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A FIRST REPORT ON LONGIDORIDAE FROM SWAZILAND

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ABSTRACT

Key words: Nematoda, Longidoridae, Swaziland

The following Longidoridae species are reported from Swaziland: *Xiphinema elongatum* Schuurmans Stekhoven & Teunissen, *Xiphinema mluci* Heyns, *sensu lato*, *Xiphinema variabile* Heyns, *Xiphinema* sp. cf. *variabile*, *Longidorus laevicapitatus* Williams and *Longidorus paramonile* Jacobs & Heyns. Measurements of all specimens are given, together with some illustrations for *X. elongatum*, *X. variabile* and *L. paramonile*.

Uittreksel

'N EERSTE VERSLAG OOR LONGIDORIDAE UIT SWAZILAND

Die volgende Longidoridae-spesies word uit Swaziland aangemeld: Xiphinema elongatum *Schuurmans Stekhoven & Teunissen,* Xiphinema mluci *Heyns,* sensu lato, Xiphinema variabile *Heyns,* Xiphinema sp. *verwant aan* X. variabile, Longidorus laevicapitatus *Williams en* Longidorus paramonile *Jacobs & Heyns. Afmetings word verskaf van alle eksemplare, asook enkele illustrasies van* X. elongatum, X. variabile *en* L. paramonile.

INTRODUCTION

During November 1984 the authors collected six soil samples at random in Swaziland. Four of these samples yielded Longidoridae, which are reported on in this paper. As was to be expected, the species found correspond to those recorded from the neighbouring territories, Natal and Transvaal. The specimens were killed in hot FAA and processed into dehydrated glycerine according to Thorne's slow method. All slides are in the collection of the Department of Zoology, Rand Afrikaans University.

NOTES ON MORPHOLOGY AND DISTRIBUTION

Xiphinema elongatum Schuurmans Stekhoven & Teunissen, 1938 (Fig. 1 A–E).

This is one of the commonest longidorid species in southern Africa. Heyns (1974) reported the wide distribution of this species in South Africa and regarded it as indigenous, because of the many records from virgin soil. In the western Cape, Barbercheck, Smith & Heyns (1985) found *X. elongatum* to be the most common *Xiphinema* species in vineyards in the Breë River Valley while Van Reenen & Heyns (1986) likewise reported it to be the commonest *Xiphinema* species in vineyards in the Berg River Valley. Extensive surveys conducted by Dr V. W. Spaull in sugar cane fields in Natal revealed *X elongatum* to be the dominant longidorid in this area also (unpublished data). It is therefore not surprising to find this nematode on sugar cane in Swaziland. It was collected from the rhizosphere of cane on the Manzini Road just outside Big Bend.

Measurements

Female (n = 6): L = 2,38 mm (2,26–2,46); a = 59,5 (56,5–62,3); b = 7,0 (6,5–8,2); tail = 66 μm (60–70); c = 36,2 (33,4–39,5); c^1 = 2,7 (2,5–29); V = 40,7 (38,5–42,0); odontostyle = 95,5 μm (91–102); odontophore = 58,5 μm (57–61); stylet = 154 μm (149–160); h = 18 μm (15–22); h% = 27,3 (24–32)

Juvenile J4 (n = 1): L = 1,9 mm; a = 51,7; b = 6,2; tail = 64 μm; c = 29,1; c^1 = 2,8; odontostyle = 76 μm; odontophore = 49 μm; replacement odontostyle = 92 μm; h = 10 μm; h% = 16

The specimens agree with the description of South African specimens as given by Heyns (1974).

Xiphinema mluci Heyns, 1976 *sensu lato* (Fig. 1 F–J)

Six females and two pre-adult juveniles were collected with a population of *Longidorus paramonile* under grass sods next to the main road between Mbabane and Piggs Peak, 2 km north of the branch road to Oshoek. When Heyns (1976) described *X. mluci*, he indicated that this species displayed exceptionally wide morphological variation and distinguished several morphometrically distinct but overlapping groups. Recent collections in several areas in South Africa yielded more material of this species which is presently being restudied at the Rand Afrikaans University by G. Stocker and J. C. de W. Kruger. *X. mluci* will be redescribed and several closely related new species described. The present specimens from Swaziland belong to this species complex and are provisionally listed as *X. mluci sensu lato*.

Measurements

Female (n = 6): L = 3,79 mm (3,36–4,15); a = 81,5 (74,7–98,8); b = 8,9 (7,6–11,0); tail = 150 μm (143–156); c = 26,4 (24,0–28,0); c^1 = 5,4 (5,1–5,7); V = 47,8 (47,0–49,5); odontostyle 107 μm (104–112); odontophore = 77 μm (71–82); stylet = 184 μm (175–194)

Juvenile J4 (n = 2): L = 2,70 mm; a = 73; b = 6,0; tail = 129 μm; c = 20,9; c^1 = 5,2; odontostyle = 91 μm; odontophore = 70 μm; stylet = 161 μm; replacement odontostyle = 114 μm; L = 2,88 mm; a = 70,2; b = 8,5; tail = 145 μm; c = 19,9; c^1 = 5,8; odontostyle = 93 μm; odontophore = 68 μm; stylet = 161 μm; replacement odontostyle = 108 μm

Xiphinema variabile Heyns, 1966 (Fig. 2A–C)

A single female was found under grass sods along the Manzini Road about 13 km from Big Bend.

Female: L = 2,05 mm; a = 75,9; b = 8,2; tail = 43 μm; c = 47,7; c^1 = 2,5; V = 50,7; ondontostyle = 68 μm; odontophore = 48 μm; stylet = 116 μm; h = 9 μm; h% = 21

Xiphinema sp.

In the same sample containing the female of *X. variabile*, three unidentifiable males and a juvenile were found which resemble *X. variabile* but differ in some important respects. The stylet lengths of these males range from 151–154 μm, compared with a maximum length of 118 μm (123 μm in the female) in *X. variable;* the spicules are 51–52 μm compared to a maximum of 42 μm in *X. variabile* (see Heyns, 1966); moreover, the tail peg is more sharply defined and the labial area not as expanded as in *X. variabile*.

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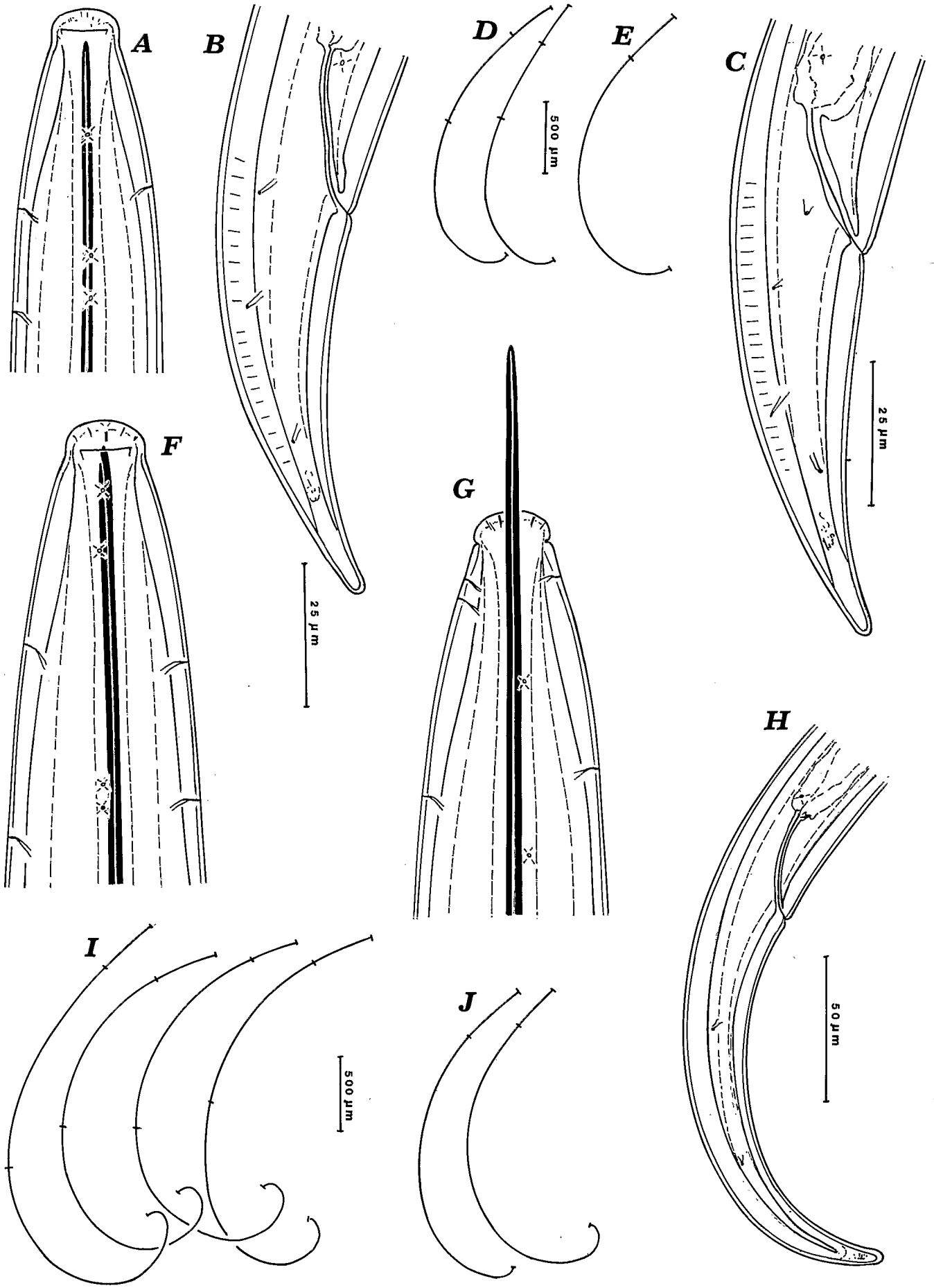

FIG. 1 A–E *Xiphinema elongatum*. A: Head of female. B: Female tail. C: Tail of J4. D: Body posture of female. E: Body posture of J4. F–J: *Xiphinema mluci sensu lato*. F and G: Head of female, laterally and dorso-ventrally respectively. H: Female tail. I: Body posture of female. J: body posture of J4.

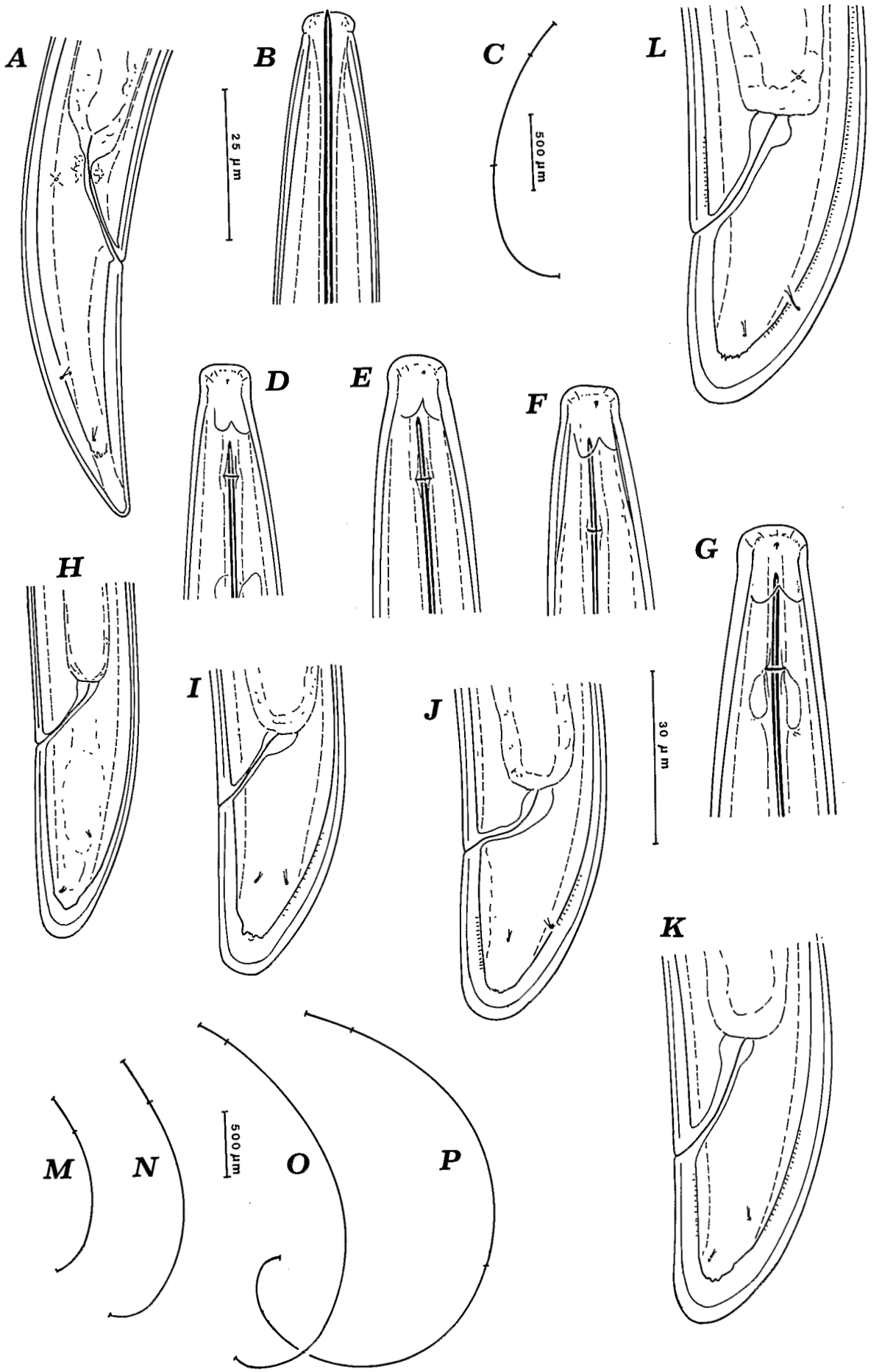

FIG. 2 A–C. *Xiphinema variable*. A: Female tail. B: Head of female, dorso-ventrally. C: Body posture of female. D–P. *Longidorus paramonile*. D–G: Head of J2, J3, J4 and female, respectively. H–K: Tail of J2, J3, J4 and female, respectively. L: Tail of another female. M–P: Body posture of J2, J3, J4 and female, respectively.

TABLE 1 Biometrical data of *Longidorus paramonile* specimens from Swaziland and type specimens from Natal

	♀(n = 10)		J4 (n = 2)		J3 (n = 7)	J2 (n = 2)		Type specimens (n = 7) Acc. to Jacobs & Heyns (1982)
L (mm)	5,26	(4,37–6,78)	4,30	3,45	2,62 (2,37–2,79)	1,85	1,47	4,22–5,01
a	123	(107–138)	110	111	85,5 (78–90)	69	60	129–150
b	18,3	(15,2–21,1)[a]	15,9	?	10,1 (9,1–10,9)	8,5	6,0	14,7–23,6
c	198	(156–234)	127	123	81 (72–93)	49	47	150–208
V	49,1	(47,9–50,5)	—	—	—	—	—	45–49
Tail length (μm)	26,7	(24–28)	34	28	33 (29–36)	38	31,5	22–31
Anal body diameter (μm)	24,3	(22,5–26,5)	26	22,5	22 (20–24,5)	20	16	—
c^1	1,09	(1,00–1,22)	1,31	1,24	1,48 (1,33–1,67)	1,90	1,97	1,0–1,4
Body diameter (μm)	43	(36–49)	39	31	31 (28–34,5)	27	24,5	—
Odontostyle (μm)	66	(64–67,5)	61	57,5	54 (51–57)	46	45	53–59
Odontophore (μm)	43,4	(42–45)[b]	?	?	40 (37–43)	32	27	38–44
Total stylet (μm)	108,5	(106,5–110,5)[b]	?	?	93,8 (89,5–100)	78	72	—
Replacement odontostyle (μm)		—	69,5	63	60,1 (57–61,5)	54	53	—
Guiding ring to front (μm)	24,0	(22–27)	23	25	20,6 (19,–22)	18,5	18	24–27
Width of lip region (μm)	11,5	(10,5–12,5)	11	10	10,1 (10–10,5)	9	8	10–11
Length of basal bulb (μm)	96	(88–109)	86	76	76 (70–84)	65	63	58–79
Width of basal bulb (μm)	13,9	(13–16)	14	17	13,1 (11,5–14,5)	12	12	7–13
G1 %	5,4	(2,3–8,9)[c]	—	—	—	—	—	—
G2 %	6,2	(3,9–8,7)	—	—	—	—	—	—

[a]: n = 7 [b]: n = 5 [c]: n = 8

Male (n = 3): L = 2,72; 2,77; 2,80 mm; a = 66,3; 64,2; 66,7; b = 7,5; 6,9; 7,8; tail = 42; 40; 42 μm; c = 64,8; 69,2; 66,7; c^1 = 1,6; 1,4; 1,5; odontostyle = 90; 94; 93 μm; odontophore = 61; 60; 61 μm; stylet = 151; 154; 154 μm; spicules = 51; 51; 52 μm (measured along curved median line); lateral guiding pieces = 10; 10; 11 μm; distance from cloaca to adcloacal pair of supplements = 17; 19; 16 μm; distance adcloacal pair to 1st ventromedian supplement = 87; 75; 77 μm; 1st to 2nd supplement = 24; 39; 33 μm; 2nd to 3rd supplement = 18; none; 23 μm.

***Longidorus leavicapitatus* Williams, 1959**

Jacobs & Heyns (1982) recorded this species from numerous sugar cane fields in Natal. The present specimens were also found in the rhizosphere of sugar cane on the Manzini Road just outside Big Bend.

Measurements

Female (n = 7): L = 2,68 mm (2,27–2,88); a = 55 (50–59); b = 10,8 (9,3–12,9); tail = 39 μm (36–42); c = 68 (57–76); c^1 = 1,3 (1,2–1,3); V = 48 (46–49); odontostyle = 59 μm (56–61); odontophore = 43 μm (39–47); stylet = 102 μm (96–106); body diameter = 48 μm (43–51); anal body diameter = 31 μm = (29–32); guiding ring to front end = 26,6 μm (22,5–31,5); nerve ring to front end = 139 μm (125–152); hemizonid to front end = 137 μm (130–147); width of lip region = 10,1 μm (10–10,5); anterior reproductive branch = 11,4 μm (5,1–17,1); posterior reproductive branch = 10,7 μm (6,1–16,5); egg (n = 1) = 38 × 144 μm.

Location of pharyngeal gland nuclei and their outlets seen in some specimens only:

DO (n = 2) = 7,3–13,4; DN (n = 3) = 20,0–29,2; DO–DN (n = 2) = 12,7–15,8; LSN (n = 4) = 48,0–54,4; RSN (n = 2) = 49,3–55,4; SO (n = 5) = 85,4–87,8.

Juvenile. Twelve juvenile specimens were found, of which the body lengths vary from 1,51 μm to 2,43 μm. However, based on length of odontostyle and replacement odontostyle, these are all considered to belong to the pre-adult stage.

L = 1,96 μm (1,51–2,43) μm; a = 48,5 (43,5–53,5); b = 8,9 (6,4–10,5); tail = 39 μm (31–43); c = 50,2 (44–61); c′ = 1,42 (1,25–1,62); odontostyle = 51,5 μm (48,5–55); odontophore (n = 7) = 36,1 μm (33,5–39); stylet (n = 7) = 87,3 μm (84,5–91); replacement odontostyle = 58,1 μm (55,5–60,5); width of lip region = 9,6 μm (9,5–10); guiding ring to front end = 21,8 μm (19–23).

The general morphology of these Swaziland specimens are in close agreement with the specimens described from Natal by Jacobs & Heyns (1982).

***Longidorus paramonile* Jacobs & Heyns, 1982 (Fig. 2 D–P)**

This species was recently described (Jacobs & Heyns, 1982) from sugar cane in Natal. The present specimens were collected under grass sods alongside the Mbabane-Piggs Peak Road, 2 km north of the turn-off to Oshoek.

Measurements of females and juvenile stages J2–J4 in Table 1. Location of gland nuclei and their outlets as follows (n = 5): DO = 4,2–6,0; DN = 13,6–19,0; DO–DN = 11,4–17,0; LSN = 51,6–55,7; RSN = 51,6–57,9; SO = 86,0–92,0

These specimens agree with those described from Natal, except that they are appreciably bigger: The average length of 5,26 mm is more than that recorded for the longest paratype specimen (5,01 mm); odontostyle length varies from 64–67,5 μm compared with only 53–59 μm in the types; basal bulb length varies from 88–109 μm compared with 58–79 μm in the types, and basal bulb width from 13–16 μm compared with 7–13 μm. However, other measurements as well as the general morphology are so similar to those of the type specimens, that we regard this Swaziland population as a geographical variant conspecific with *L. paramonile*.

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