the Demanian system with a single main duct. However, it can be distinguished from *O. marinus* Schulz, 1932 and *O. unicus* (Belogurov and Belogurova, 1978) in the tail length (2.6–3.1 times abd vs. 6.5 times abd and 1.4–1.5 times abd, respectively) (Schulz 1932; Kreis 1934; Timm 1954; Belogurov and Belogurova 1978) and from *O. vanderlandi* Loof, 1973 and *O. jessicae* Coomans and Heyns, 1986 in the position of the uvette (174–239 µm = 2.2–3.9 times vbd posterior to vulva vs. 390 µm = 8 times vbd, and 596–856 µm = 13–20 times vbd, respectively) (Loof 1973; Coomans and Heyns 1986).

Key to *Oncholaimus* Species Having Conico-cylindrical Male Tail

1. Demanian system absent 2
- Demanian system present or female unknown 7
2. Subventral setae in cloacal and caudal regions arranged in two rows
..... *O. multisetosus* Huang and Zhang, 2006
- Subventral setae in cloacal and caudal regions arranged in a row 3
3. Spicules slightly shorter than tail length
..... *O. mediocaudatus* (Pavlyuk, 1991)
- Spicules shorter than a half of tail length 4
4. Body shorter than 4 mm 5
- Body longer than 5 mm 6
5. Subcephalic setae present
..... *O. arenarius* (Tsalolikhin, 1979)
- Subcephalic setae absent *O. electus* Rachor, 1969
6. Amphids located in anterior half of buccal cavity ...
..... *O. compositus* Belogurov *et al.*, 1980
- Amphids located in posterior half of buccal cavity ...
..... *O. asiaticus* (Belogurov *et al.*, 1980)
7. Spicules equal to or longer than tail 8
- Spicules shorter than tail 10
8. Spicules 1.5 times tail length
..... *O. notoxyuris* Allgén, 1959
- Spicules almost equal to tail length 9
9. Conical part 1/2 of tail length
..... *O. appendiculatus* (Cobb, 1930)
- Conical part 1/5 of tail length
..... *O. brevicaudiculatus* Rachor, 1970
10. Spicules equal to or longer than 2.0 abd 11
- Spicules shorter than 2.0 abd 13
11. Body shorter than 3 mm *O. moanae* Leduc, 2008
- Body longer than 7 mm 12
12. Spicules 3.0 abd *O. onchouris* Ditlevsen, 1928
- Spicules 2.0 abd *O. scanicus* (Allgén, 1935)
13. Excretory pore located at posterior end of buccal cavity 14
- Excretory pore located posterior to buccal cavity ... 17
14. Body longer than 7 mm
..... *O. ramosus* (Smolyanko and Belogurov, 1987)
- Body shorter than 4 mm 15
15. Tail longer than 4.0 abd ... *O. aegypticus* Steiner, 1921
- Tail shorter than 3.0 abd 16
16. Spicules almost half of tail length
..... *O. martini* Wieser, 1959
- Spicules slightly shorter than tail
..... *O. paraolium* (Belogurov and Fadeeva, 1980)
17. Amphids located in anterior half or at middle of buccal cavity 18
- Amphids located in posterior half of buccal cavity ... 25
18. Body longer than 6 mm
..... *O. problematicus* Coles, 1977
- Body shorter than 4 mm 19
19. De Man's $c < 20$ 20
- De Man's $c > 20$ 21

20. Outer labial setae present *O. rapax* Kreis, 1932
 — Outer labial setae absent *O. viridis* Bastian, 1865
21. De Man's $a=30$
 *O. zinus* Belogurov and Belogurova, 1978
 — De Man's $a>40$ 22
22. Body about 2 mm long23
 — Body 3–4 mm long24
23. Spicules 1/2 of tail length
 *O. minor* Chen and Guo, 2014
 — Spicules 1/4 of tail length
 *O. salobrus* Pastor de Ward, 1993
24. De Man's $a=40-50$, $c<40$
 *O. secundicollis* Shimada *et al.*, 2009
 — De Man's $a=70$, $c=50$
 O. campylocercoides de Connick and Schuurmans
 Stekhoven, 1933
25. Pigment granules present at anterior end of pharynx
 *O. nigrocephalatus* Cobb, 1930
 — Pigment granules absent26
26. Tail longer than 6 abd, conical part 1/5 of tail length
 *O. lanceolatus* Vitiello, 1970
 — Tail shorter than 6 abd, conical part longer than 1/4
 of tail length27
27. Left subventral tooth just a little longer than other
 teeth
 .. *O. paropisthonchus* Belogurov and Belogurova, 1978
 — Left subventral tooth greatly longer than other teeth
28
28. Main duct of Demanian system branching with multiple
 terminal pores29
 — Main duct not branching, without terminal pore, or
 female unknown31
29. Conical part 1/4 of tail length
 *O. apostematus* Wieser, 1959
 — Conical part 1/2 of tail length30
30. Body shorter than 4 mm
 *O. olium* (Belogurov *et al.*, 1975)
 — Body 5–6 mm long
 *O. tchesunovi* (Platonova and Kulangieva, 1995)
31. Female tail clavate *O. malgassus* Gerlach, 1958
 — Female tail conico-cylindrical32
32. Pre-anal region tapering to posterior body end
 *O. sheri* (Chitwood, 1960)
 — Pre-anal region not tapering33
33. Conical part 3/4 of tail
 *O. opisthonchus* Filipjev, 1927
 — Conical part almost 1/2 of tail34
34. De Man's $c\approx 30$ *O. ushakovi* Filipjev, 1927
 — De Man's $c>35$ 35
35. De Man's $b=9-12$
 O. paracampylocercoides
 (Smolyanko and Belogurov, 1991)
 — De Man's $b\approx 7$ *O. langhovdensis* sp. nov.

Acknowledgments

We wish to thank Mr. Jun Hirano (Ministry of the Envi-

ronment), Mr. Ryo Fujiwara (the University of Tokyo), and Mr. Akihiro Suyama (the University of Tokyo) for their assistance in sampling, Dr. Hiroshi Kajihara (Hokkaido University) for providing the facilities for microscopic observation and molecular work, and Mr. Akiho Shibata (Hokkaido University) for helping in molecular experiments. We also thank all members of JARE 56 and the captain and crew of the icebreaker *Shirase II* for their support. This study is an outcome of a National Institute of Polar Research (NIPR) workshop held on November 31 and December 1, 2015. This study was supported in part by a grant to the first author from the Keio Gijuku Academic Development Funds.

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