Description of *Longidoroides wiesae* spec. nov. from the Kruger National Park (Nematoda: Dorylaimida)

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Longidoroides wiesae spec. nov. is described from South Africa. The new species is characterised by body length of about 4,5 mm; a spiral body posture; bluntly rounded, confluent lip region; small slit-like amphid aperture; bilobed amphidial fovea; bluntly rounded tail; and stylet length about 172 μ m. It is compared with *L. costatus* Jacobs & Heyns, 1987, *L. pulcher* Jacobs & Heyns, 1982, *L. pini* Jacobs & Heyns, 1987 and an unnamed *Longidoroides* species described from Brazil by Rashid, Coomans & Sharma (1986).

Key words: Nematoda, *Longidoroides*, Longidoridae, South Africa, Kruger National Park.

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Introduction

This paper, which describes a new species of *Longidoroides*, is a continuation of a series of papers by Botha & Heyns (1990a, 1990b, 1990c, 1991, 1992a, 1992b, 1992c, 1993a, 1993b) on soil and freshwater nematodes from the Kruger National Park. For materials and methods, see Botha & Heyns (1991).

Description

Family: Longidoridae

Longidoroides wiesae spec. nov.
(Figs 1, 2 and 3)
Morphometric data in Tables 1 and 2

Heat relaxed body curved ventrad into one to one and a half spirals, with the tail pointing roughly in the direction of the vulva. Regularly tapered in the anterior body region, which is confluent with the adjoining body. Cuticle with two main optical layers and several very thin hyaline outer layers visible under LM, with transverse striae visible only with SEM, and with indistinct radial canals in the inner layer, appearing as fine radial

lines around the tail end. Combined cuticle width 4,1 (3,5-4,5) μ m just behind lip region, 4,2 (4-4,5) μ m around midbody, and 13,6 (12-16) μ m around the tail tip. Lateral chord narrow in neck region, increasing to 12-16 μ m at midbody (i.e. 22-28% of the corresponding body width). Body pores indistinct and relatively few in number: 1-3 dorsal pores and 4-7 ventral pores in anterior neck region; 8-11 lateral pores in neck region, 25-33 somewhat staggered pores between base of pharynx and vulva, and 38 to 46 posterior to vulva, plus two caudal pores. Amphidial aperture a small crescent-shaped slit, situated 6-7 μ m from anterior end. Amphidial fovea bilobed, mostly slightly asymmetrical, with the longest lobe reaching 25 (22-30) μ m from the anterior end. Odontostyle typical for the genus, with junction to odontophore plain, and odontophore with indication of rather small, simple (i.e. not anchor-shaped) basal flanges. Basal pharyngeal bulb typical, fairly distinctly separated from anterior narrow part, which is mostly somewhat contorted, but seldom overlaps with the basal bulb. Dorsal nucleus of same size and shape as the subventral nuclei, which are usually both situated at about the same level. DO = 12,1(10,4-14,6); DN = 28,7(23,1-31,3); DO-DN = 16,7(10,4-20,6); SN =

Fig. 1. *Longidoroides wiesae* spec. nov. A. Anterior body region of holotype female. B. Posterior reproductive branch. C. Vaginal region of paratype female. D. Head region of holotype female. E. Dorsal view of head region of paratype female. F. Tail of holotype female. G. Heat relaxed body posture.

Fig. 2. *Longidoroides wiesae* spec. nov. A-D. Head end, juvenile stages I to IV. E-H. Tail end, juvenile stages I to IV. I and J. Maximum variation observed in tail shape of paratype females.

Table 1
Morphometric characters of females of *Longidoroides wiesae* spec. nov.

	Holotype female	Paratypes n = 10
L (mm)	4,55	4,52(3,96-5,08)
a	73	76(68-86)
b	9,9	9,6(8,7-10,7)
c	111	123(99-147)
c'	0,95	0,91(0,77-1,09)
V%	51,0	49,1(43,6-51,6)
Lip region width	15,5	14,6(13-16)
Odontostyle length	106	105(101-112) [†]
Odontophore length	62	65(57-73)
Total stylet length	168	172(166-185) [†]
Amphid aperture	3	2-3
Guiding ring from anterior end	44	43(40-47)
Nerve ring from anterior end	200	207(193-221)
Hemizonid from anterior end	206	203(192-213)
Basal bulb length	115	123(111-137)
Basal bulb width	25	24(22-26)
Prerectum length	480	510(400-600)
Tail length	41	37(33-44)
Anal body diameter	43	41(37-44)

[†] Once only 88 and 153 respectively

Table 2
Morphometric characters of juveniles of *Longidoroides wiesae* spec. nov.

Juvenile stage	J1	J2	J3	J4		
<i>n</i>	1	2	2	5		
L (mm)	1,13	1,61	1,67	2,62	2,86	3,54(3,26-3,85)
a	47	54	54	73	70	72(65-81)
b	4,5	4,4	5,8	7,1	7,7	7,8(6,9-9,2)
c	35	40	42	69	73	87(69-110)
c'	1,88	1,90	1,57	1,31	1,11	1,06(0,85-1,24)
Lip region width	8,5	9	9,5	11,5	13	13,5(13-14)
Odontostyle length	62	73	73	90	92	100(98-103)
Odontophore length	41	48	45	46	53	58(51-65)
Total stylet length	103	121	118	136	145	158(151-168)
Replacement odontostyle	70	82	78	99	102	114(109-121)
Amphid aperture	?	?	2	2	2	2-2,5
Guiding ring from anterior end	26	30	30	34	40	41(38-43)
Basal bulb length	61	87	66	93	94	108(98-120)
Basal bulb width	13	14	16	19	20	21(19-23)
Tail length	32	40	40	38	39	41(35-49)
Anal body diameter	17	21,5	25	29	35	39(36-41)

Fig. 3. *Longidoroides wiesae* spec. nov. A. LM photo showing duplex saccate structure ventrally between the nerve ring and the basal bulb. B. SEM photo of head region showing small slit-like amphid aperture, transverse striae and several body pores. C. SEM photo with ventral view of tail end. A = $\times 1200$; B = $\times 2000$; C = $\times 1000$.

53,7(48,7-58,5); SO = 85,1 (84,3-86,4) ($n = 6$).

Neurosecretory organ situated on ventral side of pharynx, behind nerve ring, with a characteristic, constant shape, with the distal end constricted to form a terminal saccate structure. Cardia varying from flattened to bluntly conoid, 5-11 μm long by 13-16 μm wide at its base. Vulva transverse; vagina reaching inwards for more than half the corresponding body diameter. *Pars proximalis vaginae* (terminology according to De Ley *et al.* 1993) 25 (22-27) μm in length, longer than

wide, with irregular contour; *pars refringens vaginae* absent; *pars distalis vaginae* 13 (10-14) μm long, broader than body cuticle, and tapering proximally. Dilator muscles attached to *pars distalis vaginae*. Part of both uteri adjoining vagina often demarcated by a dorsal constriction (Fig. 1C); uteri without further special features. Sphincter between uterus and oviduct strongly developed. Oviduct with a prominent *pars dilatata*. Ovaries typical for the genus. Tail bluntly convex-conoid. Dorsal somatic muscles mostly very prominent in tail. Rectum length about 65-75% of anal body diameter.

Diagnosis

Longidoroides wiesae spec. nov. is about 4,5 mm long, and has a spiral body posture. It has a rounded, confluent lip region, a small slit-like amphid aperture and asymmetrically bilobed amphidial fovea, bluntly rounded, convex-conoid tail, and stylet length about 172 μ m.

Relationships

Longidoroides wiesae spec. nov. bears superficial resemblance to *Longidoroides costatus* Jacobs & Heyns, 1987, but lacks the reinforcing "ribs" present in the cuticle of the anterior neck region of that species. It further differs in tail length and shape (tail shorter and more bluntly rounded than in *L. costatus*, $c = 99-147$ vs. $79-102$, and $c' = 0,77-1,09$ vs. $1,4-1,8$), body width ($a = 68-86$ vs. $99-129$), broader lip region ($13-16 \mu$ m vs. $11-13 \mu$ m), position of guiding ring ($40-47 \mu$ m vs. $29-34 \mu$ m), and much longer amphidial pouches.

Longidoroides wiesae spec. nov. can also be compared with *Longidoroides pulcher* Jacobs & Heyns, 1982, but differs in having a much smaller amphid aperture ($2-3 \mu$ m vs. $4-6 \mu$ m), longer odontostyle ($101-112 \mu$ m vs. $74-87 \mu$ m), more stout body ($a = 68-86$ vs. $89-115$), and longer tail ($33-44 \mu$ m vs. $22-30 \mu$ m) with relatively thinner cuticle around tail terminus.

Also to be considered is *Longidoroides pini* Jacobs and Heyns, 1987, which superficially resembles the new species, but which is a much larger amphimictic species ($L = 6,16-8,67$ mm vs. $3,96-5,08$ mm).

Lastly, the new species should be compared with the unnamed *Longidoroides* species which Rashid, Coomans & Sharma (1986) reported from Bahia State, Brazil, and which seems to be rather similar to *L. wiesae* spec. nov. However, it has a more attenuated neck region with a higher, more pointed lip region, and a much longer odontostyle (175μ m vs. $101-112 \mu$ m) and the vulva is situated at 41%

vs. 43,6-51,6%. It has to be pointed out that there is an apparent fault in the description by Rashid *et al.* (1986), viz. ratio c is given as 28 (which is obviously incorrect, considering the short conoid tail). When c is calculated from the body length ($5,3$ mm) and tail length (19μ m) as given in their description, it comes to 279. Whether the tail length given is correct cannot be determined from their illustration, since the scale for Fig. 6D is apparently wrong.

Type locality and habitat

Holotype and paratypes collected from soil about three meters from the bank of the Sabie River, at Picket Mthshawa in the Kruger National Park, *legit* J. Heyns and A. Botha, 22 Feb. 1990.

Type specimens

Holotype and three paratypes on slide RAU 5626; other paratypes on slides RAU 5624, 7187, 7189, 7191 and 7193; further paratypes in the nematode collections of the Institute for Zoology, University of Ghent, Belgium; the Museum National d'Histoire Naturelle, Paris, France and the Agricultural University, Wageningen, The Netherlands.

Dedication

The new species is named after my friend Wies Coomans-Gyselincx, in appreciation of her efforts to make my frequent visits to the University of Ghent comfortable and enjoyable.

References

- BOTHA, ANNELIZE AND J. HEYNS. 1990a. Aporcelaimidae (Nematoda: Dorylaimida) from the Kruger National Park. *Koedoe* 33(2): 27-46.
- BOTHA, ANNELIZE AND J. HEYNS. 1990b. Dorylaimoidea (Nematoda) from the Kruger National Park. *Koedoe* 33(2): 47-59.
- BOTHA, ANNELIZE AND J. HEYNS. 1990c. A preliminary check list of the free-living and plant-parasitic nematodes of the Kruger National Park. *Koedoe* 33(2): 73-76.

- BOTHA, ANNELIZE AND J. HEYNS. 1991. Dorylaimoidea (Nematoda) from rivers in the Kruger National Park. *Koedoe* 34(2): 1-24.
- BOTHA, ANNELIZE AND J. HEYNS. 1992a. Freshwater nematodes of the genera *Thornenema* and *Mesodorylaimus* from the Kruger National Park with a diagnostic species compendium for South African species of the genus *Mesodorylaimus* (Nematoda: Dorylaimida). *Koedoe* 35(1): 25-42.
- BOTHA, ANNELIZE AND J. HEYNS. 1992b. Species of *Tyleptus*, *Proleptonchus*, *Aquatides* and *Afractinolaimus* from rivers in the Kruger National Park (Nematoda: Dorylaimida). *Koedoe* 35(1): 43-54.
- BOTHA, ANNELIZE AND J. HEYNS. 1992c. Further records and descriptions of nematodes from rivers in the Kruger National Park (orders Enoplida, Chromadorida, Monhysterida, Mononchida and Araeolaimida). *Koedoe* 35(2): 11-25.
- BOTHA, ANNELIZE AND J. HEYNS. 1993a. Species of the genera *Oxydirus*, *Dorylaimellus* (*Axodorylaimellus*), *Laimydorus* and *Rhabdolaimus* from rivers in the Kruger National Park (Nematoda: Dorylaimida and Araeolaimidae). *Koedoe* 36(1): 49-60.
- BOTHA, ANNELIZE AND J. HEYNS. 1993b. New records of Tylenchida, Araeolaimida and Enoplida from the Kruger National Park, with an addendum to the check list of nematode species in the park. *Koedoe* 36(1): 61-65.
- DE LEY, P., P.A.A. LOOF AND A. COOMANS. 1993. Terrestrial nematodes from the Galápagos Archipelago II: Redescription of *Aporcelaimellus obtusicaudatus* (Bastian, 1865) Altherr, 1968, with review of similar species and a nomenclature for the vagina in Dorylaimida (Nematoda). *Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen, Biologie* 63(1): 1-22.
- JACOBS, P.J.F. AND J. HEYNS. 1982. *Longidoroides* species from sugar cane in Natal (Nematoda: Longidoridae). *Phytophylactica* 14(4): 179-193.
- JACOBS, P.J.F. AND J. HEYNS. 1987. New and known species of *Longidoroides* and *Paralongidorus* from South Africa (Nematoda: Longidoridae). *Phytophylactica* 19(1): 7-14.
- RASHID, FARZANA, A. COOMANS AND R.D. SHARMA. 1986. Longidoridae (Nematoda: Dorylaimida) from Bahia State, Brazil. *Nematologia Mediteranea* 14(2): 235-250.