A New Species of *Tubixaba* Monteiro & Lordello, 1980 (Dorylaimida: Aporcelaimidae) with an Emendation of the Genus

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Tubixaba parva sp. nov., is described from the southern border of the Kruger National Park. It is much smaller and less slender, has a small-sized odontostyle and a relatively longer tail than the type and only species, *Tubixaba tuxaua* Monteiro & Lordello, 1980 from Brazil. The generic diagnosis is slightly emended to accommodate the new species in *Tubixaba*.

Key words: Kruger National Park, nematode, Aporcelaimidae, *Tubixaba parva* sp. nov., emendation of genus.

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Introduction

A soil sample taken among the roots of grasses and *Acacia* trees at the Malelane Gate of the Kruger National Park yielded several specimens of an unknown dorylaim nematode. On account of the relatively thick cuticle, large stylet aperture and absence of a sclerotised guiding ring, this nematode belongs to the family Aporcelaimidae Heyns, 1965. Although it comes close to the genus *Aporcelaimus* Thorne & Swanger, 1936, it cannot be accommodated in this genus mainly because of the smaller stylet aperture. It fits best in the genus *Tubixaba* Monteiro & Lordello, 1980, a monotypical genus described from Brazil. However, its placement in *Tubixaba* necessitates a slight emendation of the diagnosis of that genus.

Method

The specimens used in this description were killed in hot (60 °C) F.A.A., and processed into dehydrated glycerine according to Thorne's slow method (Hooper 1970). Drawings and measurements were made with the aid of a ZEISS Standard 18 microscope fitted with differential interference contrast and a camera lucida. Curved structures such as body length and spicules, were measured along their median line with the aid of a curvimeter.

Description

Tubixaba Monteiro & Lordello, 1980. Emended.

Aporcelaimidae. Medium to very large nematodes (about 3 mm – 12 mm long). Cuticle thick, with criss-cross and radial lines, with or without punctations. Lateral lips separated from subdorsal and subventral lips, which are partly amalgamated. Junction where lateral lips meet subdorsal and subventral lips may be sclerotised. Amphideal chambers without sclerotised, median support, not duplex, but with biconvex outline in face view. Oral aperture a dorso-ventral slit, more or less hexagonal in appearance. Cheilostom hexagonal in face view. Stylet aperture about one third odontostyle length. Oesophago-intestinal disc absent. Vulva a transverse slit without cuticularised lips. Male with an adanal pair and a non-contiguous series of ventro-median supplements. Tails of sexes similar, short. Type species: *Tubixaba tuxaua* Monteiro & Lordello, 1980.

Tubixaba parva sp. nov. (Figs. 1 and 2)

Morphometric data in Table 1.

Female

Relatively large and slender nematode. Body of heat-relaxed specimens slightly ventrally curved. Cuticle relatively thick (4,5 μ m – 6,5 μ m) over largest part of body, and even more so on the tail, where it is 8,0 μ m – 10,5 μ m thick on the ventral side, and 9,0 μ m – 11,5 μ m thick on the dorsal side. With criss-cross lines below the surface of the outer layer of the cuticle, and with prominent radial lines towards the tail. Inner layer of cuticle with faint annulations and transverse striae, interrupted at the lateral field. The lateral field broadens gradually from about the level of the nerve ring, to occupy almost one third the body width posteriorly. Many hypodermal glands present. Dorsal pores restricted to the oesophageal region, varying from 10 to 15 in number. Ventral pores about 120 present over entire length of body. Lateral pores about 360 in number, starting as a single row behind the lip region, but diverging into two rows at the level of the nerve ring; irregularly distributed, with most of the pores in the ventro-lateral row.

Subdorsal and subventral lips partly amalgamated, with the junction between lateral and subdorsal, and lateral and subventral lips appearing sclerotised. This sclerotisation reaches as far as the amphid. Number and arrangement of labial papillae typically dorylaimoid. Mouth opening a dorso-ventral slit. Odontostyle axial, but located more ventrally in the cheilostom. Stylet aperture varying from 28% – 39% the odontostyle length. Odontostyle about five times as long as broad. Odontophore simple, without modifications. Guiding apparatus without a sclerotised ring, but with a plicated fold. Amphid shallow, stirrup-shaped, the aperture about half the lip region width (Fig. 1C). In an en face view the amphideal chamber shows an unsclerotised constriction on both sides of each amphid (Fig. 1F). Vestigium observed in the anterior slender part of oesophagus of some specimens. What appears like a rudimentary excretory pore, was seen in some specimens. Hemizonid situated posterior to the nerve ring. Oesophagus widening gradually from 33%

Fig. 1. *Tubixaba parva* sp. nov.: A. Anterior part of body; B. Lateral view of head; C. Surface view showing amphid; D. Odontostyles of two specimens; E. Face view of lip region; F. Cross section through amphideal region; G. and H. Body posture in heat relaxed specimens, female and male respectively; I. and J. Tails of two female specimens.

Fig. 2. *Tubixaba parva* sp. nov.: A. Posterior part of body of male; B. Spiculum and crura; C., D. and E. Variation in cardiac region in three specimens; F. One branch of amphidelphic reproductive system of female.

Table 1
Morphometric characters of Tubixaba parva sp. nov.

	Holotype		Paratypes		Juveniles		
	Female	Females	Males	J4	J3	J4	J3
n	1	12	12	1	1	1	1
L (mm)	3,52	3,85 (3,27–4,42)	3,80 (3,40–4,20)	2,80	1,90	2,80	1,90
a	48,6	45,6 (39,0–53,4)	45,5 (41,5–51,2)	41,4	34,8	41,4	34,8
b	5,4	6,1 (5,1–7,9)	6,1 (5,3–7,2)	–	4,8	–	4,8
c	103,0	112,8 (78,8–144,4)	110,8 (89,3–139,0)	95,3	85,5	95,3	85,5
c'	0,74	0,71 (0,55–0,82)	0,72 (0,63–0,82)	0,69	0,78	0,69	0,78
V%	46	53 (46–56)	–	–	–	–	–
Width of lip region (µm)	16	17 (16–19)	17 (15–19)	–	–	–	–
Height of lip region (µm)	7	6,8 (5–8)	6,7 (5–8)	–	–	–	–
Odontostyle (µm)	16	16 (14–17)	16 (15–17)	14	12	14	12
Odontophore (µm)	27	26 (25–28)	28 (25–39)	–	–	–	–
Total stylet length (µm)	43	43,2 (40–46)	45 (40–55)	–	–	–	–
Guiding ring from anterior end (µm)	10,5	10,2 (8,5–11,5)	10,5 (10,0–11,5)	–	–	–	–
Length of oesophagus (µm)	645	625 (505–674)	626 (538–690)	–	390	–	390
Body width (µm)	72,0	84,5 (66,0–99,5)	84,0 (78,2–93,2)	60	50	60	50
Tail length (µm)	34,2	35,2 (25,0–47,9)	35,1 (28,8–43,8)	30	20	30	20
Anal body diameter (µm)	45,8	48,5 (44,8–58,4)	48,0 (43,0–52,8)	40	20	40	20
Length of replacement odontostyle (µm)	–	–	–	16	13	16	13
Length of rectum (µm)	40,8	54,8 (32,5–66,1)	66,2 (46,5–80,5)	–	–	–	–

from the anterior end. Anterior slender part of oesophagus weakly muscularised. Position of the oesophageal gland nuclei and their openings as follows ($n = 9$):
 $DO = 47,1$ ($43,6 - 49,9$); $DN = 49,1$ ($45,8 - 52,1$);
 $S_1 N_1 = 61,3$ ($58,7 - 63,4$); $S_1 N_2 = 64,5$ ($62,1 - 65,4$);
 $S_2 N_1 = 73,9$ ($72,2 - 76,0$); $S_2 N_2 = 74,4$ ($72,6 - 76,0$);
 $S_2 O = 76,2$ ($74,3 - 77,8$); $S_1 O$ is at the same level as $S_1 N$. In one specimen the position of the gland nuclei and their openings deviated somewhat from the above, viz., $DO = 58,8$; $DN = 52,7$; $S_1 N_1 = 64,6$; $S_1 N_2 = 67,3$; $S_2 N_1 = 76,7$; $S_2 N_2 = 77,1$; $S_2 O = 84,6$. In some specimens the openings of the second pair of subventral glands are not at the same level.

Oesophago-intestinal disc absent. Cardia varying in shape and size (Fig. 2C–E). Contents of intestine dark, globular, obscuring the intestinal cells as well as the junction between the intestine and praepectum. Tail short, conoid, bluntly rounded, without sexual dimorphism. Caudal pores variable in position and number, from three to five pairs occurring on the tail. In some specimens the caudal pores are indistinct.

Female amphidelphic. Ovary reflexed dorsally. Distinct ovarian sac at the junction with the oviduct. *Pars dilatata oviducti* and *pars dilatata uteri* well-developed and separated by a sphincter muscle. Uterus varying in width, and sometimes plicated. Ovejector not clearly differentiated. Sperm present everywhere in the gonoduct, even in the oviduct. No uterine eggs observed. Vagina muscularised and vulva a transverse slit, without cuticularised lips.

Male

Male similar to female except in posterior part in the region of the supplements, where the body is more strongly ventrally curved. With two opposed, outstretched testes. Spicules relatively slender and straight; $84,7$ ($79,8 - 87,8$) μm long. Crurae slender, almost straight; $21,6$ ($17,5 - 26,0$) μm long. With an adanal pair and eight to eleven non-contiguous ventro-median supplements.

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Juvenile

Only one third and one fourth stage juvenile were found. They resemble adults, except in size and tail length. Morphometric data in Table 1.

Diagnosis

Tubixaba parva n. sp. can be distinguished from *T. tuxaua* Monteiro & Loredello, 1980 by its much smaller body size ($3,27$ mm – $4,42$ mm compared with $9,44$ mm – $11,66$ mm), smaller odontostyle (14 μm – 17 μm compared with 30 μm – 33 μm), less slender body ($a = 39 - 53$ compared with $a = 57 - 71$), different c ratio ($c = 79 - 144$ compared with $c = 147 - 180$), and absence of punctations in the cuticle.

Type locality and habitat

The type population consisting of 13 females, 12 males and two juveniles were collected by J. Heyns and A. Coomans in July 1984 among the roots of grasses and *Acacia* trees next to the parking area outside the Malelane Gate of the Kruger National Park.

Type slides

Holotype female on slide RAU type 279. Paratypes on slides RAU type 271 – 285. All slides in the collection of the Department of Zoology, Rand Afrikaans University, Johannesburg, Republic of South Africa.

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