

Description of three new species of the genus *Mesodorylaimus* Andr ssy, 1959 (Nematoda: Dorylaimidae) from Livingston Island, Antarctica, with notes on *M. imperator* Loof, 1975

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Summary. Three new species of the genus *Mesodorylaimus* Andr ssy, 1959 are described from Livingston Island, South Shetland Islands, Antarctica. *Mesodorylaimis chipevi* sp. n. is characterised by having a long body (L=1.8-2.2 mm); tail tip cylindrical, rounded; deeply folded and thick cuticle in the vulval region; *M. antarcticus* sp. n. by its medium body size (L=1.3-1.6 mm), lip region off set by a shallow depression, odontostyle 13-15 μ m, transverse vulva, *pars refringens vaginae* consisting of triangular sclerotizations, tail first conoid then more or less uniformly tapering to a spicate or narrowly rounded terminus; *M. masleni* sp. n. by its medium body size (L=1.5-1.8 mm), lip region continuous with the body outline, odontostyle 15-17 μ m, vulva transverse; presence of wrinkles and folds around vulva; *pars refringens vaginae* consisting of two well developed triangular arcuate sclerotizations, long tail (91-117 μ m), ventrally straight, dorsally convex and subcylindroid. Some additional data on *M. imperator* are provided. A feature common to all Antarctic species of *Mesodorylaimus* is the presence of ventral papillae in the anterior and posterior parts of the body. A key to the species of the genus occurring in Antarctica is provided.

Key words: Antarctica, key, *Mesodorylaimus*, morphology, new species.

The only species of genus *Mesodorylaimus* reported from Antarctica (*M. imperator* Loof, 1975) is endemic in the region (Andr ssy, 1998). During the first Bulgarian Antarctic Campaigns (summers of 1994/1995 and 1995/1996) to Livingston Island, numerous specimens of *Mesodorylaimus* spp. were collected, including representatives of three new species. Descriptions of the new species, and some additional data on *M. imperator*, are presented here.

MATERIALS AND METHODS

Samples were collected from soil, lichens, mosses and grasses (Table 1). Nematodes were recovered from the samples using the Baerman funnel method. They were killed by gentle heat, fixed in TAF and processed to anhydrous glycerine by the Seinhorst's (1959) method.

Eleven paratype specimens of *M. imperator* (slide numbers WT 1797 and WT 1804) were examined.

DESCRIPTIONS

Mesodorylaimus chipevi sp. n. (Figs. 1 & 3A, B)

Measurements: Table 2.

Female. Body slender, more or less curved ventrally habitus. Cuticle about 3 μ m thick at mid-body, 2 μ m at anterior part of neck, 5-6 μ m at base of tail; outer layer with fine transverse striae. Lateral chord about one third of body width. Dorsal body pores two, in the guide ring area. Ventral pores two in the spear area and 7-10 papillae disposed in the middle of the first half (4-6), and in the same position of the second half (3-4 papillae) of the body. Two or three lateral pores in

Table 1. Distribution of *Mesodorylaimus* species on Livingston Island.

Sample number	Collection date	Site description	Nematode species
III 1	6.12.1994	Shallow soil, under a cover of green algae, among grass on a rock, near the sea at South Bay.	<i>Mesodorylaimus chipevi</i> sp. n.
III 5	16.12.1994	Small tufts of grass (<i>Deschampsia antarctica</i> Desv.), on a large rock.	<i>Mesodorylaimus chipevi</i> sp. n. <i>Mesodorylaimus antarcticus</i> sp. n. <i>Mesodorylaimus masleni</i> sp. n.
III 11	26.1.1996	Moss <i>Sanionia</i> sp., on Mount Charrua.	<i>Mesodorylaimus antarcticus</i> sp. n. (type population)
III 14	5.12.1994	Small moss community (<i>Polytrichum</i> sp.- <i>S. uncinatus</i> (Hedw.) Kuntze) with <i>D. antarctica</i> , on a large rock, inland.	<i>Mesodorylaimus chipevi</i> sp. n.
III 15	1.02.1996	Grass (<i>D. antarctica</i>), on a large rock, at Cape Punta Hesperides.	<i>Mesodorylaimus antarcticus</i> sp. n. <i>Mesodorylaimus masleni</i> sp. n.
III 18	6.12.1994	A grass spot (<i>D. antarctica</i>), on top of a flat rock, near the sea.	<i>Mesodorylaimus chipevi</i> sp. n. (type population)
III 37	18.12.1994	A moss-grass (<i>D. antarctica</i> - <i>Polytrichum</i> sp.) community, on top of a small flat rock, on the beach near Johnson Dock inlet.	<i>Mesodorylaimus antarcticus</i> sp. n.
III 38	18.12.1994	Grass spot (<i>D. antarctica</i>), on a high rock, on the beach near Johnson Dock inlet.	<i>Mesodorylaimus antarcticus</i> sp. n.
III 44A	29.12.1994	A small moss tuft (<i>Sanionia</i> sp.), transect over a large rock, at Cape Punta Hesperides	<i>Mesodorylaimus antarcticus</i> sp. n.
III 44C	29.12.1994	A mixed grass-moss spot (<i>D. antarctica</i> - <i>Sanionia</i> sp.), transect over a large rock, at Cape Punta Hesperides.	<i>Mesodorylaimus chipevi</i> sp. n. <i>Mesodorylaimus antarcticus</i> sp. n. <i>Mesodorylaimus masleni</i> sp. n.
III 44D	29.12.1994	A large pure grass spot (<i>D. antarctica</i>), transect over a large rock, at Cape Punta Hesperides.	<i>Mesodorylaimus chipevi</i> sp. n. <i>Mesodorylaimus antarcticus</i> sp. n.
III 46	2.01.1995	A large area of grass (<i>D. antarctica</i>), from a large rock, Cape Punta Polaka, at the entrance of South Bay.	<i>Mesodorylaimus antarcticus</i> sp. n. <i>Mesodorylaimus masleni</i> sp. n. (type population)

odontostyle area, lateral body pores rare and indistinct. Lip region not off set, partly fused, sensilla protruding. Body at proximal end of pharynx 3.3-3.5 times as wide as head. Amphid aperture about two fifths of the corresponding body width. Odontostyle straight, 1.0-1.2 times as long as cephalic diameter, aperture occupying 39-44% of odontostyle length. Odontophore simple, linear. Guiding ring 9 μm from anterior end, usually seen as double, especially when spear is partly extruded. Nerve ring surrounding the pharynx at 33-36% of neck length from head end. Hemizonid and excretory pore observed (see Remarks) in the nerve ring region. Pharyngeal characters (five females): pharynx beginning to widen at 52-57%, and attaining its full width at 58-63% of neck length from head end. DO lying near the point where the pharynx attains its full width; distance DO-DN 7-11 μm . The two S_1N lying at a small distance apart behind the middle of the distance DN- S_2N , the anterior one smaller. DN measuring 10-12 x 7.2-7.9 μm ; nucleolus 4.6-5.3 μm ; $S_1N_2=7.2-7.9$ x 3.0-5.9 μm , nucleolus 3.3 μm ,

$S_2N=7.9-5.9$ μm , nucleolus 3.3 μm . Locations (%):

DO=57-61; $S_1N_1=77-79$; $S_2N=90-92$; K=74-84; DN=59-63; $S_1N_2=81-84$; $S_2O=92-94$; K'=75-81; DO-DN=1.8-2.5; $S_1N_1-S_1N_2=3.7-5.6$.

Cardia elongate-conoid, variable in length. Intestinal microvilli long and clearly visible. The posterior end of the intestine with tongue-like structure present (see Remarks). Vulva transverse. Vagina: *pars proximalis* 13-14 μm wide, 16-22 μm long, *pars refringens* more or less arcuate oblique, trapezoid to triangular, 15-17 μm wide, 4.6-6.6 μm deep; *pars distalis* very short, c. 1.3 μm (De Ley *et al.*, 1993). Two genital tubes, opposed, reflex. No sperm cells present. Oviducts and ovaries very long. Synchron eggs 1-5, measuring 84-107 x 32-46 μm . Cuticle anterior and posterior to vulva thickened and deeply folded. Rectum 1.4-1.8, prerectum 2.4-3.8 times anal body width. Tail in anterior part convex-conoid, then cylindroid and slightly tapering to the almost cylindrical terminal

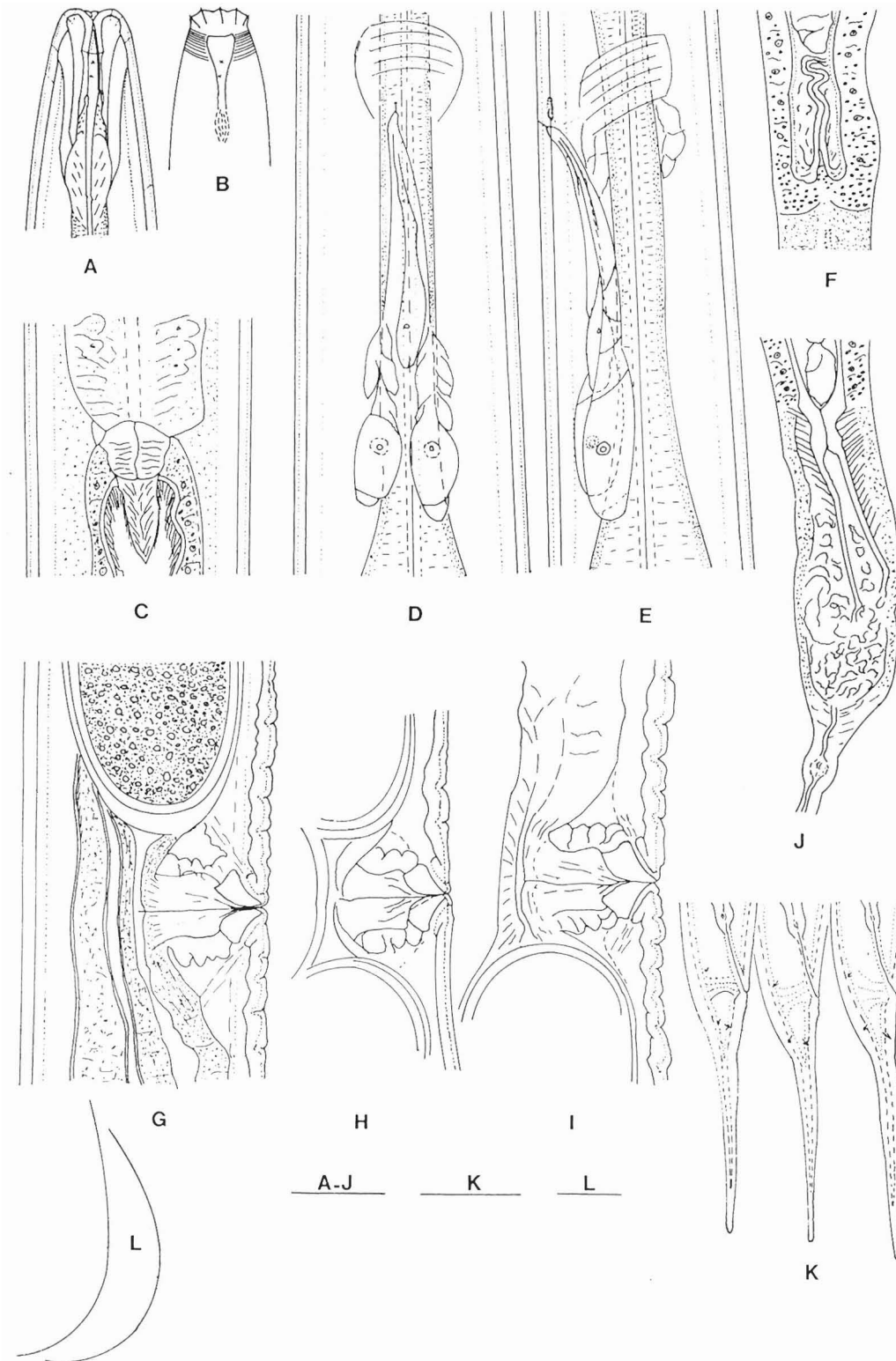


Fig. 1. *Mesodorylaimus chipevi* sp. n. A-L: Female; A: Spear region in median view; B: Anterior body region in surface view; C: cardia; D: Excretory system in ventral view; E: Excretory system in lateral view; F: Tongue-like structure in the intestine; J: Tongue-like structure in the prerectum; G-I: Vaginal region, lateral view; K: Tail ends. L: Habitus. Scale bars: A-J - 20 μ m; K - 50 μ m; L - 400 μ m.

Table 2. Measurements (μm) of *Mesodorylaimus chipevi* sp. n., *M. antarcticus* sp. n. and *M. masleni* sp. n. females from Livingston Island.

Characters	<i>Mesodorylaimus chipevi</i> sp. n.		<i>Mesodorylaimus antarcticus</i> sp. n.		<i>Mesodorylaimus masleni</i> sp. n.	
	Holotype	Paratypes n=20	Holotype	Paratypes n=15	Holotype	Paratypes n=15
L	2000	2037 \pm 78 (1844-2158)	1420	1483 \pm 84 (1298-1639)	1550	1625 \pm 90 (1496-1810)
a	38.9	36.2 \pm 3.0 (31.4-40.8)	31.6	31.3 \pm 1.9 (28.5-34.3)	32	31.1 \pm 2.2 (27.2-35.0)
b	4.7	4.9 \pm 0.2 (4.7-5.1)	4.4	4.4 \pm 0.1 (4.2-4.6)	4.3	4.3 \pm 0.2 (4.0-4.5)
c	16.1	15.7 \pm 0.9 (14.1-17.8)	14.2	14.3 \pm 2.8 (13.4-16.6)	16	16.1 \pm 1.2 (13.0-17.6)
c'	4.4	4.4 \pm 0.4 (3.3-5.0)	4.4	4.1 \pm 0.2 (3.7-4.5)	3.4	3.6 \pm 0.3 (3.2-4.1)
V %	52	51 \pm 1.2 (49-53)	50	51 \pm 1.1 (49-52)	50	51 \pm 1.6 (49-54)
G1%	17	16 \pm 1.5 (14-19)	15	15 \pm 0.9 (14-17)	17	16 \pm 1.0 (15-17)
G2%	17	17 \pm 1.7 (14-22)	16	16 \pm 1.0 (14-18)	16	16 \pm 1.2 (14-18)
Odontostyle	16	16 \pm 0.7 (15-17)	13	13 \pm 0.6 (13-15)	16	16 \pm 0.5 (15-17)
Odontophore	23	22 \pm 1.1 (19-23)	20	19 \pm 0.6 (18-20)	21	22 \pm 0.6 (20-22)
Spear	39	38 \pm 0.9 (36-39)	33	32 \pm 0.7 (31-34)	37	37 \pm 0.7 (36-38)
Neck length	424	414 \pm 17 (388-440)	323	345 \pm 12 (311-352)	361	377 \pm 10 (357-402)
Cardia length	28	33 \pm 1.7 (24-43)	27	32 \pm 5.5 (24-40)	—	36 \pm 3.8 (28-41)
Body width:						
lip region	14	14 \pm 0.4 (13-15)	13	13 \pm 0.1 (12-13)	15	14 \pm 0.8 (13-15)
mid-body	53	57 \pm 5.0 (49-66)	45	48 \pm 3.9 (42-54)	48	52 \pm 4.3 (46-58)
anus	28	30 \pm 1.7 (25-32)	23	24 \pm 1.1 (23-26)	28	28 \pm 0.8 (27-30)
Lateral chord	17	18 \pm 1.5 (15-20)	13	14 \pm 0.9 (12-15)	14	14 \pm 0.8 (13-15)
Prerectum	108	90 \pm 15 (66-121)	81	85 \pm 10 (74-100)	72	87 \pm 15.8 (63-126)
Rectum	49	46 \pm 2.1 (42-49)	38	39 \pm 2.3 (36-44)	48	47 \pm 2.5 (43-52)
Tail	124	131 \pm 7.9 (116-148)	99	115 \pm 6.2 (93-138)	97	101 \pm 7.4 (91-117)
D oes/D lips	3.3	3.7 \pm 0.4 (3.0-4.0)	3.6	3.7 \pm 0.4 (3.2-4.3)	—	3.6 \pm 0.3 (2.9-4.2)
Odontostyle aperture	6.6	6.2 \pm 0.4 (5.3-6.6)	4.6	4.7 \pm 0.5 (3.7-5.3)	—	6.5 \pm 0.3 (6.0-6.9)
J	20	24 \pm 5.0 (14-28)	21	19 \pm 3.1 (16-23)	23	25 \pm 6.2 (16-38)
J% of the tail length	16	18 \pm 4.4 (12-26)	21	20 \pm 3.4 (16-23)	24	25 \pm 5.4 (17-36)

part. Tail tip rounded. One subdorsal and one subventral pore on each side of the tail.

Male. Not known.

Type habitat and locality. A grass spot (*Deschampsia antarctica* Desv.) on the top of flat rock near the sea (III 18), Livingston Island, Antarctica (62°34'48"S-60°20'42"W). Collecting date 6. 12. 1994. Other populations and localities presented in Table 1.

Type material. Holotype and 14 paratypes deposited in the nematode collection of the Central Laboratory of General Ecology, Sofia; four paratypes at the Department of Zoology, Faculty of Biology, University of Sofia St Kliment Ohridski. One paratype female deposited at: CABI

Bioscience, Egham, England (Nematode Type Collection) and the USDA Nematode Collection, Beltsville, MD, USA.

Diagnosis and relationships. *Mesodorylaimus chipevi* sp. n. differs from all species in the genus by a combination of the following characters: long body (1.8-2.2 mm), c'=3.3-5.0; tail tip cylindrical, rounded; deeply folded and thick cuticle in the vulval region.

The new species is similar to *M. plicatus* Andr ssy, 1986, *M. imperator* Loof, 1975 and *M. intervallis* (Thorne & Swanger, 1936) Andr ssy, 1959 (Table 2). It differs from *M. plicatus* by having a longer body, shorter odontostyle, narrower amphid aperture, lip region, larger b and smaller c' values (L=1.6-1.9 mm; odontostyle 17-

19 μm ; $b=4.2-4.7$; $c'=5.2-6.5$ in *M. plicatus*). *Mesodorylaimus chipevi* sp. n. can be differentiated from *M. imperator* by its longer body, larger b values, vaginal, tail and pharyngeal characters (in *M. imperator* $L=1.2-1.5$ mm; $b=3.9-4.8$). The new species can be distinguished from *M. intervallis* by its longer body, smaller b and c' values, and the nature of the cuticular ornamentation near the vulva [in *M. intervallis* $L=1.6$ mm; $b=6.3$; $c'=6-7$; no deep folds but "two innervated organs" (Thorne & Swanger, 1936)].

Etymology. The species is named after Dr. Nesho Chipev who has collected numerous samples containing nematodes from Livingston Island.

***Mesodorylaimus antarcticus* sp. n.**
(Figs. 2 & 3C, D)

Measurements: Table 2.

Female. Body arcuate ventrally, slightly narrowing in vulval region. Cuticle 2.0-2.6 μm thick at mid-body, 1.3-1.4 μm at anterior part of neck, 4.0-4.6 μm at base of tail, with fine transverse striae. Lateral chord about 1/3 of body width. Dorsal body pores 2, in odontostyle area. Two or three ventral pores, in the anterior narrow half of pharynx area, usually first opposite the guide ring. 8-10 papillae disposed ventrally in the middle of the first half of body (5-7 papillae in number) and in the same position 3 pores in the second half of body. Five to 8 lateral body pores in the pharynx region and 3 or 4 on the dorsal side of the lateral chord in pre-rectum-rectum region. Lip region marked by a shallow depression, lips partly fused, sensilla protruding and giving the lip region an angular contour. Body width at base of pharynx 3.5-4.2 times width of lip region. Amphid aperture about 3.2-4.3 μm . Odontostyle 1.0-1.2 times as long as cephalic diameter, aperture occupying 32-35% of its length. Odontophore linear. Guiding ring single, at 7.3-8.0 μm from anterior end. Nerve ring surrounding pharynx at 36-41% of neck length. Excretory pore at 111-125 μm from anterior end. Pharyngeal characters (five females): pharynx beginning to widen at 53-57% and attaining its full width at 60-64% of its length from head end. DO lying slightly anterior to the point where pharynx attains its full width; distance DO-DN=6-9 μm . The two S_1N lying at a small distance from one another, posterior to the middle of distance DN- S_2N ; anterior one very small. DN measuring 7.2-8.5 x 5.9-6.6 μm , nucleolus 4 μm ;

$S_1N_2=6.6-7.2$ x 4.6-5.2 μm , nucleolus 3.0-3.3 μm , $S_2N=6.6-7.2$ x 4.6-5.9 μm , nucleolus 3.3 μm . Locations (%):

DO=60-63; $S_1N_1=77-80$; $S_2N=90-92$; K=76-85; DN=62-66; $S_1N_2=82-83$; $S_2O=92-94$; K'=80-84; DO-DN=1.8-2.6; $S_1N_1-S_1N_2=2.6-4.5$.

Cardia elongate conoid, variable in length. Intestinal microvilli clearly visible. Peculiar tongue-like valve present. Vulva transverse, very small, 3 μm . Vagina: *pars proximalis vaginae* 7-10 μm wide, 17-20 μm long; *pars refringens vaginae* triangular, 11.8-13.8 μm wide; *pars distalis vaginae* short 1.2-1.6 μm . Two genital branches, opposite, reflexed. Uteri short, with well developed *pars muscosa* (Coomans, 1965). No sperm or eggs observed. Ten specimens with cuticular folds on both sides of the vulva. In one female the posterior ovary not reflexed and with one intra-uterine egg measuring 96 x 29 μm . Rectum 1.5-1.8, pre-rectum 2.4-4.2 times anal body width, respectively. Tail first conoid, then more or less uniformly tapering to a spicate or narrowly rounded terminus. Posterior part of tail usually straight or slightly curved dorsally. Two pairs of subdorsal caudal pores (one adanal, one at the end of conoid part), one sub-ventral, at the level of posterior subdorsal pair.

Male. Not known.

Type habitat and locality. Moss *Sanionia* sp. on mount Charrua (III 11), Livingston Island, Antarctica (62°39'22"S-60°21'13"W). Collecting date 26.01.1996. Other populations and localities presented in Table 1.

Type material. Holotype and 7 paratypes in the nematode collection of the Central Laboratory of General Ecology, Sofia. Three females at the Department of Zoology, Faculty of Biology, University of Sofia, Bulgaria. Two paratype females deposited at CABI Bioscience, Egham, England (Nematode type collection) and the USDA Nematode Collection, Beltsville, MD, USA.

Diagnosis and relationships. *Mesodorylaimus antarcticus* sp. n. is characterised by a medium body size ($L=1.3-1.6$ mm), lip region marked by a shallow depression, odontostyle 13-15 μm , $V=49-52\%$, transverse vulva, *pars refringens vaginae* consisting of narrow triangular sclerotizations, tail first conoid then more or less uniformly tapering to a spicate or narrowly rounded terminus.

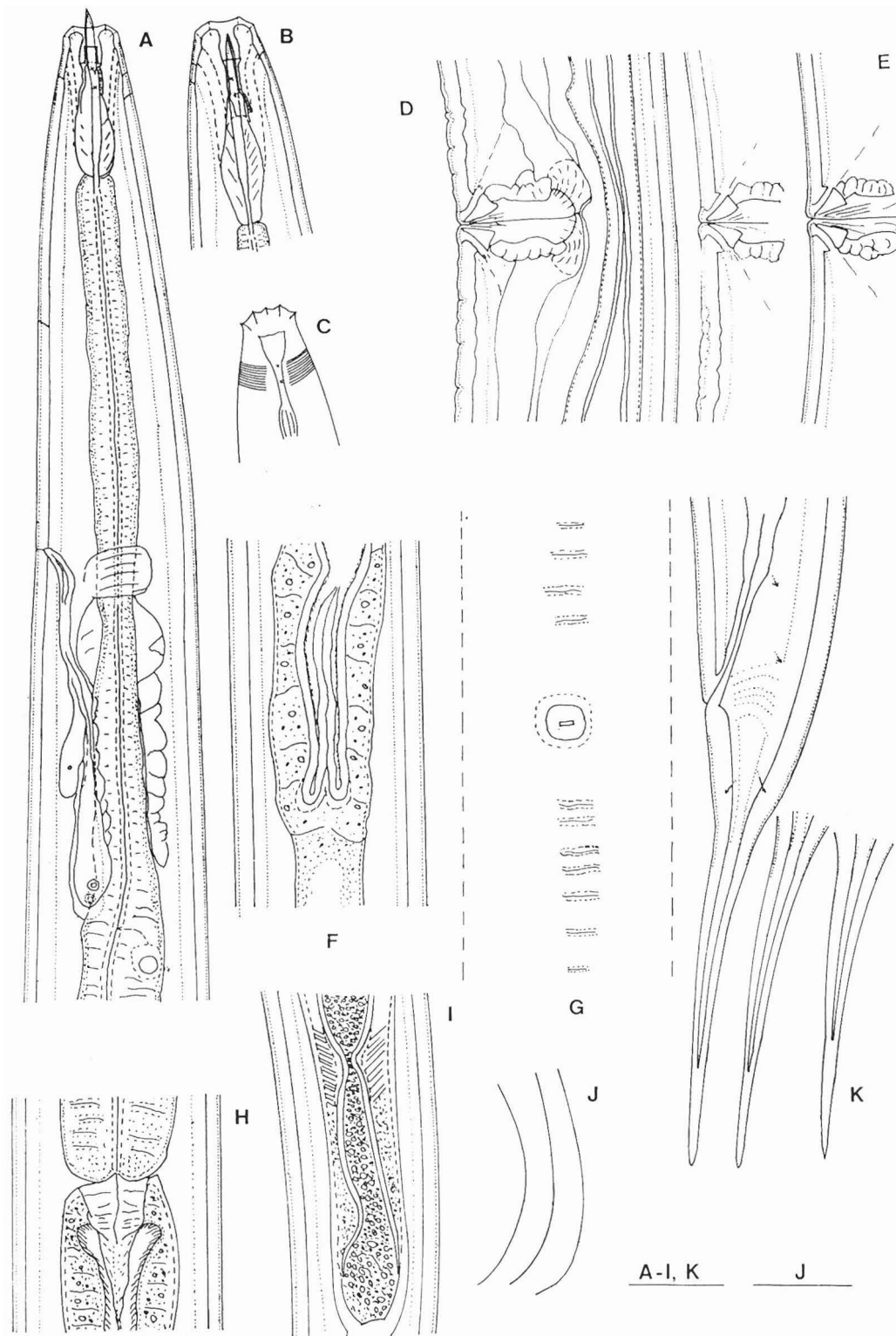


Fig. 2. *Mesodorylaimus antarcticus* sp. n. A-K: Female; A: Anterior end; B: Spear region; C: Lip region in surface view; D, E: Vaginal region, lateral view; F: Tongue-like structure in the intestine; I: Tongue-like structure in the prerectum; G: Vulval region, ventral view; H: Cardia; J: Habitus; K: Tail ends. Scale bars: A-I - 20 µm; J - 300 µm.

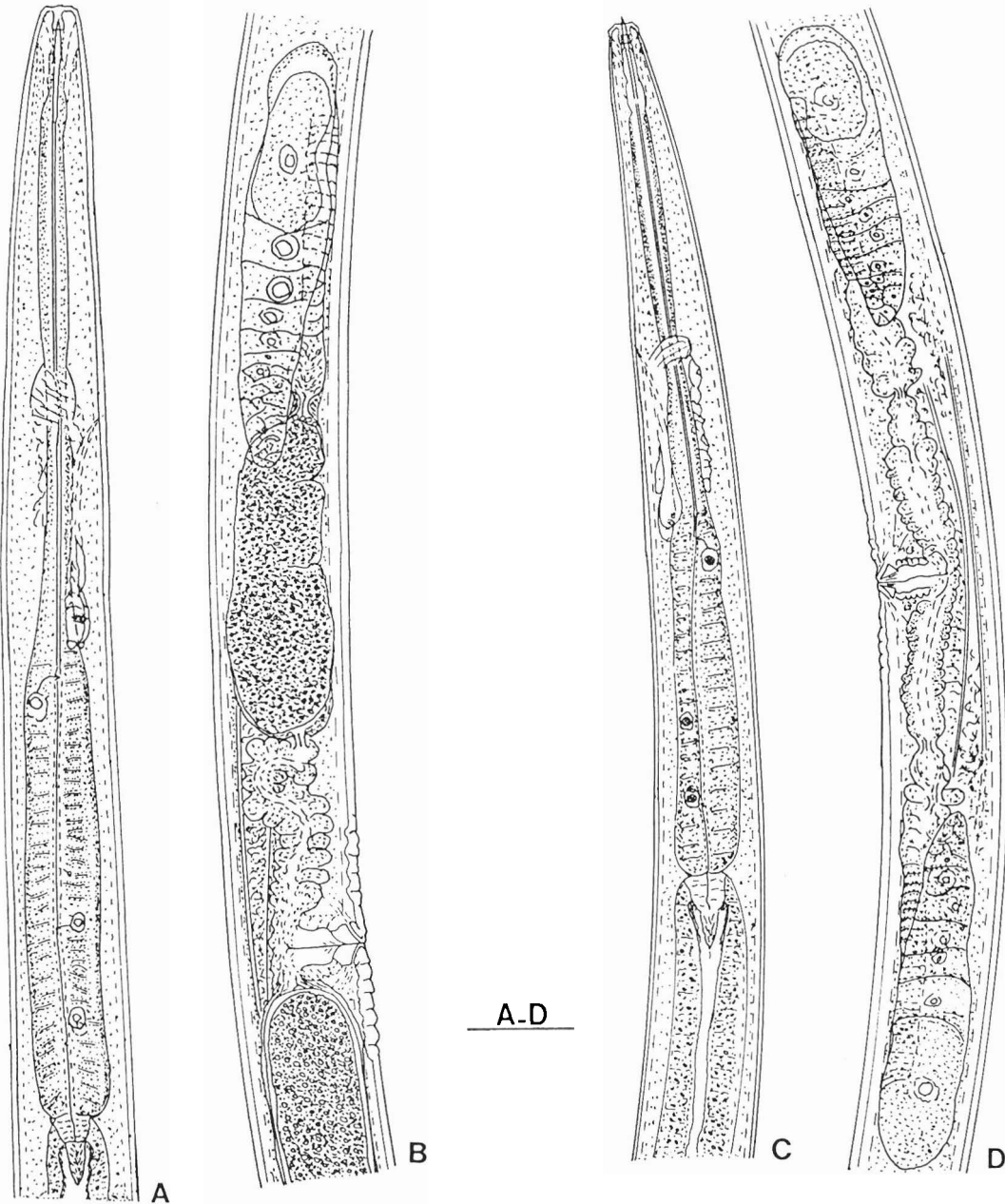


Fig. 3. *Mesodorylaimus chipevi* sp. n. A, B: Female; A: Pharyngeal region; B: Anterior genital branch and vulval region; *Mesodorylaimus antarcticus* sp. n. C, D: Female; C: Pharyngeal region; D: Reproductive system. Scale bar: A-D - 40 μ m.

With cuticular folds at the vulval region this species resembles *M. ibericus* Abolafia & Peña Santiago, 1997 and *M. imperator* Loof, 1975. It can be distinguished from *M. ibericus* by having a transverse vulva vs longitudinal; *pars proximalis vaginae* 7-10 μ m vs 11-13 μ m wide; *pars refringens vaginae* 12-14 μ m combined width vs 15 μ m, and 6-8 μ m vs 5 μ m, respectively; comparatively longer hyaline portion (16-23 μ m vs 9-21 μ m). The new species differs from *M. imperator* by having a

thinner cuticle (c. 2 μ m vs 4 μ m at mid-body, and c. 4 μ m vs 6 μ m at the base of female tail); papillae protruding vs not protruding; triangular vs trapezoid *pars refringens vaginae*; a comparatively longer distance between the two S_1N (K=76-86% vs K=84-94%). The specimens (about 33%) of *M. antarcticus* sp. n. without cuticular folds are similar to *M. bastiani* (Bütschli, 1873) Andrassy 1959, *M. litorallis* Loof, 1969 and *M. rotundolabiatum* Basson & Heyns, 1974. The new species can be

distinguished from *M. bastiani* by having a shorter odontostyle (13-15 μm vs 14-16 μm or 1.0-1.2 vs 1.3-1.4 times the width of lip regions); more stout body ($a=29-34$ vs $a=38-48$); more slender tail ($c'=3.7-4.5$ vs $c'=3.0-4.0$); males unknown, females not containing sperm vs males present and females with sperm in genital tract. From *M. littoralis* the new species differs by having a longer odontostyle (13-15 μm vs 11-12 μm); a longer pharynx ($b=4.2-4.6$ vs 4.8-6.1) attaining its full width at 60-64% vs 64-69% of its length; transverse vulva vs longitudinal; *M. antarcticus* is distinguished from *M. rotundolabiatum* by having a thinner cuticle (1.3-1.4 μm vs 1.6-2.2 μm at anterior part of neck and 3.9-4.6 μm vs 4.3-6.4 μm at base of tail); a longer odontostyle (13-15 μm vs 10-14 μm) and pharynx (311-352 μm vs 268-300 μm); microvilli and tongue-like valve present vs absent.

***Mesodorylaimus masleni* sp. n.**
(Fig. 4)

Measurements: Table 2.

Female. Body ventrally curved, in the shape of a C. Cuticle 3.3-3.5 μm thick at mid-body, 2 μm at anterior part of neck, 5.3-6.0 μm at base of tail, outer layer with very fine transverse striae. Lateral chord about quarter of body width. Dorsal body pores two, first at 7-9 μm and second at 11-18 μm from anterior end. Two ventral pores in the spear area. 7-10 ventral papillae: 5-6 in the middle of the first half and 2-3 in the middle of the second half of the body. Lateral body pores present in the dorsal side of the lateral chord. Total number per body side 17-27. Lip region almost continuous with the body contour, lips partly fused, sensilla not protruding. Body at proximal end of pharynx 3.4-3.8 times head width. Amphid aperture 45-50% of the corresponding body width. Odontostyle straight, 1.1-1.2 times cephalic diameter, aperture occupying 42-45% of odontostyle length. Odontophore linear. Guiding ring single, 8-9 μm from anterior end. Nerve ring surrounding the pharynx at 34-37% of neck length. Excretory pore at 125-138 μm from head end. Pharyngeal characters (five females): pharynx beginning to widen at 52-55%, and attaining its full width at 57-59% of neck length from head end. DO lies slightly anterior to the latter level, the distance DO-DN=6-10 μm . The anterior S_1N small, the other large and distinct. DN=7.2-10.0 x 6.5-9.0 μm , nucleolus 3.3-4.0 μm ; S_1N_2 measuring 5.2-7.9 x 4.6-7.2, nucleolus 2.6 μm ; $S_2N=5.9-7.2$ x 6.0-6.5 μm , nucleolus

2.6 μm . Locations (%):

DO=56-58; $S_1N_1=76-78$; $S_2N=91-92$; K=70-78; DN=59-60; $S_1N_2=82-84$; $S_2O=93-94$; K'=73-77; DO-DN=1.9-2.7; $S_1N_1-S_1N_2=5.4-6.9$.

Cardia elongate, conoid. Intestine microvilli clearly visible. Peculiar tongue-like valve present. Vulva transverse, 6-6.5 μm long, often deformed (Fig. 4F & M). *Pars proximalis vaginae* 13-15 wide and 19-23 long, *pars refringens vaginae* triangular arcuate, 17-19 μm wide; *pars distalis vaginae* 2-2.6 μm . Female didelphic, amphidelphic, ovaries reflexed. *Pars dilatata* of oviduct separated from uterus by a sphincter muscle. Uterus not containing sperm cells. Anterior, posterior or subventral to the vulva, body cuticle presents abundant wrinkles and folds. Rectum and prerectum 1.5-1.8 and 2.3-4.2 times anal body width, respectively. Tail dorsally first convex, conoid, then subcylindroid, tapering slightly towards very narrowly rounded terminus. One female possessed tail of 44 μm ($c'=1.5$) (Fig. 4K). Caudal pores two pairs, subdorsal and subventral.

Male. Not known.

Type habitat and locality. A large area of grass (*D. antarctica*) from the rock massif of Cape Punta Polaka, at the entrance of South Bay (III 46), Livingston Island, Antarctica (62°39'46"S; 60°23'20"W). Collecting date 2.01.1995. Other populations and localities presented in Table 1.

Type material. Holotype and 11 paratypes in the nematode collection of the Central Laboratory of General Ecology, Sofia. One paratype female at the Department of Zoology, Faculty of Biology, University of Sofia, Bulgaria. One paratype female deposited at CABI Bioscience, Egham, England (nematode type collection) and the USDA Nematode Collection, Beltsville, MD, USA.

Diagnosis and relationships. *Mesodorylaimus masleni* sp. n. is characterised by a medium body size ($L=1.5-1.8$ mm), lip region continuous with body contour, odontostyle 15-17 μm long or slightly longer than lip region width, vulva median ($V=49-54\%$), transverse, often deformed; presence of wrinkles and folds around vulva; *pars refringens vaginae* consisting of two well developed triangular arcuate sclerotizations, long tail (91-117 μm ; $c=13-18$, $c'=3.2-4.1$), ventrally straight, dorsally convex and subcylindroid, and males unknown.

With the presence of cuticular folds *M. masleni* sp. n. resembles *M. antarcticus* sp. n., *M. chipevi*

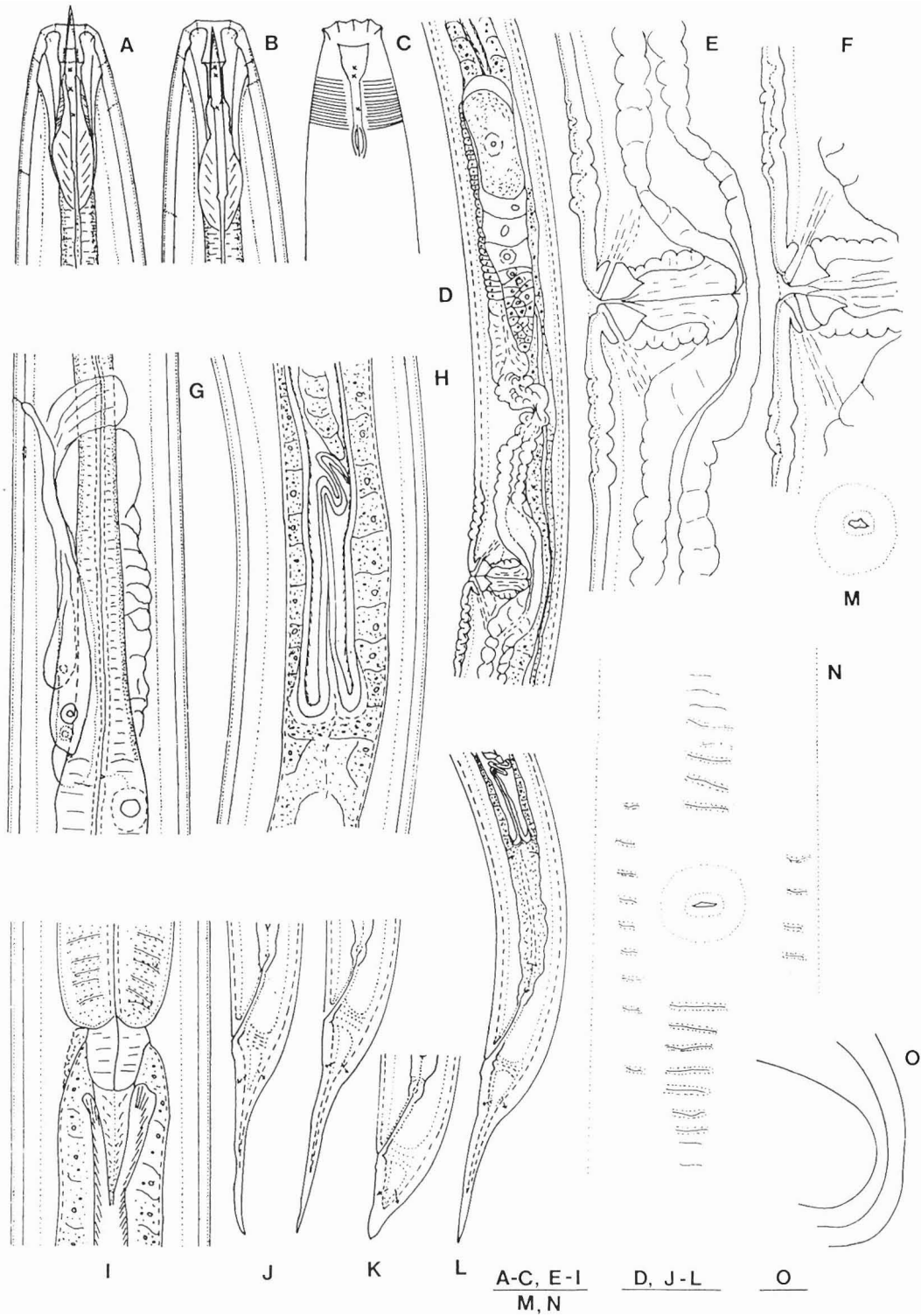


Fig. 4. *Mesodorylaimus masteni* sp. n. A-O: Female; A, B: Spear region; C: Lip region in surface view; D: Anterior genital branch; E: Vaginal region in lateral view; F: Vagina with deformation in lateral view; G: Excretory system, lateral view; H: Tongue-like structure in the intestine; I: Cardia; J: Tail ends; K: Aberrant tail shape; L: Posterior end; M: Vulva with deformation in ventral view; N: Vulval region in ventral view; O: Habitus. Scale bars: A-C, E-I, M, N - 20 μ m; D, J-L - 50 μ m; O - 300 μ m.

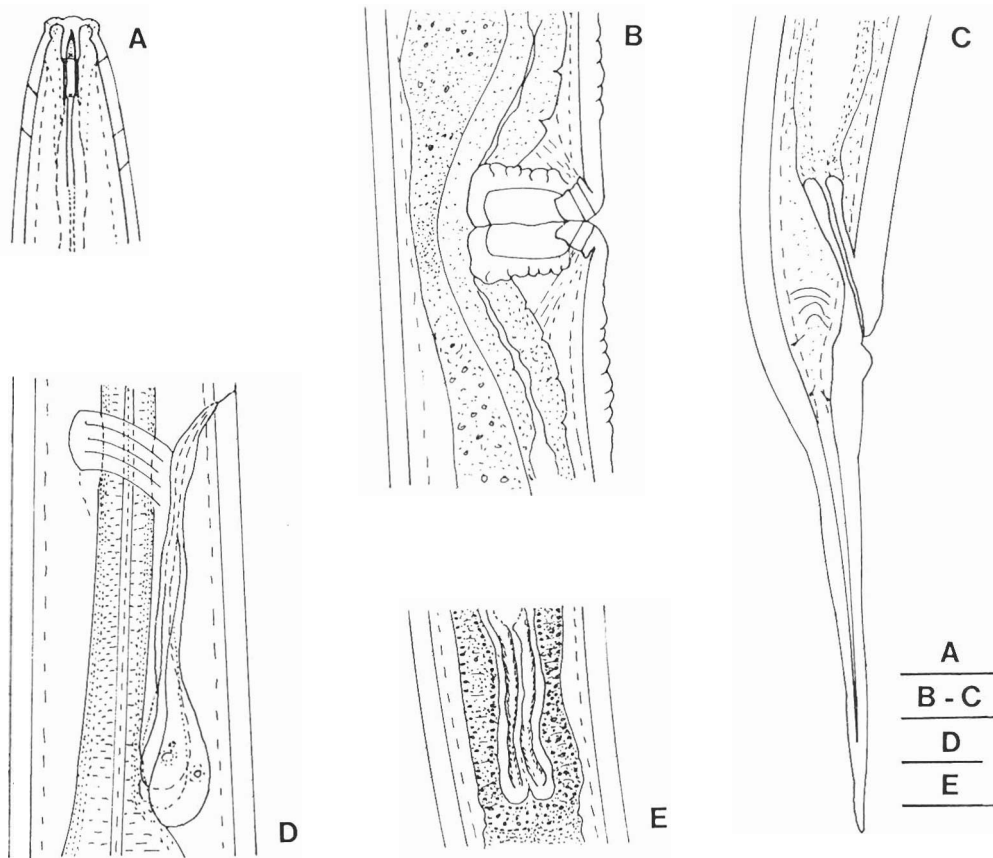


Fig. 5. *Mesodorylaimus imperator* Loof, 1975. A-E: Female: A: Spear region in lateral view; B: Vaginal region, lateral view; C: Tail end; D: Excretory system, lateral view; E: Tongue-like structure in the intestine. Scale bars: A-C, E - 20 μm ; D - 10 μm .

sp. n., *M. ibericus* Adolafia & Peña Santiago, 1997, *M. imperator* Loof, 1975 and *M. plicatus* Andrassy, 1986. It can be distinguished from *M. antarcticus* sp. n. by its longer body and odontostyle; (1.5-1.8 mm vs 1.3-1.6 mm, and 15-17 μm vs 13-15 μm), pharyngeal and vaginal characters; from *M. chipevi* sp. n. by having a shorter body (1.5-1.8 μm vs 1.8-2.2 μm), shorter and differently shaped tail (91-117 μm vs 116-148 μm , $c'=3.2-4.1$ vs 3.3-5.0); different pharyngeal characters (DO=56-58%, $S_1N_1-S_1N_2=5.4-6.9\%$ vs DO=57-61%, $S_1N_1-S_1N_2=3.7-5.6\%$); wider *pars distalis vaginae* (2.0-2.6 vs 1.3). The new species differs from *M. ibericus* by having a longer odontostyle (15-17 μm vs 13-15 μm); vulva transverse vs longitudinal; different pharyngeal characters ($S_1N_1-S_1N_2=5.4-6.9\%$ vs no distance); a longer *pars proximalis vaginae* (19-23 μm vs 16-19 μm); wider *pars refringens vaginae* (17-19 μm vs 15 μm); it can be distinguished from *M. imperator* by having a longer body (1.5-1.8 mm vs 1.2-1.5 mm), different pharyngeal characters (see Loof, 1975), different shape of *pars refringens vaginae*; different anal-caudal region

(Figs. 4 & 5); from *M. plicatus* by having a shorter odontostyle (15-17 μm vs 17-19 μm), more stout body ($a=27-35$ vs $a=37-45$), shorter tail ($c'=3.2-4.1$ vs 5.2-6.5), differently shaped *pars refringens vaginae* (triangular arcuate vs drop-like or drop-arcuate).

Etymology. This species is named in honour of Dr. N.R. Maslen who has contributed substantially to the Antarctic nematode fauna.

Mesodorylaimus imperator Loof, 1975 (Fig. 5)

Type specimens of *M. imperator* were examined and no differences were found in the morphometric data as provided in the original description by Loof, (1975). However, some further data concerning the number and location of the pores and vagina peculiarities are given here. There are 2-3 dorsal and ventral pores in the spear area and 4-8 ventral papillae disposed in the middle of the first half (2-5) and in the middle of the second half (1-

3) of the body. Two lateral pores are present in the odontostyle area. The *pars proximalis vaginae* is 14-20 µm wide, 16-18 µm long, *pars refringes vaginae* trapezoid-rounded to trapezoid-arcuate, 11-13 µm wide, 0-4 µm deep and *pars distalis vaginae* 2.4-2.6 µm thick.

Remarks. An excretory pore similar to that present in *M. chipevi* sp. n. as in the other Antarctic species of the genus was observed in *Longidorus macrosoma* (Aboul-Eid, 1969). The excretory duct is not cuticularized and there are three gland-like bodies (one ventral and two subventral) extending from the nerve ring to the pharynx expansion, lying in the pseudocoel to the pharynx. The two subventral bodies (glands and nucleoli) are distinct but the ventral body usually is not well developed, differs between specimens and occasionally may be indistinct (Figs. 1D, E, 2A, 3A, C, 4G, 5D).

The tongue-like structure observed in *M. chipevi* sp. n. was first described by Thorne & Swanger (1936), and subsequently by Williams (1959), Andr ssy (1968; 1986), Loof (1969), Zullini (1973), Thorne (1974), Vinciguerra (1982) and Heyns & Kruger (1983). This structure was clearly visible in specimens not containing food particles inside the intestine lumen. When food is present the structure was observed to extend into the pre-rectum and is a terminal web of the intestine (Figs. 1F, J, 2F, I, 4H & 5E).

Key to the species of the genus *Mesodorylaimus* Andr ssy, 1959 occurring in Antarctica

1. Vulval region without folds.....2
- Vulval region with cuticular folds.....3
2. V=49-52%; Odontostyle length 13-15 µm or 1.0-1.2 times the width of lip region; a=28.5-34.3; without male .. *M. antarcticus* (*partim*) sp. n.
- V=52-60%; Odontostyle length 14-16 µm or 1.3-1.4 times the width of lip region; a=38-48; males present *M. bastiani*
3. Cuticular folds deep4
- Cuticular folds not so deep; lip region off set by a depression5
4. L=1.8-2.2 mm; Vulva 7.2 µm, *pars refringes vaginae* trapezoid to triangular-arcuate, 15-17 µm wide; cuticular folds anterior and posterior to vulva.....*M. chipevi* sp. n.
- L=1.5-1.8 mm; Vulva 5.9-6.5 µm, *pars refringes vaginae* triangular-arcuate, 17-19 µm wide; cuticular folds anterior, posterior and subventral to vulva*M. masleni* sp. n.

5. Post-anal region of tail protruding; *pars refringes vaginae* rounded to arcuate-trapezoid, *pars distalis vaginae* 2.4-2.6 µm wide; males present.....
..... *M. imperator*
- Post-anal region of tail not protruding; *pars refringes vaginae* triangular, *pars distalis vaginae* 1.2-1.6 µm wide; males unknown
..... *M. antarcticus* sp. n.

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Nedelchev S., Peneva V. Описание трех новых видов рода *Mesodorylaimus* Andrassy, 1959 (Nematoda: Dorylaimidae) с острова Ливингстон, Антарктика, с заметкой о *M. imperator* Loof, 1975.

Резюме. Приводится описание трех новых видов рода *Mesodorylaimus* Andrassy, 1959 с острова Ливингстон, Южные Шетландские о-ва, Антарктика. *Mesodorylaimis* chipevi sp. n. характеризуется длинным телом (L=1.8-2.2 mm), хвостовым концом цилиндрической формы с округленной оконечностью, выраженной складчатостью очень толстой кутикулы близ вульвы. *M. antarcticus* sp. n. характеризуется средними размерами тела (L=1.3-1.6 mm), губной областью, отделенной неглубокой перетяжкой, одонтостилем длиной 13-15 μ m, поперечной вульвой, *pars refringens vaginae*, состоящими из треугольных склероций, коническим хвостовым концом, постепенно сужающимся к термину, который может быть узко закругленным или нести шипик. Особенности *M. masleni* sp. n. являются: средний размер тела (L=1.5-1.8 mm), губная область, не отделенная перетяжкой, одонтостиль 15-17 μ m, поперечная вульва, наличие морщинок и складок кутикулы вокруг вульвы, *pars refringens vaginae* в виде двух хорошо развитых треугольных изогнутых склероций, субцилиндрическим хвостовым отделом длиной 91-117 μ m с прямой вентральной и изогнутой дорсальной поверхностью. Приводятся дополнительные данные для *M. imperator*. Общей особенностью для всех *Mesodorylaimus* является наличие вентральной папиллы в передней и задней частях тела. Предложен ключ для определения видов рода *Mesodorylaimus*, встречающихся в Антарктике.
